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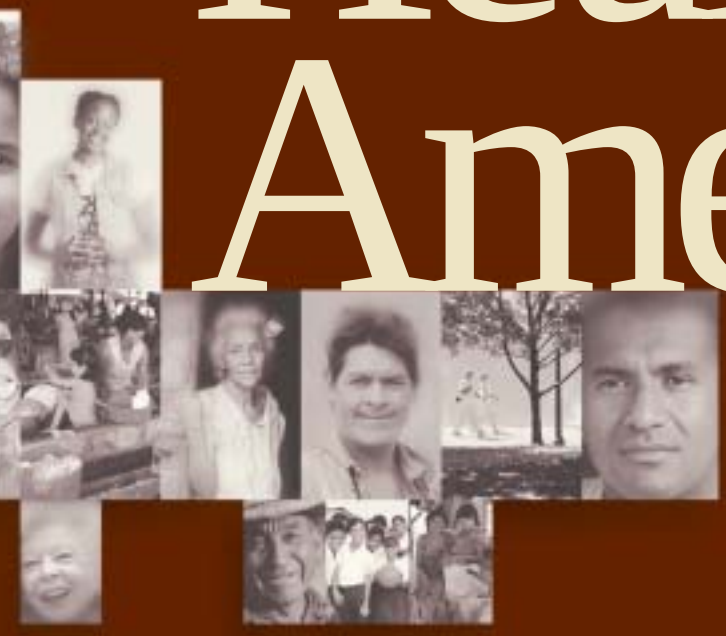
Health in the Americas



VOLUME II
2002 Edition

Pan American Health Organization

Celebrating 100 Years of Health

Health in the Americas

2002 Edition
Volume II

Scientific and Technical Publication No. 587

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PAN AMERICAN SANITARY BUREAU
VALUES, VISION, and MISSION

The Pan American Sanitary Bureau (PASB), the oldest international health agency in the world, is the Secretariat of the Pan American Health Organization (PAHO). The Bureau is committed to providing technical support and leadership to PAHO Member States as they pursue their goal of Health for All and the values therein. Toward that end, the following values, vision, and mission guide the Bureau's work.

VALUES

Equity
Striving for fairness and justice by eliminating differences that are unnecessary and avoidable.

Excellence
Achieving the highest quality in what we do.

Solidarity
Promoting shared interests and responsibilities and enabling collective efforts to achieve common goals.

Respect
Embracing the dignity and diversity of individuals, groups, and countries.

Integrity
Assuring transparent, ethical, and accountable performance.

VISION

The Pan American Sanitary Bureau will be the major catalyst for ensuring that all the peoples of the Americas enjoy optimal health and contribute to the well being of their families and communities.

MISSION

To lead strategic collaborative efforts among member countries and other partners to promote equity in health, to combat disease, and to improve the quality of, and lengthen, the lives of the peoples of the Americas.

CONTENTS

GENERAL OBSERVATIONS

Because of rounding, the sum of partial details and percentages in the tables may not coincide with the total.

Explanation of symbols:

..	Not applicable
…	Data not available
—	Zero magnitude
0.0	Greater than zero, but lower than 0.05

The term "country" also may be used to designate territories or other areas.

PREFACE

On this centennial year of the Pan American Health Organization (PAHO), I am pleased to present the quadrennial publication *Health in the Americas*, 2002 edition. With this publication, PAHO continues to respond to Member States' mandate to analyze and disseminate information on health situation and trends in the Region of the Americas. This publication presents, in two volumes, a Regional analysis and an analysis for each of the 47 countries and territories of the health situation and trends in the Americas from 1997 to 2000.

An important feature of this publication is its documentation of the effects of socioeconomic inequalities on the populations' health, particularly the relationship between income distribution and health status, viewed when countries are analyzed in groups. This relationship has an extremely important implication—it is possible to make significant improvements in health not only by promoting economic growth, but also by reducing income gaps within a country.

In broad terms, the Region's health situation can be viewed as a reflection of the dual impact of the demographic changes and shifts in epidemiological profiles. It also mirrors the effectiveness of health policies and the performance of the health systems. Some health problems still remain unresolved and new ones have emerged. Moreover, health problems are unequally distributed across the population and have differential effects on various groups. The health gains that have accumulated at the beginning of the 21st century are, in great measure, a tribute to the capacity of the countries to pursue the goal of "Health for All by the Year 2000," recognizing that it remains valid in the Region of the Americas even today.

This publication offers an updated assessment of overall health conditions in the Americas and, as such, contributes to a better understanding of its determinants. I encourage national health authorities, policy makers, scholars, researchers, health workers, and anyone committed to the advancement of public health in the Americas to take advantage of this valuable resource.

George A. O. Alleyne
Director

INTRODUCTION

Health in the Americas is the Pan American Health Organization's flagship publication analyzing the health situation and trends in the Region of the Americas. This edition is the latest in a long series of such reports that the Organization has published since 1954. The book's contents, format, and slant have evolved over time in order to adapt to changing demands from Member States, to reflect new developments in epidemiologic thinking and practice, and to respond to new challenges in PAHO's technical cooperation. Through its history, this publication has grown from an almost purely statistical report to an in-depth, comprehensive, public health assessment of the Region's health status and its determinants.

In this 2002 edition, the analysis of *Health in the Americas* is oriented toward documenting inequalities in health. In order to best show the analysis at both the Regional and country levels, this edition, as were previous ones, is presented in two volumes. Volume I's eight chapters bring together the contributions of several of PAHO's technical units to present a Regional perspective on the current health situation. This volume includes analyses of the status and trends of several important health and health-related indicators and determinants, ranging from mortality and changes in life expectancy to the impact that income-level and income-distribution inequalities have on the population's health. Viewed in the context of globalization, health sector reform, and other macro-political processes, Volume I describes the current status and trends in health promotion, environmental health, disease prevention and control, availability of health resources and technology, and external cooperation in health.

Chapter I presents a conjunctural analysis of the current political and socioeconomic context in the Americas, emphasizing democratization, decentralization, globalization, privatization, urbanization, and other major macro-determinants of health. It also presents a demographic analysis that focuses on changes in natality and fertility, as well as their transition; aging; migration; and urbanization processes. In addition to showing updated mortality rates for major causes of death, by sex and age, the mortality analysis in this chapter documents the contribution of 32 causes of death to changes in life expectancy observed in the Americas between the beginning of the 1980s and the end of the 1990s. The chapter ends with an analysis of inequalities in health that considers the population's income level and income distribution.

Chapter II analyzes major macro-political, social, economic, and financial determinants of health, emphasizing those processes that can potentially affect health status and the organization, effectiveness, and accessibility of health systems. The chapter also examines the effects of globalization, international trade, and economic policy and growth on poverty, as well as issues of gender and ethnicity as health determinants.

Chapter III looks at trends and main features of health sector reforms in the Region, stressing the importance of essential public health functions and including an analysis of policies, resources, and offer/access of health services according to public, private, and social security participation. It also describes the stages of decentralization of health services and essential public health functions; the reorganization of health care systems and public health services; health sector financing, including national health accounts; health legislation and regulation; and the monitoring processes of health sector reforms.

Chapter IV deals with how individuals and populations organize themselves to respond to health needs by promoting health activities both within and outside the health sector. It examines healthy communities and healthy individuals; food and nutrition; prevention and

control of tobacco, alcohol, and other drug use; reproductive health; indigenous populations; the elderly; the disabled and handicapped; violence prevention and control; oral health; and mental health.

Chapter V shows how environmental forces change living conditions and public health. It highlights environmental policies and the regulation of water, air, housing, waste, and pollution; it also looks at progress made in water supply and sanitation, control of pesticides and other pollutants, and the work environment and occupational health services in the Region.

Chapter VI—which deals with disease prevention and control—briefly describes the current situation and trends of health problems and impairments based on morbidity and disability, stressing the main interventions carried out to prevent and control them. Analyses highlight inequalities by geographic areas, age, sex, and socioeconomic categories. The chapter also shows the Region's current situation in regard to emerging and re-emerging diseases; tuberculosis and other chronic communicable diseases; AIDS and sexually transmitted infections; vaccine preventable diseases, with emphasis on Regional efforts toward measles eradication; and acute respiratory infections and diarrheal and other infectious intestinal diseases in the context of the Integrated Management of Childhood Illness Initiative. It also updates the situation analysis of vector-borne and foodborne diseases; zoonoses, including rabies; Creutzfeldt-Jakob disease; foot-and-mouth disease; as well as cancer and other chronic degenerative diseases, accidents and other external causes, and disaster preparedness and emergencies.

Chapter VII analyzes health resources and technology, and details how scientific and technical activities are organized to cope with health problems in the countries. The analysis includes the situation of human and technological resources, health care facilities, health services provision, medical technology, drugs, blood and other biological products, and the scientific production in health in the Americas.

Finally, Chapter VIII reviews the characteristics and trends of external cooperation in health within the context of changes in subregional initiatives, including the international commercialization of foods, biological products, means of current transportation and tourism. It also examines new forms and new agents in cooperation in health, PAHO's response to disasters, the volume of resources for international and bilateral technical cooperation in the context of the "Shared Agenda for Health in the Americas."

Volume II presents the most up-to-date health situation analysis for each of the 48 countries and territories of the Americas. This volume is a product of a Regionwide analytical effort that is conducted using a common framework that includes an analysis of overall health status, specific health problems, and the response of the health system and services. Emphasis was given to the use of disaggregated core health data available within each country, the documentation of inequalities, and the gender approach. Each country's overall health status analysis covers recent political, economic, and social trends, as well as the degree of implementation of national development plans and these plans' impact on the population's living conditions, health status, and level of equity. It also includes a demographic and mortality analysis, with emphasis in health inequalities. Country-specific health problems are analyzed both in terms of standard population groups and in terms of specific diseases and injuries, taking into account a gender approach. The section that examines the health system's response touches on current national health policies and plans; health sector reform strategies and programs and their relationship to principles of equity, quality, efficiency, financial sustainability, and social participation; and the degree to which essential public health functions have been implemented. It also updates information on the institutional organization, health regulations, and functioning of health system and health care services. Finally, the country's health situation analysis includes the availability of health supplies,

human resources, health technology, and research, as well as an assessment of sectoral financing and expenditure, including technical and financial external cooperation in health.

Additional information to complement the analyses presented here can be accessed in other PAHO publications and on the Organization's website. These sources include the Core Health Data System at regional and national levels, a series of annual brochures, *Health Situation in the Americas: Basic Indicators*, and the publications, *Health Statistics from the Americas*, the *Annual Report of the Director*, and the *PAHO Epidemiological Bulletin*.

ANGUILLA

OVERVIEW

Anguilla is northernmost of the Leeward Islands, situated 113 km northwest of Saint Kitts, 8 km north of Saint Maarten, and 240 km east of Puerto Rico. The island, which covers an area of 91 km^2, is mostly flat, with the highest elevation being Crocus Hill, at 65 m above sea level. The climate is tropical, with the heat and humidity tempered by trade winds. Anguilla lies in the tropical storm belt and is at risk from hurricanes and tropical storms.

Due to the island's small size and population, and its pattern of development, there is no urban-rural distinction in Anguilla. The Valley is the capital, and all major settlements are easily accessible via the main road network, which consists of paved and unpaved roads. There are two seaports and one airport.

In 1980, Anguilla ceased to form part of the territory of the associated state of Saint Kitts, Nevis, and Anguilla, but continues to be a territory of the U.K. The Governor and Deputy Governor are appointed by the Queen. The Governor presides over the Executive Council, which is composed of the Chief Minister, no more than three other ministers, and two ex-officio members, namely the Deputy Governor and the Attorney General. The administration reports to the legislative council. General elections are held every five years, but can be held at anytime, as they were in 1999 and again in 2000.

The Anguillan economy registered an annual average growth rate of 9.2% in 1997, 5.2% in 1998, and 8.2% in 1999. GDP in 1990 constant prices was US$ 60 million in 1997, US$ 63 million in 1998, and US$ 68 million in 1999. Per capita GDP grew steadily from US$ 6,073 in 1997, to US$ 6,162 in 1998, and to US$ 6,271 in 1999. In spite of the devastation wrought by Hurricane Lenny, which flooded many parts of the island in November 1999, economic activity expanded strongly. This was due mainly to expansion of the construction sector, as the Government, businesses, and homeowners worked to repair the damage caused by the hurricane.

Anguilla has few natural resources, and tourism is the largest contributing sector to the economy, representing more than 30% of GDP or US$ 2.6 million (EC$ 7 million), and employing over 20% of the labor force. According to the National Accounts Statistics (1999), construction is the second largest contributor to GDP. The construction sector's output continued to increase during 1999, and was US$ 11.08 million (16.22% of real GDP). This represented a 21% increase from 1998, when output was US$ 9.1 million. The offshore financial services sector, an important source of tax revenue for the government, is being developed as a means of strengthening and diversifying the economy. Legislation covering limited partnerships, offshore banks and trust companies, insurance, and company management has been enacted.

The unemployment rate was 8% in 1999, with a male-female ratio of 1:2. A labor force survey conducted in September 1999 revealed that the distribution of the labor force by occupational group was professionals (13.7%), craftspeople and tradespeople (13.2%), service and sales workers (13.1%), clerks (7.6%), senior officials and managers, technicians, and associate professionals (7.2%), persons employed in the legislative sector (4.2%), persons employed in agriculture and fisheries (2%), plant and machine operators (1.7%), unskilled workers (0.2%), and unspecified occupations (35%).

Anguilla's territory is divided into 7,394 parcels, 66% of which are under one acre in size. Approximately 95% of the land is privately owned in small family plots. According to the Land and Surveys Department, during the period 1997–2000, there were a total of 4,276 dwellings (houses, apartments, and villas), with an average occupancy of three people per household. Eighty-one percent of households have access to electricity and sewerage services, 70% have water available in their houses, and 78% of households have telephones installed. There were 274 internet lines in 1997, 465 in 1998, and 659 in 1999. Most households have access to radio and television.

School attendance is compulsory through age 17 years. There are six primary schools and one secondary school, which are owned by the Government, and one private primary school. Primary schools are located throughout the island; the secondary school is located in The Valley. Average enrollment in all primary schools was 1,520 from 1997 to 2000. The teacher-student ratio was 1:17 in 1999. Average secondary school enrollment was 1,126 from 1997 to 1999. Slightly more than half (51%) of primary and secondary school students in 1999 were females. Government

scholarships and loans facilitate access to tertiary education. The adult literacy rate is 95%, with no reported difference by sex. Over 80% of the labor force received a secondary education, with a further 11.2% receiving a university education.

The population growth rate was 2.9% in 2000. The 1992 census reported the population as 8,920, 49% of whom were males. According to the Statistical Unit of the Ministry of Finance, the estimated population was 12,871 in 1999, yielding an estimated population density of 141 persons per km^2.

The crude birth rate was 13.6 per 1,000 population for the period 1997–1999. The annual number of live births fluctuated over the period, with 169 births registered in 1997, 155 in 1998, 176 in 1999, and 193 in 2000. The total fertility rate was 1.8 children per woman according to the 1992 census. The number of births to teenage mothers ranged from 22 (13%) in 1997 to 37 (19.1%) in 2000. Life expectancy at birth is 71.3 years for males and 77.3 years for females.

There has been increasing immigration to Anguilla, particularly from neighboring Caribbean Islands. In the 1992 census, non-Anguillans accounted for 16% of the population (with even sex distribution); most immigrants were of working age or children.

Mortality

Diseases of the circulatory system accounted for 48% of deaths (123) during the period 1997–1999, malignant neoplasms for 14% (34 deaths), external causes for 6% (14 deaths), and conditions originating in the perinatal period for 2.4% (6 deaths). Two deaths due to communicable diseases were recorded in 2000, one from septicemia and one from bronchopneumonia. Figure 1 shows estimated mortality rates by broad groups of causes and sex for 1990–1994.

There were 56 deaths in 1997, 62 in 1998, 58 in 1999, and 71 in 2000, for a total of 247 deaths over the period (116 males and 131 females). During the period, 70% (172) of all deaths were in the 70 years and older age group, 11.3% (28) were 60–69 years old, 8.5% (21) were 40–59 years old, 4.4% (11) were 20–39 years old, 3.2% (8) were 1–19 years old, and 3.2% (8) were under 1 year old.

The infant mortality rate for the period 1997–2000 was 11.8 per 1,000 live births. There were five deaths in 1997, and one each in 1998, 1999, and 2000. Most infant deaths occurred in the neonatal period. During the 1997–2000 period, 695 deliveries and 7 stillbirths were recorded; there were no maternal deaths.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

There were eight deaths among children under 1 year from 1997 to 2000. Four were due to conditions originating in the perinatal period; two to slow fetal growth, malnutrition, and immaturity; and two to hypoxia and birth asphyxia. Most newborns weigh over 2,500 g. There were 16 (9.5%) low birthweight infants born in 1997, 6 (4%) in 1998, 9 (5.1%) in 1999, and 14 (7.2%) in 2000. Acute respiratory infections are the leading cause of morbidity in this age group.

There were two deaths among children age 1–4 years during 1997–2000, one due to injuries caused by fire and one due to signs, symptoms, and ill-defined conditions.

Growth and development of all children under 5 years old are monitored monthly at the district health centers.

Schoolchildren (5–9 years)

There were no deaths in this age group during the period 1997–2000. The school health service provides physical examinations and dental, hearing, and vision screening for children 5–9 years of age. There is no organized vision referral system, but a visiting specialist from Saint Maarten visits Anguilla to perform limited services.

Worm infestation was reported in four children in the 5–6 years age group in 1997; no infestations were reported in 1998 or 1999, but five were reported in 2000.

Adolescents (10–14 and 15–19 years)

During the period 1997–2000, females under 19 years of age accounted for 11.8% of all births. Family planning services are available to adolescents and a family life education program, which includes peer counseling and skills training, has been implemented in the schools.

From 1997 to 2000, 43 cases of child abuse (mostly females) were reported and referred to the Social Welfare Department.

Adults (20–59 years)

Prenatal care is provided by midwives and by the resident obstetrician/gynecologist in district health centers until 36 weeks gestation. After 36 weeks, all prenatal patients are seen and examined by an obstetrician/gynecologist at Princess Alexandra Hospital. Approximately 80% of pregnant women attending prenatal clinics enroll before the 16th week of pregnancy. Vitamins, iron, and folic acid supplements are distributed routinely. Approximately 20.4% of pregnant women had hemoglobin levels below 11 mg/dl in 2000.

All deliveries are performed at Princess Alexandra Hospital and are attended by trained personnel. Postpartum care begins in the hospital and continues through home visits by district midwives. The public health nurse from each district visits the hospital weekly, thereby strengthening communication between the hospital and the health centers.

Family planning services are delivered at the health centers. There were 258 registered clients in 2000; of these 158 (61.2%) used oral contraceptives, 85 (32.9%) used injectables, and 15 (6%) used condoms. There were 49 new acceptors, which

accounted for 19% of registered clients. A total of 37 intrauterine devices were inserted during 1997–2000. Visits to private clinics are not accounted for in these statistics.

Pap smears are available at Princess Alexandra Hospital. Coverage fluctuated, with 198 examinations conducted in 1997, 234 in 1998, 217 in 1999, and 132 in 2000. There were five cases of noninvasive cervical cancer and no deaths due to cervical cancer reported from 1997 to 2000.

The Elderly (60 years and older)

The elderly constitute 18% of the total population according to the 1992 census. Females comprise 23% (1,035 persons) of this age group. Most elderly persons live at home with their extended family, but a growing number live alone. Health care providers, mainly nurses, make periodic home visits to housebound elderly (an estimated 34 males and 59 females) for routine monitoring and medical care.

The Miriam Gumbs Senior Citizen's Home, a 16-bed geriatric care facility, provides institutional care for the elderly and destitute.

Family Health

The 1992 census revealed that 25% of households were single-person households, 42% were nuclear families, and 12% were extended families.

Public health services at the primary and secondary care levels, including maternal and child health services and general medical care, are very accessible. Families can seek exemptions from the nominal charges at the hospital through the Social Welfare Department.

By Type of Health Problem

Vector-borne Diseases

No cases of malaria, yellow fever, Chagas' disease, plague, or schistosomiasis were reported during the 1997–2000 period. There were 14 cases of dengue fever over the period, but no cases of dengue hemorrhagic fever. The *Aedes aegypti* mosquito is highly prevalent on the island.

Diseases Preventable by Immunization

There were no confirmed cases of poliomyelitis, tetanus, measles, whooping cough, rubella, or diphtheria reported during the period 1997–2000.

Immunization coverage over the period was 100% for BCG, 99% for MMR, 94% for polio, and 96% for DPT. Figure 2 shows the coverage for these vaccines in 2000 among the population under 1 year of age. A pentavalent vaccine for diphtheria, pertussis, tetanus, hepatitis B, and *Haemophilus influenzae* was introduced in July 2000. All pregnant women are immunized against tetanus and diphtheria.

Intestinal Infectious Diseases

There were no reported cases of cholera, typhoid fever, paratyphoid fever, shigellosis, food poisoning, or amebiasis over the review period. According to the laboratory at Princess Alexandra Hospital, there were four cases each of ancylostomiasis and necatoriasis (hookworm), two cases of ascariasis, and no cases of schistosomiasis during the period 1997–2000. There were 14 cases of trichuriasis and 1 case of strongyloidosis.

Chronic Communicable Diseases

There were no reported cases of tuberculosis or leprosy from 1997 to 2000.

Acute Respiratory Infections

No deaths due to acute respiratory infections were reported during the review period.

Zoonoses

There were no reported cases of rabies, hantavirus, or Venezuelan equine encephalitis during the period 1997–2000.

HIV/AIDS

Blood investigations from the laboratory at Princess Alexandra Hospital revealed one HIV-positive case in 1997, three in 1998, one in 1999, and two in 2000; one blood donor tested positive from 1997 to 2000. Four of these cases were males and four were females, and all were in the 20–60 years age group. There were no deaths from AIDS during the period.

Sexually Transmitted Infections

In 1997, no sexually transmitted infections were detected among blood donors. In 1998, one donor was positive for syphilis and in 1999, one was positive for syphilis and one for hepatitis B. No cases of hepatitis or other STIs were reported among blood donors in 2000.

Other blood investigations revealed four cases of hepatitis B in 1997, six in 1998, three in 1999, and none in 2000. There were eleven cases of syphilis in 1997, three in 1998, two in 1999, and three in 2000. There was one case of gonorrhea in 1999 and two cases in 2000.

Nutritional and Metabolic Diseases

Obesity, particularly among women and children, is one of the major health problems facing Anguilla. Anemia was found in an estimated 7.4% of 5- and 6-year-olds and in 4.8% of 12-year-olds in 2000. In 1997, an estimated 20.2% of pregnant women were anemic. One male (in the 60–64 years age group) died due to other protein calorie malnutrition during the review period.

Diseases of the Circulatory System

Ischemic heart disease (31 deaths), cerebrovascular disease (18 deaths), and hypertensive disease (6 deaths) were among the leading causes of death from 1997 to 2000.

Malignant Neoplasms

Malignant neoplasms accounted for 10% (25) of deaths during the period 1997–1999. Of these, the main sites were the female breast (24%); the lip, oral cavity, and pharynx (16%); stomach (8%); and prostate (8%). There was one death each due to malignancy of the female breast in the 45–49 years, the 65–69 years, 75–79 years, and the 80–85 years age groups; there were two deaths due to this cause among women 85 years and over.

Accidents and Violence

There were four deaths due to accidents during the period 1997–1999. Also, six cases of domestic violence were reported. Police statistics for the period 1997–2000 registered 13 reported cases of rape, 37 cases of indecent assault, 1 case of murder, and 311 cases of wounding and assaults. There were no cases of manslaughter.

Oral Health

Oral health screening and treatment take place at the Dental Unit. The ratio of tooth extraction to fillings was approximately 1:4 during 2000. The number of visits to the Dental Unit ranged from 9,029 in 1997 to 9,369 in 2000. Tooth extractions ranged from 1,501 in 1997 to 1,660 in 2000, and the number of fillings ranged from 4,333 in 1997 to 4,282 in 2000.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The objective of the Ministry of Health and Social Development is to ensure equitable health care. A Health Authority Project Board was formed in 2000.

Health Sector Reform Strategies and Programs

In 1996, the Ministry of Health adopted the primary health care approach and, in 1997, the Primary Health Care Department was instituted to ensure that appropriate, affordable, and accessible services are delivered to the people of Anguilla in a timely manner.

The Health System

Institutional Organization

The Minister of Health and Social Development is responsible for the management of health services. The Permanent Secretary of Health, the Health Planner, and the Director of Health Services advise the Minister of Health. The Director of Health Services is responsible for the effective functioning of all departments and delegates responsible to the Primary Health Care Manager, Health Services Administrator, and Principal Nursing Officer.

The strategic management group, composed of senior technical and administrative staff and the Minister of Health and Social Development, meets monthly to plan and advise the Minister on policy and quality assurance issues as well as financial and budgetary reviews in the public and private sector. Chaired by the Director of Health Services, the group is responsible for the overall management and coordination of publicly provided health services.

The Primary Health Care Management Team and the Hospital Management Team are each responsible for the day to day management of services in their respective departments. The private health sector in Anguilla is small, but growing. It is limited to primary and selected tertiary care.

Health Insurance

The Government of Anguilla has group insurance for all public servants.

Organization of Regulatory Actions

Certification and Professional Health Practice

The medical council certifies physicians and monitors medical practices. There are no mechanisms for regulating the practice of other health professionals.

Environmental Quality

The Environmental Health Section of the Primary Health Care Department is responsible for solid and liquid waste management, food hygiene, vector control, environmental sanitation, beach and roadside cleaning, improving hygiene practices, occupational health and safety, and the provision of low-cost sanitation services. However, it is severely constrained by inadequate human resources, limited training, and lack of technology.

Organization of Public Health Care Services

Health Promotion

Health Committees were formed in two districts. Though there is no formal intersectoral collaboration, there are several informal intersectoral collaborations established, including programs on water monitoring and solid waste management, a mobile dental unit, and a health/education liaison committee.

Two health educators deliver education programs that focus on the promotion of health and wellness and emphasize behavior

modification and lifestyle changes, targeting primary and secondary schoolchildren, young adults, and community groups. Alliances have been formed with the various media houses on the island and weekly radio programs disseminate health information.

Disease Prevention and Control Programs

Vector control activities concentrate on the control of the *Aedes aegypti* mosquito and rodents. The national *Aedes aegypti* control program uses a community-based approach. Activities include the stocking of cisterns and water storage facilities with larvicidal fish, house inspections, and treatment. Rodent control is ongoing, with baiting at food premises, schools, and public institutions. Rodenticides are sold to the public through the Environmental Health Unit of the Primary Health Care Department.

Epidemiological Surveillance

There is no budgeted epidemiologist post in Anguilla. However, the Public Health Nurse Supervisor has been responsible for the collection of data on communicable diseases since 1998. The Health Information System, based at Princess Alexandra Hospital, aims to improve medical recordkeeping and to ensure more timely and appropriate information for quality assurance, epidemiologic, resource management, and planning purposes.

Solid Waste Services

The Environmental Health Section is responsible for the collection of refuse from Government institutions, public roads, and beaches. Garbage is collected twice weekly by contractors. Homeowners are responsible for the removal of construction waste and old appliances and vehicles. Hotels and other commercial establishments are required to make their own waste collection arrangements.

Potable Water, Excreta Disposal, and Sewerage Services

The Water Laboratory of the Primary Health Care Department started its first water quality monitoring program in 1999. Treatment and testing of groundwater is the responsibility of the Water Laboratory. The Anguilla Water Department is responsible for the planning, construction, operation, and maintenance of the water supply. The Environmental Health Section is responsible for inspection and treatment of cisterns.

All sewage is treated and disposed of on site by means of septic tank soak-aways (84% of households), pit latrines (12%), and package treatment plants, which are used primarily by hotels, some commercial establishments, and government institutions.

Food Safety

The Environmental Health Unit conducts periodic inspections of premises where food and drinks are sold. There is an examination, certification, and registration program for food handlers and food establishments; education of food handlers is an integral component of the program. In 2000, there were 76 registered food establishments and 249 registered food handlers.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

The health care delivery system consists of a public and private sector. Public sector services include primary health care and secondary health care. Each of Anguilla's five health districts, through which primary care services are provided, has a health center and defined boundaries. There are four health clinics and The Valley Health Center. The health clinics are staffed by a public health nurse, a clinic aide, and an environmental health officer. These clinics provide basic core services, including maternal and child health, family planning, immunization, nutrition advice, semiweekly basic medical clinics conducted by a medical doctor, geriatric care, chronic disease management, health education, and environmental health. The Valley Health Center offers the same services, but also has support from a nutritionist, a health educator, and a pharmacist, as well as a district medical officer. Other staff at the health center include a public health nurse, a district nurse-midwife, a district nurse, a community health aide, and a clinic aide.

Secondary health care is delivered at Princess Alexandra Hospital, a 36-bed facility. Hospital services include emergency treatment; outpatient and inpatient care for surgical, medical, pediatric, and gynecological and obstetric cases; and laboratory and radiological diagnostic services. The main pharmacy is located at the hospital and serves both the private and public sector. A doctor or a public health nurse makes referrals to services at the hospital from the primary care level. The hospital's Accident and Emergency Department also offers scheduled outpatient services. To further enhance the services offered, a number of new buildings have been added to the hospital, including a laboratory with modern facilities and a maternity unit. The Emergency Medical Service was introduced in 1998, with two ambulances and a team of nine emergency medical technicians who were trained in Barbados.

Referrals are made from the health clinics to the hospital, and there is a referral system for all patients discharged from the hospital returning to their respective clinics. Anguilla has no tertiary-level care facilities and refers patients needing such care to the U.K., Saint Maarten, Puerto Rico, and other Caribbean islands. Between 1997 and 1999, 62 cases were referred for treatment overseas.

Public dental services are offered at the central unit in The Valley and are supported by a mobile unit that provides care at primary schools. Two dental surgeons, four dental auxiliaries, and three dental assistants staff this service.

The Miriam Gumbs Senior Citizen's Home is a 16-bed geriatric care facility that provides institutional care for the elderly and destitute.

A psychiatric nurse provides community mental health services, and is responsible for the care of all mentally ill patients. A visiting psychiatrist from Barbados supports the services in diagnosis and treatment review. Emergencies are referred to a district medical officer. Patients requiring specialized hospital care are referred to neighboring Caribbean islands at the Government's expense.

Auxiliary Diagnostic Services and Blood Banks

All blood donors—388 over the period—are screened for HIV, hepatitis B, and syphilis.

Specialized Services

Community mental health services are provided by two trained community psychiatric nurses. There is an arrangement for a psychiatrist to visit the island every three months to offer consultancy services. The expertise of these nurses is sought by the hospital, as no psychiatric nurses are employed in the Secondary Health Care Department. In 2000, 276 clients were counseled and treated; 17 were new clients.

Health Supplies

Drugs

Anguilla obtains drugs monthly through the Pharmaceutical Procurement Service (PPS). The PPS also gives support in the areas of inventory control and organization. Anguilla has no national drug formulary and purchases are guided by the regional PPS formulary. Similarly, there is no list of essential drugs. Other medical supplies are procured from other agencies both regionally and internationally.

Immunobiologicals

Vaccines for the Expanded Program on Immunization are obtained through the PAHO Revolving Fund for Vaccine Procurement. Inventory control is good and a reliable service is maintained. Standards and protocols for this program are stringently adhered to.

Human Resources

Availability by Type of Resource

In 2000, there were 9 doctors, 40 trained nurses, 2 dentists, 4 dental therapists/nurses, 3 dental assistants, 3 pharmacists, 1 laboratory technologist, 3 laboratory technicians, 2 radiographers, 5 environmental health officers, 1 nutritionist, and 2 health educators. To enhance service delivery at the primary care level, training in dietetics, environmental health, public health nursing, and health information was offered.

Training

There are no training institutions for health personnel in Anguilla. Depending on health staffing needs, personnel are sent to various Caribbean islands, the U.K., or the U.S. for training. Increasingly, local training workshops on both primary and secondary health care issues are organized. The Government supports training for health personnel in the public and private sectors.

Health Sector Expenditure and Financing

Health received 14.1% of the recurrent budget in 2000. Of this, 5% goes to primary health care and 9% to secondary health care. Approximately 9.3% of the total recurrent expenditure for health is collected in user fees for dental, hospital, and pharmacy services.

Approximately US$ 30,000 in revenue was collected at the hospital during 1999–2000. Collected funds go directly to the general consolidated fund and cannot be used by the hospital. Total health expenditure in 2000 was US$ 2,550,380; drug expenditure was US$ 130,597.

External Technical Cooperation and Financing

The Ministry of Health continues to receive significant technical and financial assistance from PAHO, CAREC, CFNI, DFID, and UNDP. Technical assistance is received from PAHO on a continuous basis in the form of training of Health Personnel and other technical advice. CAREC supplies vaccines that are procured by PAHO for the Expanded Program for Immunization.

CFNI provided technical assistance in the areas of breastfeeding policy, child feeding guidelines, the annual School Nutrition Quiz competition, and education and training for national nutrition coordinators, including a basic food and nutrition course.

DFID has been active in numerous health projects. The Island Harbour District Development Project is jointly funded by the Government of Anguilla and the Government of the United Kingdom.

UNDP provided funding for the Public Health and Environmental Protection Project in 1998.

FIGURE 1. Estimated mortality, by broad groups of causes and sex, Anguilla, 1990–1994.

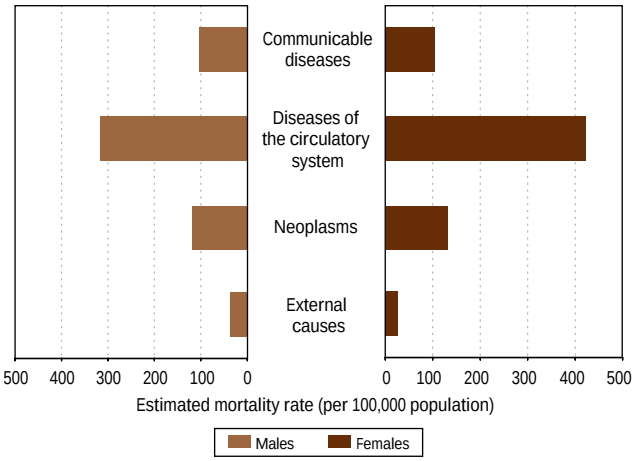
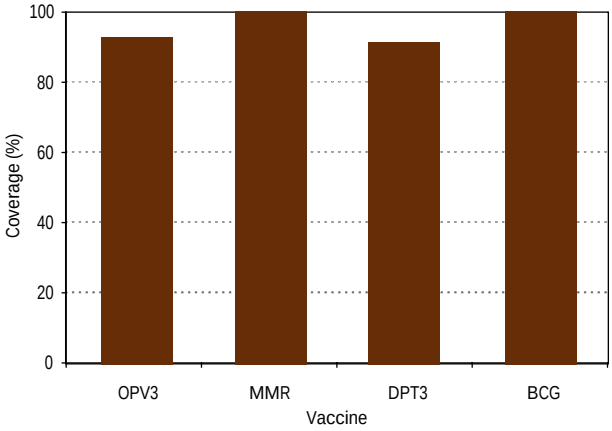


FIGURE 2. Vaccination coverage among the population under 1 year of age, by vaccine, Anguilla, 2000.



ANTIGUA AND BARBUDA

OVERVIEW

Antigua and Barbuda encompasses the islands of Antigua, Barbuda, and the uninhabited Redonda, all located at the center of the Eastern Caribbean's Leeward Islands. The islands span a total area of approximately 440 km^2 (Antigua, 280 km^2; Barbuda, 160 km^2; Redonda, 1.6 km^2).

Both islands have relatively flat topographies. Antigua has central plains and volcanic hills rising in the southwest to altitudes of 400 m at Boggy Peak; Barbuda's highest point, the Highlands, rises to 40 m. Antigua and Barbuda have many beaches, which attract tourists to the country.

The country's relatively flat topography and the felling of trees to plant sugarcane during the colonial era has left both islands with very low rainfall, approximately 40 to 42 inches annually. Moreover, droughts occur every 3 to 7 years, with the last drought occurring in 2000, when only 30.9 inches of rain were recorded. The islands have no rivers and very few streams. Because of the low rainfall, Antigua relies on two desalination plants for about 70% of its water: one is owned and operated by the Antigua and Barbuda Public Utilities Authority; the other is privately owned and operated. Other sources of water include surface water from the Potworks Dam in the east (20%) and underground wells located mainly in Antigua's southern portion (10%). Barbuda relies on underground wells for its water supply, but because the water in these wells is brackish and not potable, it is mainly used for domestic purposes. The unreliable water supply conditions lead residents to store potable water collected in the rainy season in cisterns, drums, and tanks. Unfortunately, this practice encourages mosquito breeding and has other negative consequences on hygiene, such as a potential increase of the incidence of waterborne diseases.

Antigua and Barbuda became independent from Great Britain in 1981, and the island has its own system of government based on the British Westminster model. It is governed by an elected Parliament that represents majority and opposition parties; elections are held at least every five years. The islands are divided into 17 administrative constituencies, which include Barbuda. Executive authority is vested in a Cabinet that is headed by the Prime Minister and comprises 12 ministers. Barbuda's affairs are run mainly by the Barbuda Council, which was set up by an act of Parliament in 1976.

The last national housing and population census was conducted in 1991. The 1999 estimated mid-year population was 70,856. The crude birth rate was 21.6 per 1,000 population in 1997 and the crude death rate at that time was 6.4 per 1,000 population. Antigua and Barbuda's population structure in 2000, by age and sex, is presented in Figure 1. In 2000, life expectancy at birth was 72.3 years for males and 76.4 years for females. During the 1996–1999 period, there were 5,602 live births, an average of 1,400 births annually. The average birth rate for that period was 19.8 per 1,000 population.

Tourism is an important contributor to GDP, followed by the financial sector (offshore banking, trusts, and insurance), wholesale and retail trade, construction, and government services. The Government continues to focus on further developing the tourist industry and diversifying the economy by expanding the financial and information sectors.

GDP increased steadily, from US$ 460.4 million in 1996 to US$ 565 million in 1998. Annual GDP growth is presented in Figure 2.

The external debt was US$ 384 million in 1999, an increase from US$ 246 million in 1996. At the end of fiscal year 2000, the total outstanding debt of the consolidated public sector was approximately US$ 0.5 billion, consisting of US$ 0.4 billion in external obligations and US$ 0.1 billion in domestic debt. According to the International Monetary Fund's Interim Index, the country's inflation rate in 1999 was 1.1%, down from 3.4% in 1998; the inflation rate further fell to near zero in 2000.

As a way to promote better fiscal performance, the Government of Antigua and Barbuda began to improve its tax collection system in 2000. Reforms included the introduction of an amended property tax regime and the imposition of a 2% levy on the gross income of unincorporated businesses; residents continue to enjoy an income tax free status.

Since 1973, Antigua and Barbuda has had a free and compulsory educational system for children 5–16 years old; children

under 5 years old attend preschools, of which there were 93 for the 1997–1998 school year, 104 for 1998–1999, and 100 for 1999–2000. In the 1999–2000 academic year, there were 13,079 students enrolled in 30 government and 26 private primary schools, and 5,318 students enrolled in 9 government and 5 private secondary schools. In 1996–2000, males represented 52% of enrollment at the primary-school level; only 45% of the enrolled students were males at the secondary-school level. The adult literacy rate in 1998 was 88%. Barbuda has a single school, which provides both primary and secondary education for children who reside there.

The quality of tertiary level education at the Antigua State College continues to improve. In 2000, both the School of Nursing and the School of Pharmacy were integrated into this institution's system. A local campus of the University of the West Indies—an institution jointly operated by the English-speaking Caribbean Governments—provides continuing education. Private institutions provide technical and secretarial education courses.

Mortality

In the 1996–1999 period, there were a total of 1,858 deaths, most of which (63.5%) occurred in the age group over 65 years old; 13.6% of the deaths were in the age group 15–49 years old. In 1999, 54.8% of the deaths occurred in males.

Between 1996 and 1999, the leading causes of death included neoplasms, diseases of the circulatory system, and accidents. Conditions originating in the perinatal period also featured predominantly as a cause of death during that period.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Children 0–4 years old accounted for 10.4% of the total population. In 1999, 92.1% (1,224) of the 1,329 live births took place at Holberton Hospital, Antigua's main hospital, and 6.8% (90) of the births took place at Adelin Medical Center, the only private hospital on the island; the remaining 1.1% (15 live births) took place outside of the secondary care system. These figures reflect the Government's policy of maximizing the number of births that take place in institutions. The number of stillbirths was 15 in 1996 and 1997, 12 in 1998, and 16 in 1999. The health sector is well equipped: facilities are adequate, including a special care unit for premature and other infants requiring special care. All high-risk pregnancies are referred to Holberton Hospital.

The perinatal mortality rate was 29.2 per 1,000 deliveries in 1996, declining to 18.8 in 1997, dropping further to 18.4 in 1998, and rising to 23.8 in 1999.

Of the 103 infant deaths that occurred in 1996–1999, 71 (68.9%) were early neonatal deaths and 11 (10.7%) were late neonatal deaths. The leading causes of neonatal deaths in 1999 were conditions originating in the perinatal period (57%), pneumonia (18%), congenital anomalies (7%), external causes (7%), and other diseases of the respiratory system (7%). The infant mortality rate, which was 25.3 per 1,000 live births in 1996, fell to 14.5 and 12.4 respectively in 1997 and 1998. In 1999, the infant mortality rate rose to 21.1 per 1,000 live births.

The country's goals regarding breastfeeding involve attaining exclusive breastfeeding of infants for the first 6 weeks of life as a minimum, and continuing breastfeeding for at least 4 months. In 1997, 26.8% of infants were exclusively breastfed at 6 weeks of age; in 1998, 28.5%; and in 1999, 37.5%, all figures well below the 100% target. Continued breastfeeding at 3 months was at 84.1% in 1997, 86% in 1998, and 84.8% in 1999, again below the set target of 4 months.

During the 1996–1999 period there were a total of 15 deaths in the age group 1–4 years old. The causes of these deaths were pneumonia (3), congenital anomalies (3), accidents including accidental poisoning (4), acquired immune deficiency syndrome (1), intestinal infection (1) and diseases of the nervous system (3).

Child Health Services, which monitor growth, development, and nutritional status of children under 5 years old, are provided at various health centers throughout the island. The prevention of certain childhood diseases through immunization also is emphasized. Coverage of Child Health Services ranged from 82% in 1996, to 89% in 1997, 86% in 1998, and 84% in 1999. An estimated 15% of children under 5 years old receive child health care from private physicians.

Screening programs for nutritional status and hemoglobin levels in children under 5 years old have not been as successful, with the proportion of children screened falling far below the 100% target for 1996–1999. Mild to moderate levels of malnutrition, as determined by weight-for-age on the Caribbean Growth Chart, were at low levels for the period in review. The number of children in the age group under 5 years old with mild to moderate malnutrition was 73 in 1997, 72 in 1998, and 51 in 1999. Figures for severe malnutrition are even lower, with only two children falling in this category in 1997, one in 1998, and three in 1999. Of concern is the fact that in this age group 311 children were classified as being overweight in 1997, 266 in 1998, and 243 in 1999.

In the 1996–1999 period, the most common health problems among children 1–4 years old attending health clinics were acute respiratory infections, diarrheal diseases, injuries, and skin infections.

Schoolchildren (5–9 years)

In 1998 only 63% of 5-year-old children received their first health assessments prior to entry into primary school; the figure for 1999 was slightly better, at 77%. There are many problems associated with this service, including the fact that it does not necessarily coincide with the Child Health Clinic and depends on

having enough space in the health centers and the presence of family nurse practitioners to conduct the assessments.

Adolescents (10–19 years)

Adolescents aged 10–19 years represented 18.6% of the estimated population for 1996–1998. In 1996, the Adolescent Health Survey identified the following as primary issues affecting the health status of this age group: violence and gang-related incidents, drug abuse, and sexual and reproductive health. The survey was conducted in Antigua and Barbuda in 1996–1997, in collaboration with the Health Education Unit and the Health Information Division.

The survey also indicated that in the 12 months prior to the survey, 15.8% of the students had been involved in acts of vandalism, 8.3% had stolen, 8.8% had been involved in fights where weapons were used, and 10% had been gang members. According to the survey, the substances most commonly used by adolescents were alcohol, tobacco, marijuana, and cocaine. The survey also reported that 7.8% used cigarettes, 36.7% used alcohol, 6.1% used marijuana, and 1.8% used cocaine. Of those surveyed, 15% indicated that they had at some time been subjected to physical abuse. Approximately 10% had been sexually abused, mainly in the age group under 15 years old. Attempted suicide also was identified as a problem, with 9.6% of the students having attempted suicide at least once, most of them females. Finally, 30% of the students surveyed admitted to having had sexual intercourse; of these, 12.9% reported that they had been forced into it.

Adults (20–59 years)

In 1998, the population aged 20–59 years old was estimated at 35,484, roughly 50% of the total population; 52% in this age group were females. According to community clinic reports, the main conditions for consultation by adults were hypertension, diabetes mellitus, injuries, heart disease, and acute respiratory infections. There are hypertensive and diabetic clinics, sexually transmitted infection clinics, and psychiatric clinics providing services to this age group at the community level. Reasons for first clinic visits included diabetes, hypertension, accidents and injuries, heart disease, and drug abuse including alcohol; hypertension and diabetes accounted for 25% of all visits by this age group. Other reasons for clinic visits among persons in this age group included accidents and/or injuries, respiratory infections, and heart disease. Twice as many women as men utilize adult services.

According to collected data, in 1998 accidents and injuries accounted for more than 26% of deaths, homicides and suicides for 15%, AIDS for 7.5%, and diabetes for 7.5%. In 1998 in the age group 45–59 years old, heart disease was the leading cause of death. Malignant neoplasms and conditions related to alcohol and drug dependency followed as leading causes of death in this age group that same year.

Services for women in this age group include prenatal care and family planning. Prenatal clinic coverage ranged from 71.8% of pregnant women in 1997 to a peak of 81.9% in 1998, decreasing to 77.7% in 1999. The proportion of women attending clinic before 12 weeks of gestation ranged from 24.2% to 29.1% for 1996–1999.

In the 1996–1998 period, the country defined national targets for pregnant women. The first was to achieve a minimum of eight prenatal visits during pregnancy. Only four visits per pregnancy on average were attained for the period, and fewer than half of all pregnant women met the recommended four visits up to 32 weeks and four visits after 32 weeks. The second target aims for at least 90% of women reaching labor with hemoglobin levels no lower than 11 g/dl. The goal was achieved in 1999, when only 6.9% of women tested showed anemia with hemoglobin readings below the set level. The third target was to increase screening for venereal disease and to screen for hemoglobin levels at 23–32 weeks for the 1995–1999 period. Results for this goal were low—35.2%–48.8%—and are cause for concern. The fourth target was to achieve 100% postnatal coverage for mothers and infants; the level attained in 1999 was 72%, slightly lower than the 74% figure for 1997. Postnatal services are offered at the community level.

Family planning services showed a significant decline between 1996 and 1999, due to a decrease in resources. The number of users declined dramatically, from 521 to 140 for new users, and from 1,796 to 361 for active users. Family planning acceptance at postnatal clinics showed a decline between 1997 and 1998, falling from 62% to 30%. In 1998, oral contraceptives were the preferred method among new family planning users, whereas in 1999 injectible contraceptives were the most used.

Elderly (60 years and older)

The estimated population 60 years old and older in 2000 was 4,172 persons (6.3% of the total population); 2,479 were women and 1,693 were men. Within this age group, 599 persons were over 80 years old. Health problems affecting this group included malignant neoplasms, cerebrovascular disease, heart disease, diabetes, and hypertension. These chronic, noncommunicable diseases accounted for the majority of cases seen in community clinics. Many patients also showed related risk factors such as obesity, alcoholism, and smoking. Hemiplegia and blindness due to cataracts, glaucoma, and diabetes were common causes of disability among the elderly.

The Social Security Board provides old-age pension to persons over 60 years of age, based on past contributions. The Medical Benefits Scheme provides free laboratory and other investigative services, as well as pharmaceuticals to beneficiaries over the age of 60 years.

In addition to a 100-bed, long-term care geriatric facility operated by the Government, there are four privately run homes for the aged. The St. Vincent de Paul Society also has a day care program for the elderly. A home-help program for the elderly introduced by the Citizens Welfare Division of the Ministry of Home Affairs

continues to provide social, economic, and health services to this vulnerable group. Support services are provided by welfare aides and home help workers, and several social and recreational programs are organized for the senior population.

Family Health

The 1991 census reported that approximately 42% of households were headed by women. The Citizens Welfare Division offers specialized and professional welfare services geared to promote and maintain family stability and meet needs of persons coping with personal crisis and other family and social problems. The Directorate of Gender Affairs, a division of the Ministry of Health, is responsible for managing services for abused women, including a 24-hour crisis hot line, a court advocacy service, a safe haven for victims, and counseling and support for victims in an attempt to deal with these problems.

The Collaborative Committee for the Promotion of Emotional Health in Children is a nonprofit organization that addresses the needs of emotionally disturbed and abused children and their families through the operation of the Child and Family Guidance Center. During 1999, the center saw a total of 66 cases, ranging in ages between 3 and 24 years. Behavioral disorders were cited as the most frequent problem, with a total of 22 children seen for this cause; other cases seen at the center were due to slow learning (11), child abuse (6), and truancy (5).

Workers' Health

The country has no specific workers' health program, but national workmen's compensation legislation applies to most workers. All employed persons are required to participate in the Medical Benefit and Social Security schemes through monthly contributions of a fixed percentage of salary; employers also are required to make monthly contributions on behalf of their employees. The Medical Benefits Scheme provides coverage for medical and surgical care and services, including hospitalization, medication, laboratory tests, X-rays, electrocardiography, and other services. The scheme also provides medication to persons diagnosed with certain chronic diseases, including hypertension, heart disease, diabetes, cancer, glaucoma, and mental illness. Social Security benefits cover illness, disability, maternity, and pension.

The Disabled

The Council for the Handicapped provides and assists with special programs for the disabled. School-aged children who are hearing-impaired attend the School for the Deaf and Hearing-Impaired, which is supervised by the Ministry of Education; children who are blind or visually impaired also attend the school. Mentally challenged children attend a special school.

The Government, through the National Vocational and Rehabilitation Center for Disability, assists disabled adults with job placement and transportation to and from their work sites. Those disabled persons who are unable to work are provided with a government stipend. The center offers agricultural, sewing, and handcraft projects, as well as skills-training activities in such areas as communication, reading, writing, sign language, independent living skills, and home management. The Society of and for the Blind provides technical and craft training for the visually impaired.

Indigenous and Other Special Groups

Antigua and Barbuda attracts many immigrants, primarily from Dominica, the Dominican Republic, Guyana, Jamaica, Montserrat, and Saint Vincent and the Grenadines, most of whom come in search of employment. The immigration of citizens from Montserrat deserves special mention: many of them came to Antigua in 1995, fleeing the volcanic activity of the Soufriere Hills Volcano in that country. An estimated 4,000 Montserratians resided in Antigua at the peak of immigration, with many relocating to Antigua to stay with friends or relatives. Antigua has put together contingency plans in the event of a mass evacuation of Montserrat.

Antigua also has experienced an increase in the number of Spanish-speaking immigrants. Many of those coming from the Dominican Republic have Antiguan ancestry, since many Antiguans migrated to the Dominican Republic in search of work in the 1920s. These migration issues have mainly affected the educational, health, and social systems, which were strained as they worked to incorporate these individuals. Language barriers also have had to be overcome in providing health care and education to these new residents. There is no indigenous population in Antigua and Barbuda.

By Type of Health Problem

Natural Disasters

The most common natural disasters in Antigua and Barbuda are hurricanes and tropical storms. In October 1998, Antigua was ravaged by Hurricane Georges, which resulted in 2 deaths and 34 injured persons. Damages to public facilities, agriculture and fisheries, the environment, health tourism, education, churches, homes, and businesses were estimated at US$ 74,074,074.

In 1999 hurricanes José and Lenny struck Antigua in October and November, respectively. There was one death and 13 injured persons; more than 3,500 homes were damaged or destroyed. Estimates put the financial cost to homes, the environment, roads and bridges, health, utilities, agriculture and fisheries, and businesses at US$ 91,640,519.

Vector-borne Diseases

Vector-borne diseases of significance are dengue and malaria. In 1997, there were 10 confirmed cases of dengue on the island. In 2000, there were 11 confirmed cases of dengue due to serotype 3 virus; there were no cases of dengue hemorrhagic fever or dengue

shock syndrome. There were no reported cases of malaria in 1997 and 1998, but there was one confirmed case in 1999. There is ongoing surveillance to prevent the importation of malaria.

Diseases Preventable by Immunization

Vaccines against diphtheria, pertussis, measles, mumps, rubella, tetanus, and polio are routinely given as part of Child Health Services. In July 2000, the pentavalent vaccine that includes hepatitis B and *Haemophilus influenzae* type b was introduced. Yellow fever vaccinations are available to persons travelling to areas where yellow fever is endemic. For the 1996–2000 period, a total of 181 doses of yellow fever vaccines were given. Immunization coverage against diphtheria, polio, tetanus, measles, mumps, and rubella in children under 5 years old was 99% in 1999 (Figure 3).

There is active surveillance for diseases preventable by immunization. There were no cases of acute flaccid paralysis, fever with rash, or measles for the 1996–2000 period. There were four reported cases of mumps in 1999 and five in 2000. The Ministry of Health launched a rubella immunization campaign in September 1999, which targeted all adults between 20 and 30 years old; the campaign aimed to immunize this group against the rubella virus using the measles, mumps, and rubella (MMR) vaccine. A total of 9,250 vaccine doses had been administered up to March 2000.

There were three cases of tetanus in 1999; all three were males and included one fatality. During 1999, there were 17 cases of hepatitis B infection reported to the Epidemiology Service. These reports were mainly recorded from the Blood Bank screening process.

Intestinal Infectious Diseases

The country remains free of cholera. In the first quarter of 1997 there was an outbreak of gastroenteritis due to rotavirus which affected 2,000 persons. More than 50% of those affected were under 10 years old. In 2000, there were four confirmed cases of typhoid. The ages of the cases ranged from 3 months to 43 years.

Chronic Communicable Diseases

There have been no new cases of leprosy since 1995. The two remaining residents with leprosy who did not require active treatment were relocated to the community and continue to receive assistance from the Government.

Between 1996 and 1999 there were 16 cases of tuberculosis: 6 in 1996, 3 in 1997, 4 in 1998, and 3 in 1999. BCG vaccine is not routinely given as part of the immunization schedule. There was no evidence of coinfection between tuberculosis and AIDS.

Acute Respiratory Infections

Acute respiratory tract infections ranked as the leading communicable disease in 1998 and 1999. In 1999, there was an outbreak of acute respiratory tract infection, with 1,344 cases. In 1996 and 1997 there were two episodes of legionnaires' disease identified, both traced to defective water heating systems.

Zoonoses

Antigua and Barbuda continues to remain free of rabies and other zoonoses.

HIV/AIDS

In 1999, AIDS began to rank as one of the 10 leading causes of death. The cumulative total of HIV notifications from 1985 to the end of 1999 was 271; in that time period, 85 persons died from AIDS. Most of the notified cases of HIV were distributed among the 25–29-year-old age group.

In 1998, there were five new AIDS cases reported, and three deaths. In 1999 there were 14 new AIDS cases reported, and 10 deaths were attributed to HIV-related illnesses. In 1999, the annual incidence of AIDS was 209 per 1,000,000 population, and the male to female ratio of AIDS cases was 2.5:1. A study conducted in 1997 among pregnant women revealed an HIV prevalence rate of 0.9%.

Sexually Transmitted Infections

For the 1996–1999 period, sexually transmitted infections (STIs) ranked among the five leading communicable diseases each year; according to the Health Information Division there were 1,629 STI cases for the period. Visits to health centers for sexually transmitted infections declined for the period, however, from an average of 19.3 patients per week in 1996 to 9.3 patients per week in 1999.

Nutritional and Metabolic Diseases

The percentage of young children with hemoglobin levels below 10 g/dL dropped from 13% in 1995 to 7.1% in 1999. A 1996 micronutrient study revealed that 1% of children 1–4 years old had vitamin A and beta-carotene deficiencies; more females were affected with vitamin A deficiency and levels improved with age. Among the children surveyed, 62% were found to have below-normal vitamin E levels.

In 1999, the chronic disease register recorded a total of 713 diabetic patients, which accounted for 4,332 clinic visits.

Diseases of the Circulatory System

Diseases of the circulatory system accounted for 180 (37.7%) of all deaths in 1998 and 190 (37.3%) in 1999.

Malignant Neoplasms

Malignant neoplasms were the leading cause of death in 1999, with 73 registered deaths. For 1998 and 1999 the main sites were prostate (26%), stomach (9%), colon (8%), liver and lungs (7.7%), and breast (4%).

Accidents and Violence

In 1996–1999 there were 37 fatal motor vehicle accidents, which caused 43 deaths and 87 injuries. The total number of motor vehicle accidents for the period was 3,922 with the highest number (1,562) occurring in 1996.

Oral Health

A Health Situation Analysis conducted by the Ministry of Health and Home Affairs in 1996 reported that dental disease was a condition identified in approximately 10% of 5– and 10–year-olds. Observations on oral conditions of the children attending dental clinics in Antigua seem to indicate that untreated decay remains a severe problem, but the prevalence and severity of dental caries in Antigua and Barbuda needs to be further studied and quantified.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

In 1997, the Government approved the National Health Policy for the 1997–2001 period. The policy reflects the Government's acknowledgement of the need to have clear and unified policies to guide the country's development; it sets priority goals and ways to attain them. The policy reiterates the Government's commitment to universal health services, but calls for creative approaches to health care financing. In 1997, the Government approved a national policy on HIV/AIDS and other sexually transmitted infections.

In 2000, the Cabinet mandated the Ministry of Planning, Implementation, and Public Service Affairs to produce a four-year National Strategic Development Plan for the 2001–2004 period.

In 1999, a local coordinator was assigned to the Health and Family Life Education Project, and members were appointed to a National Coordinating Committee. A policy on health and family life education was developed in 2000 and was approved by the Cabinet.

The Health System

The Ministry of Health oversees the public health care system, regulations, and delivery of services. The Minister of Health is a Cabinet member and delegates management authority for the Ministry to a Permanent Secretary. Technical and administrative staff assist the Permanent Secretary in attaining the Government's health goals and objectives. The Chief Medical Officer functions as the Minister's chief technical advisor and is responsible for coordinating health services delivered in hospitals and health centers.

Antigua is divided into six geographically determined medical districts, each of which is served by a government-appointed District Medical Officer responsible for providing medical services to residents. Primary health care services in the district include maternal and child health, health education, environmental sanitation, community mental health, nutrition, diabetic and hypertensive screening and care, communicable disease control and surveillance, and home visitation. As part of ongoing decentralization efforts, Parliament enacted the Hospital Boards Act in 1999, which was implemented in 2000.

The health system is financed through public taxation and levies that support the Medical Benefits Scheme. Private insurance's participation in health financing is minimal.

Health services in Barbuda are regulated and organized by the Barbuda Council. Private services are limited to Antigua where there are private practitioners who offer ambulatory services.

Organization of Regulatory Actions

New regulatory standards are needed to cope with the expansion of public and private health services. The Pharmacy Act was passed in 1995 and the Midwifery Act was revised in 2000. Amendments to the Environmental Health Act and Mental Health Laws are under way.

The Medical Registration Board regulates medical practice. The General Nursing Council regulates the training and practice of nurses and is responsible for their registration. The Midwifery Board regulates the practice and training of midwifery.

Organization of Public Health Care Services

Health promotion is emphasized in community programs and school activities; community participation also is encouraged.

Disease prevention and control programs in Antigua and Barbuda fall under the Ministry of Health's Medical Division. Noncommunicable diseases such as diabetes, hypertension, and cancer were identified as priorities. Subsequent to a meeting in 1999, a draft protocol for the management of diabetes in primary care has been outlined.

The Ministry of Health facilitates public education programs about mosquito control and the prevention of dengue fever and its complications.

Antigua and Barbuda follows the Directly Observed Treatment, Short course (DOTS) approach for the prevention and control of tuberculosis; it is supervised by the Nurse Epidemiologist and the Medical Officer of Health. The AIDS Secretariat and the National AIDS Committee continue to conduct educational programs and to distribute condoms as part of the HIV/AIDS Prevention and Control Program.

The country has one public health laboratory; in 1999 it was integrated into the Public Health Laboratory Information System. Using a software program designed for the purpose, data from the laboratory are processed and transmitted to the National Epidemiologist. This ensures that timely data are available, which is critical for disease prevention and control programs. Epidemiological surveillance is the responsibility of the Ministry of Health.

Potable water in Antigua is provided by the Antigua Public Utilities Authority. The Central Board of Health monitors the quality of water supplied by the Authority and that stored by private residents.

There is no central sewerage system on the islands. In 1999, responsibility for solid waste management was transferred from the Central Board of Health to the National Solid Waste Management Authority, which was established by the Government in 1995. The Authority is responsible for solid waste collection, storage, treatment, and disposal. Presently all solid waste, including medical waste, is disposed of at the Cooks Dumpsite. Since 1996, plans have been under way to establish sanitary landfills in Antigua and Barbuda, as well as a medical waste incinerator at a new hospital.

The proliferation of itinerant roadside food vendors is a matter of increasing concern. The Central Board of Health inspects restaurants and other establishments where food is sold.

Organization of Individual Health Care Services

Health care services are provided both by private institutions and by government facilities. Holberton Hospital, a 141-bed facility, is the only public, acute health care institution. General and specialist services are provided in internal medicine, surgery, orthopedics, obstetrics and gynecology, pediatrics, radiology, and pathology. In addition, private sector and foreign specialists provide nephrology, ophthalmology, neurology, and oncology services.

A renal dialysis unit with three dialysis machines was commissioned in July 1997. The unit now has four machines, one of which operates using independent reverse osmosis. These services and facilities attract patients from neighboring islands, such as Anguilla, Montserrat, and Saint Kitts and Nevis.

Holberton Hospital also offers emergency medical services. This important service began in 1996 with the procurement of several emergency vehicles and the provision of paramedical training for personnel.

Holberton Hospital has a rehabilitation unit with facilities for physiotherapy, occupational therapy, speech and language therapy, and respiratory therapy.

Various diagnostic tests and therapeutic agents remain unavailable in the country, and many patients must travel abroad to neighboring islands or to the United States for tests such as magnetic resonance imaging and treatment options such as radiotherapy and chemotherapy. The Medical Benefits Scheme has a referral system, whereby patients are referred overseas for diagnostic tests and therapeutic agents that are unavailable on the island. In 1999, 149 persons were referred overseas for treatment or tests; in 2000, the number fell to 123.

The Mental Hospital houses an average of 100 patients, some of whom come from neighboring islands such as Anguilla, Montserrat, Nevis, Saint Kitts, and Tortola. The Fiennes Institute is a 100-bed public geriatric facility.

Residents of Barbuda are served by the Hannah Thomas Hospital, formerly known as the Spring View Hospital, which is an eight-bed facility that functions mainly on an outpatient basis. Patients from Barbuda receive specialist treatment in Antigua.

The Ministry of Health's Division of Oral Health is developing a comprehensive dental health program. Antigua has three dentists, a dental auxiliary, and one dental hygienist. The three-chair dental unit at the St. John's Health Center, in the capital, offers dental prophylaxis, temporary and permanent restorations, sealants, extractions, and fluoride gel treatments.

There is one private, secondary-care facility—the 21-bed Adelin Medical Center—which provides both outpatient and inpatient care. There are three group practice medical centers with private physicians and dental offices.

Community Health Services are provided through a network of 9 health centers and 18 satellite clinics or subcenters. Teams that include district medical officers, family nurse practitioners, public health nurses, district nurse midwives, and clinic aides provide services in the health centers. District nurse midwives and clinic aides provide services at the subcenters with support from the health center team.

The health services are centrally managed and operated. Patients from rural areas travel to the capital, St. John's, for X-rays, laboratory, and pharmacy services.

During 1999, construction began on four new health centers on the island. This project was undertaken by the British Government through its Department for International Development (DFID) as a way to cope with the added stress put on the health system after the immigration of residents of Montserrat. As a way to help decentralize the health services, these new clinics will provide pharmacy and dental services in addition to the services offered at other health centers on the island; they also will operate for extended hours to make the services more accessible.

All resident medical specialists, including government consultants and district medical officers, have private practices in the capital. In addition there are four private ophthalmology/ophthalmic centers, one private orthopedic center that offers X-ray facilities, four private laboratories, and a private physical therapy center.

Blood banking is centrally provided at Holberton Hospital and at the Adelin Center. In 2000, there were 989 blood donors at Holberton Hospital. Blood is screened for hepatitis B, syphilis, and HIV.

Health Supplies

Antigua and Barbuda is a member of the Eastern Caribbean Drug Service (ECDS); through this service the country's drug

procurement system has been upgraded and computerized. There is a National Drug Formulary and a National Formulary Committee that streamlines the use of pharmaceuticals. Vaccines are obtained with the assistance of PAHO's Revolving Fund for Vaccine Procurement.

The Government spends approximately US$ 330,000 annually on drugs and medical supplies. The Medical Benefits Scheme covers medication for selected diseases—asthma, diabetes, glaucoma, hypertension, cardiovascular disease, heart disease, sickle cell anemia, and mental disorders. Those covered by the scheme include contributors and persons under age 16 years and persons 60 years and over.

Human Resources

Holberton Hospital demands a higher proportion of human resources. As a result, the Government began to collaborate with the Government of Cuba in 1998 to increase the hospital's health care personnel, specifically in the areas of urology, oncology, radiology, general surgery, and anesthetics. This cooperation has resulted in the contracting of an internist, an anesthesiologist, a radiologist, two pharmacists, four laboratory technicians, and registered nurses for a two-year period beginning in 2000.

In 1997, based on a decision by the Barbuda Council, a resident physician began to work at the Hannah Thomas Hospital, significantly adding to the services provided by the existing visiting volunteer physician.

The Government of Antigua and Barbuda is committed to enhancing the pool of human resources available for health. Local training included certified programs for the education of health personnel at the School of Nursing and the School of Pharmacy. Training for other health personnel is provided at regional training institutions. Continuing education is provided both locally and abroad through the effort of the Ministry of Health, professional organizations, and international and regional agencies. The Fellowships Committee, which is chaired by the Chief Medical Officer, coordinated the training of health care personnel. Fellowships were awarded in many areas, including nursing administration, public health nursing, community psychiatric nursing, basic environmental health, food safety, solid waste management, medical laboratory technology informatics, and health education. Family nurse practitioners also received training.

Health Research and Technology

The expanded Health Information System has become the Health Information Division. Computers, software, and human resources have been provided through the community health information system project of the Organization of Eastern Caribbean States. Modules are in place for nutrition, communicable diseases, maternal and child health, chronic noncommunicable diseases, human resources, and environmental health. The Health Information Division works closely with the Police's Traffic Department to provide regular reports on traffic accidents. The Division also works closely with the Statistics Division of the Ministry of Finance.

The Health Information Division has been named as the local coordinating center for the MEDCARIB network, which provides a database for health literature in the region. The Division has published an annual Health Statistical Digest since 1996. The Health Information Division also regularly publishes information and articles on health-related matters.

Staff at the Division has been trained in health informatics; the community health information system; and project preparation, appraisal, implementation, and management.

Health Sector Expenditure and Financing

The public health sector is financed through general tax funds managed by the Ministry of Finance. Specifically, the Medical Benefits Scheme is the main contributor towards financing the country's health care system in Antigua and Barbuda. Private insurance companies and the Social Security Fund make some contributions to health care financing in the private sector.

Between 1996 and 1999, actual health expenditure increased. The Ministry of Health has, over these years, been allocated between 12% and 14% of the national budget. Per capita health expenditure was US$ 312 in 1998.

In 1999, the total expenditure of the Medical Benefits Scheme was approximately US$ 11 million, an increase of about US$ 2 million from 1998. The amount disbursed for overseas treatment for the 18-month period ending in December 2000 was approximately US$ 1 million. Grants through the Ministry of Health increased from US$ 2.5 million in 1999 to US$ 4 million in 2000.

External Technical Cooperation and Financing

Antigua and Barbuda benefits from technical cooperation and financing from several regional and international organizations. The Caribbean Environmental Health Institute (CEHI), the Caribbean Epidemiology Center (CAREC), and PAHO all assist with evaluating programs, reviewing health services, developing policies and legislation, and providing training. In addition, WHO, UNICEF, UNAIDS, and the British Government's Department for International Development also have provided assistance.

FIGURE 1. Population structure, by age and sex, Antigua and Barbuda, 2000.

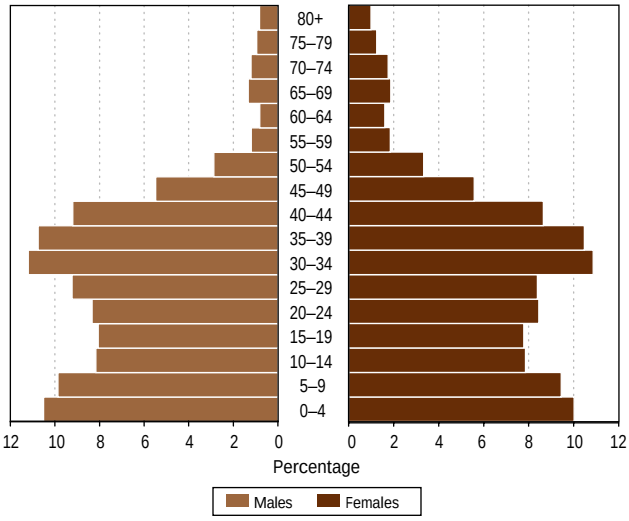


FIGURE 2. Gross domestic product, annual growth (%), Antigua and Barbuda, 1991–2000.

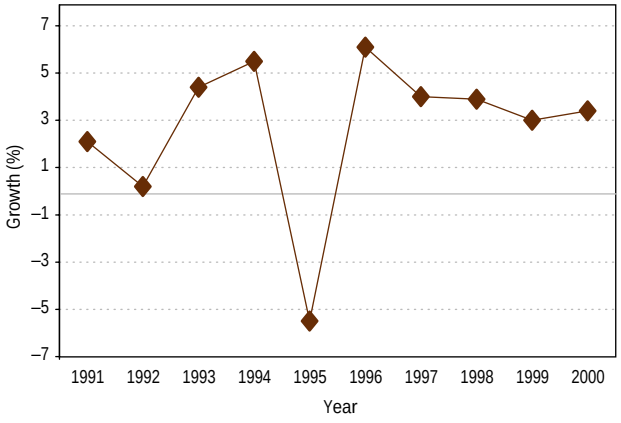
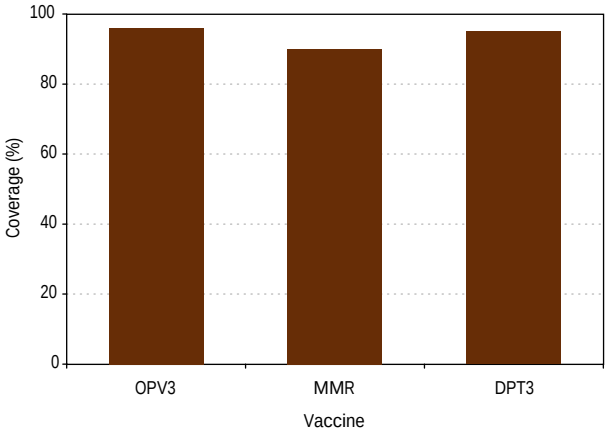


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Antigua and Barbuda, 2000.



ARGENTINA

OVERVIEW

Over the last two decades, Argentina has achieved a true milestone in its history as a nation: consolidation of a stable democracy. This process has occurred as part of another more general process that has taken place in virtually all the countries of the region that had suffered periodic disruptions of their institutional order. Argentina achieved democracy not through the undoing of yet another military government but as the result of a military defeat in an international war against a European power. This event held great symbolic significance for a country that was born, evolved, and came of age looking more towards Europe than to the other countries of the Region.

Immigrants—especially the Europeans who arrived from Spain and Italy between the end of the 19th century and the 1940s—have played a crucial role in shaping the country's sociocultural and demographic profile. In the course of the 20th century, that European lineage, coupled with the influence of the Argentine-born Creoles, already heavily Hispanicized since the colonial period, helped mold Argentina into a society with a large and growing majority of middle class workers eager to get ahead. Despite the erratic nature of the public policies of virtually all the country's governments—especially the long-term policies—free public education remained a constant that helped the population realize that aspiration. Indeed, as of the early 1990s, the literacy rate among Argentines aged 10 and over was 96.3%.

During the 1990s, the country succeeded in overcoming the chronic problem of inflation, which affected primarily the majority middle-class working population. A system of currency convertibility with U.S. dollar-peso parity was put in place. At the same time, through a controversial process, a significant portion of the State apparatus was privatized. These economic changes failed to translate into real gains in living standards, however. On the contrary, many people saw their quality of life decline. Moreover, other changes aimed at transforming the State did not bring about the expected results either. None of the reforms introduced in government administration brought about significant reductions in public spending, nor did that spending become more effective in terms of social impact or as a motor for growth. The same thing occurred in many cases when responsibility for inalienable and essential services was decentralized to the provincial and municipal levels.

The provinces suffer from their own structural problems, and they are excessively dependent on the resources they receive under the federal tax-sharing system, in which the provinces turn over most of the taxes they collect to the federal government, which then redistributes the funds in accordance with this legal framework. This system has often been subject to the discretional authority of the provincial and federal governments.

The constitutional reform of 1994 had more repercussions on political organization than it had concrete effects on the situation of the Argentine people. The new constitution reduced the president's term of office from six to four years and allowed for the possibility of one reelection. It also created the office of Chief of the Cabinet of Ministers, a position similar to that of a prime minister, although this change has not really taken root in a society that remains very attached to the president-dominated model.

Although the annual federal budget was approved on time and in accordance with the constitutional provisions—something that had not happened for five decades—its execution remained hindered by a severe tax deficit, exacerbated by a complex and inefficient taxation system that encourages evasion. This situation prompted an inevitable chain reaction: the provincial deficits, in most cases generated by the virtually sole and subsidizing industry of public employment, could be covered only by transferring extraordinary funds from the federal level, and those funds, which proved insufficient despite the revenues obtained from privatization, could only be financed by increasing the external debt. In the early 1980s, Argentina's debt amounted to around US$ 30,000 million, but by early 2001 it had risen to US$ 150,000 million. Meanwhile, GDP, after a period of growth between 1993 and 1997, declined in 1998 and 1999 (Figure 1).

Argentina has not succeeded in changing its profile as an exporter of primary agricultural products or exploiting its comparative advantages. The balance of trade—historically favorable,

though insufficient to offset the tax deficit—began to turn negative. At the same time, monetary stability brought with it a high cost of living, similar to that in most developed countries, as a result of which relative prices for Argentine goods were not competitive on the world market. Generally speaking, the state of Argentina's public accounts left the country extremely vulnerable to the adverse effects of globalization. The major national industries passed into the hands of foreign investors, and were thus subject to the volatility that generally characterizes foreign capital in difficult economic times.

Small and medium enterprises (SMEs), unable to compete or finance their operations, suffered enormously from a recession that began in 1998, and many were forced to close their doors. As a consequence, unemployment affected Argentina with unprecedented intensity. By the end of 2000, the unemployment rate had climbed to around 20%. With an economically active population (EAP) estimated at 21 million, this meant that more than 4 million Argentines were without work. It is estimated that, in 2000, 45.4% of the population was employed in the informal sector (44.3% of males and 47.1% of females). The workload for women in the informal sector may be up to triple that of men. Rural and indigenous women have the longest workday.

Child labor is an important social problem in Argentina. According to UNICEF estimates for 1995, at least 90,000 children aged 14 and 162,000 children under 14 years worked. Although the incidence of child labor is higher in rural areas, where work has cultural connotations and children as young as 4 or 5 years often toil alongside their parents and siblings, the largest proportion of working children (73%) are concentrated in urban centers. In urban areas, child workers most commonly engage in domestic activities, such as care of younger siblings or certain family businesses, or they work in the informal sector of the economy. Two-thirds of the children who work are male.

Paradoxically, Argentina's per capita income during the 1990s was a powerful magnet for immigrants, the majority of them illegal, from the countries of the subregion and, to a lesser extent, Eastern Europe. This flow of immigrants swelled the ranks of the poor and unemployed. The social consequences of this situation are evident in the tremendous growth in poverty (one third of the population is now considered poor) and the proportion of households with unmet basic needs (20%), as well as higher levels of marginalization, violence, crime, and insecurity. Since it is impossible for the country to finance an unemployment insurance system capable of covering such a large proportion of the population, sustained economic growth is the only long-term solution to this critical problem.

An analysis of incomes per inhabitant in the various provinces (GDP per capita) reveals sizable differences in their economic situations. In 1996, income in the wealthiest jurisdiction (the city of Buenos Aires, with per capita income of US$ 20,544) was almost four times higher than the US$ 5,571 per capita registered in the province of Jujuy. If the provinces are divided into four groups corresponding to four income quartiles and correlated with indicators of living and health conditions, the groups more or less coincide with the geographic regions of Argentina. Group I (per capita income of US$ 20,544–9,833) consists of the city of Buenos Aires and five Patagonian provinces, which earn significant income from production of hydroelectric energy and hydrocarbons. Group II (US$ 9,515–8,075 per capita) comprises the remaining Patagonian province, three central provinces, and two in the Cuyo region. Groups III (US$ 7,758–6,711 per capita) and IV (US$ 6,617–5,571 per capita) include provinces from the lesser-developed northern regions of the country.

The projected total population of Argentina for 1999 was 36,578,355. The country's population growth rate has declined steadily over the years, with average rates of 1.4% between 1985 and 1990, 1.3% between 1990 and 1995, and 1.3% between 1995 and 2000. The total fertility rate has also fallen steadily, decreasing from 3.6 children per woman in 1980–1985 to 2.8 in 1990–1995, with an estimated rate of 2.4 for 1995–2000. The birth rate, on the other hand, decreased only from 19.8 per 1,000 population in 1993 to 18.8 per 1,000 in 1999. Except for the city of Buenos Aires, where the rate in the latter year was 13.5 births per 1,000 population, the birth rate in the other 23 provinces remained between 17 and 24.9 per 1,000, with a tendency towards higher rates in the poorer provinces.

Over the past two decades, life expectancy at birth for the population as a whole has increased slightly more than two years, though the difference of more than seven years between female and male life expectancy has remained unchanged. In 1985–1990, life expectancy for the population as a whole was 71.03 years (67.58 for men and 74.62 for women). The projection for the period 1995–2000 was 73.1 years (69.7 for men and 76.8 for women). As a result of these demographic changes, the proportion of population aged 65 and older rose from 8.5% in 1985 to 9.7% in 1999, while the population under 15 years of age shrank from 31% to 27.9% during the same period. The masculinity index for the overall population in 1999 remained about the same as in 1985 (96.4%), but owing to the difference in life expectancy between the sexes, the value dropped to 81% in the group aged 65–70 years and to 50.3% in the population aged 80 and older, with a value of 69.7% for the overall population aged 65 and over (Figure 2).

The spatial distribution of the population is very heterogeneous. In a total surface area of 3,761,274 km^2, population densities range from just under 15,000 population per km^2 in the city of Buenos Aires to 0.7 per km^2 in the province of Santa Cruz. These differences are the result of a marked concentration of the population in the city and province of Buenos Aires, where almost 50% of the country's total population resides. The proportion of the population living in urban areas was 86.9% in 1990 and was projected to rise to 89.3% in 1999. The demographic profile of the provinces shows a correlation with their economic conditions. Table 1 illustrates how in the wealthiest groups of provinces there

TABLE 1. Demographic indicators, grouped according to per capita income, Argentina, 1999.

Group	Population <15 years (%)	Population >64 years (%)	Birth rate (per 1,000 population)	Total fertility rate (children per woman)	Life expectancy at birth (years)
IV (poorest)	33.4	6.5	23.0	3.0	70.9
III	32.6	7.2	22.8	2.9	71.3
II	26.9	10.1	17.6	2.3	73.2
I (richest)	22.6	13.0	15.4	1.9	73.0

is a trend towards lower fertility, lower birth rates, and a lesser proportion of young population, whereas the proportion of people aged 65 and older is as much as double and life expectancy has risen more than two years. The 1991 census revealed a similar correlation with the proportion of illiterate population in these groups of provinces. The national rate of 3.68% contrasted with 1.9% in Group I, 2.9% in Group II, and figures two and three times higher in Groups III and IV (6.9% and 7.2%, respectively). The proportion of the population holding a university degree was 4% nationwide, but the rate in Group I was 8.9%, whereas it was 3.4% in Group II and 2.6% in Groups III and IV.

Mortality

The crude death rate in Argentina has hovered around 8 per 1,000 since 1986, falling from 8.2 per 1,000 in 1986 to 7.9 per 1,000 in 1999 (8.9 per 1,000 for males and 7.1 per 1,000 for females). This actual decrease may be greater, however, given that during this period the proportion of older adults has increased. There are notable differences among the provinces with regard to crude death rate: for example, the city of Buenos Aires registered a rate of 11.7 per 1,000 for both sexes, while in Tierra del Fuego the rate was 2.4 per 1,000. These disparities are largely caused by differences in the age structure of the provincial populations, since after the rates are adjusted for age, the values become more uniform. In fact, the rate for the city of Buenos Aires, once adjusted, is even lower than that of Tierra del Fuego. The province of Neuquén, with a rate of 6.3 per 1,000, had the lowest age-adjusted death rate, while in the province of Chaco the rate was 9.3 per 1,000. Analysis by income groups shows a correlation between income and adjusted general mortality, especially among women. It is estimated that in 1998 there was 12.5% excess mortality among women in Group II in comparison with those living in the provinces of Group I. In Groups III and IV excess female mortality was as high as 20%.

It is estimated that in 1999 around 782 years of potential life (YPLL) per 10,000 population were lost in Argentina, based on life expectancy at birth of 70 years. The loss of potential years of life was greater among males (993 YPLL per 10,000) than among females (580 YPLL per 10,000). Diseases of the circulatory system (ICD-10: I00–I99, except I46) account for the largest number of deaths in the general population (Figure 3). In 1999, at a rate of 270.3 per 100,000 population, this group of causes produced 36.9% of all deaths (34.9% among males and 38.5% among females). No significant relationship was found between deaths from cardiovascular causes and groups of provinces by income. Neoplasms (ICD-10: C00–D48) ranked second as causes of death (20.2%) in 1999, with a mortality rate of 151.3 per 100,000 population in the general population. Communicable diseases (ICD-10: A00–B99; J00–J22; G00–G03) were the third cause of death, with a rate of 67.2 per 100,000 population, which represented 9.3% of total deaths. When this group of causes of death was analyzed by income groups, the rates did not change. External causes (injuries and poisoning) were the fourth leading cause of death (7.1% of all deaths), with a rate of 53.8 per 100,000 population (79.8 per 100,000 males and 24.7 per 100,000 females). For this group of causes there was a clear relationship to income: the proportion of deaths from external causes in the wealthiest provinces was 5.1%, whereas in the poorest provinces it was 9.6%. Conditions originating in the perinatal period (ICD-10: P00–P96) caused 2.3% of all deaths. As in the case of deaths from external causes, the proportion of deaths from this cause is clearly higher in the poorer provinces: while in Group I perinatal causes accounted for only 1.0% of deaths, they accounted for 5% in Group IV. The proportion of deaths from ill-defined causes shows a similar trend. Out of the overall proportion of 6.6%, in Groups I and IV the percentage of deaths from ill-defined causes was 2.8% and 15%, respectively, which indicates that the quality of reporting is significantly lower in the poorest provinces.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

For several years infant mortality has showed a sustained downward trend. From a rate of 26.9 per 1,000 live births in 1986 it dropped to 17.6 per 1,000 in 1999 (12,120 deaths). This national value does not reflect the variations in the rate across the country,

where at one extreme the province of Tierra del Fuego has a rate of 7.8 per 1,000, while at the other, the province of Chaco registered 29 infant deaths per 1,000 live births. Measurements of inequality in infant mortality among the provinces of Argentina yielded a Gini coefficient of 0.107 (Figure 4). It is important to consider that the provincial values also mask internal disparities within provinces. In the regions of the country with the highest incomes and lowest initial rates (central region and Patagonia), the decrease has been more marked than in the poorest regions.

In 1999, the neonatal mortality rate was 11.3 per 1,000 live births and the postneonatal death rate was 6.3 per 1,000. The ratio between neonatal and postneonatal mortality remained stable during the period 1986–1999. Even across the country's various regions, postneonatal mortality always represented around 35% of total infant mortality. Conditions originating in the perinatal period remained the leading cause of death, accounting for 50.4% of all perinatal mortality. Between 1995 and 1999, specific mortality from pneumonia and influenza decreased 35.2%, while mortality from intestinal infections declined 38.8% and specific mortality from congenital malformations decreased 10.1%. In contrast, specific mortality from external causes rose 9.3%, to become the third leading cause of death, after conditions originating in the perinatal period and congenital malformations. Based on these trends, it is estimated that neonatal deaths could be reduced 59.2% and postneonatal deaths could be reduced 46.2% through prevention and timely diagnosis and treatment.

The prevalence of exclusive breast-feeding for the first four months of life was 36.7% in 2000, an increase over the figure of 26.3% registered in 1998. The prevalence of continued breast-feeding at age 6 months was 6.6% in 1998 and 12.0% in 2000.

In 1999, 1,948 children aged 1–4 years died, for an age-specific death rate of 0.7 per 1,000 population; 57.0% of those children were male. Between 1995 and 1999, the age-specific death rate declined 12.5%. External causes continued to be the leading cause of death, with an increase in the specific rate from 0.17 per 1,000 population in 1995 to 0.21 per 1,000 in 1999. The pattern of the rates across provinces and regions is similar to that of infant mortality. Infectious and respiratory diseases and malnutrition accounted for 30.7% of all deaths.

Schoolchildren (5–9 years)

In 1999, there were 974 deaths among children aged 5–9 years. The age-specific mortality rate in this group was 0.29 per 1,000 population. External causes continued to be the leading cause of death, accounting for 39.1% of the total number; 70.3% were deaths of male children. Transport accidents were the leading cause, accounting for 37.8% of all deaths from external causes.

Adolescents (10–14 and 15–19 years)

In 1999, the population aged 10–19 years numbered an estimated 6,640,000, which was 18.1% of the total population. That year, 3,701 adolescent deaths were reported (1,062 among 10–14-year-olds and 2,639 among 15–19-year-olds, with specific rates of 0.32 per 1,000 population and 0.79 per 1,000, respectively). The ratio of male deaths to female deaths was 2:1 for the group as a whole and 3:1 in the subgroup aged 15–19. External causes accounted for 60% of adolescent deaths, with specific rates of 13.4 per 100,000 for transport accidents, 6.6 per 100,000 for suicides, and 10.9 per 100,000 for homicides and violent events of undetermined intent. Neoplasms were the second leading cause of death (8.4%).

Since the start of the HIV/AIDS epidemic, 46 AIDS cases have been reported among young people aged 10–14 and 305 among those aged 15–19. These figures accounted for 0.3% and 1.2%, respectively, of the total number of AIDS cases reported between 1982 and 2000. More adolescent males than females are affected. It is estimated that 46% of males and 32% of females acquired the infection through the use of intravenous drugs. A national study conducted in 1999 found that the current prevalence of drug use (defined as consumption in the last 30 days) among adolescents aged 12–15 was 35.2% for tobacco and alcohol, 1.2% for illegal drugs, and 0.2% for illicit consumption of prescription drugs. However, 67% of those interviewed reported that they smoked or had smoked at some time, and 41% had started smoking before the age of 16, while 10.1% had used illegal drugs at some time, and 22.8% had begun using them before age 16.

The fertility rate among adolescents decreased from 38.7 per 1,000 in 1980 to 31.9 per 1,000 in 1999 (1.7 per 1,000 in the group aged 10–14 and 62.3 per 1,000 among those aged 15–19). Of all the children born in Argentina in 1999, 15.2% were born to adolescent mothers (104,386) and, of those children, 2.6% (2,747) were born to girls under 15 years of age. Infant mortality is higher among the children of adolescent mothers, not only because of the mother's age but also because pregnancy in this age group is strongly associated with unfavorable socioeconomic conditions. Although maternal mortality would also be expected to be higher in this group, only 38 deaths of mothers aged 10–19 were reported in 1999, making the age-specific rate 3.6 per 10,000 population. That is slightly less than the national maternal mortality rate, which suggests that underreporting of maternal deaths among adolescents may be higher than in the general population.

Adults (20–59 years)

According to a UNICEF survey, 86% of pregnant women had five or more prenatal visits in 1994; however, single women and women who had not completed primary schooling had fewer than five. Maternal mortality for the country as a whole in 1999 was 41 per 100,000 live births, slightly higher than the figure of 38 per 100,000 registered in 1998. However, the Directorate of Health Statistics and the Program on Maternal and Child Health of the Ministry of Health estimate that about 50% of maternal deaths go unreported. Hence, the real rate would be around 80

per 100,000 live births. The differences found between provinces are greater than in the case of other health indicators. While in the city of Buenos Aires and in provinces such as Río Negro, Chubut, Córdoba, and Buenos Aires fewer than 20 maternal deaths per 100,000 live births were reported, provinces such as Chaco and Formosa had rates of 130 and 160 per 100,000 live births. The Lorenz curve of maternal mortality (Figure 5) shows that 40% of the births that occurred in the provinces with the highest maternal death rates accounted for almost 80% of these deaths. The Ministry of Health has launched a program to promote local and national meetings to analyze maternal mortality in order to detect and rectify the factors responsible for these deaths as well as the problems that lead to serious illness during pregnancy, childbirth, and the puerperium.

The Elderly (60 years and older)

In 1999, the population of adults aged 60 and older numbered almost 5 million, accounting for 13.4% of the total population. This age group has grown 24.6% since 1970. Fifty-six percent of all adults in this age group were women and 44% were men, but whereas there is very little difference in the proportions of men and women between the ages of 60 and 64, after age 79 there are twice as many women as men. There is no accurate information on the number of older adults who are institutionalized. Although there is a social tendency to keep older persons at home with their families, the number of homes and residences for the elderly has grown appreciably in the last 10 to 15 years. In 1999, there were 20 nursing home beds per 1,000 population aged 70 and over in 13 provinces. The retirement age is 65 years for men and 60 years for women, but the possibility of gradually increasing it to 70 and 65, respectively, is under study.

Lifestyle-related diseases account for the greatest proportion of mortality among older adults. Cardiovascular diseases (30.7%), neoplasms (19.1%), and cerebrovascular diseases (8.9%) are the leading causes of death in this age group, with an increase in cardiovascular diseases and a proportional decrease in neoplasms among the oldest members. The proportional weight of neoplasms is greater among women, especially those between 60 and 70 years of age.

Workers' Health

Between July 1999 and June 2000, 433,495 accidents were reported among workers in the formal sector of the economy. Of these, 96% were minor, 3.5% were serious, and 0.2% were fatal (955 deaths). The average accident rate was 76.7 per 1,000 exposed workers, but the rate in the construction sector was more than twice that: 185 per 1,000. In the manufacturing sector, it was 128 per 1,000 and in the agricultural sector, 103.1 per 1,000. A 1996 law on occupational hazards seeks to prevent risks and compensate workers for occupational injuries. Under this law, almost 5 million workers are covered by workers' compensation insurance. In addition, the Occupational Safety Administration has established the "Safe Work for All" plan, which includes a number of preventive measures for businesses with high workplace accident rates.

The Disabled

Based on data from a household survey conducted in 1991, it was estimated that 7% of the population (around 3,250,000 people) suffered from some type of disability. According to disability certificates for the period 1997–2000, 41.6% were mental disabilities, 41.1% motor disabilities, 13.8% sensory disabilities, and 3.5% visceral disabilities.

The National Service for the Rehabilitation and Advancement of Persons with Disabilities oversees several programs to support rehabilitation centers and services, care for needy disabled persons, recreation and sports activities, and training of human resources in orthotics and prosthetics and in occupational therapy.

Indigenous Groups

According to the Institute for Indigenous Affairs, the estimated indigenous population in 1999 was 372,996 (1.1% of the total population). The largest indigenous groups were the Colla (98,000), Mapuche (60,000), Diaguita (50,000), Mataco (40,000), Tobas (39,000), and Quechua and Aymara (38,500). However, health statistics are not broken down by ethnic group. The majority of the indigenous groups reside in the lowest-income provinces (Groups III and IV), the exception being the Mapuche, who live in Patagonia and the province of Buenos Aires.

By Type of Health Problem

Natural Disasters

Floods are the highest-risk event, although some provinces are also at risk for seismic activity and volcanic eruptions. During 2000, more than 36,000 were victimized and 21 died or went missing as a result of floods in northwestern Argentina, and in the province of Buenos Aires there were more than 50,000 flood victims but only one death. Powerful storms and heavy rainfall, a tornado in the province of Buenos Aires, a landslide in Santa Fe, and intense snowfall made it necessary to evacuate the population from some cities. The eruption of the Copahue volcano in the province of Neuquén had a negative impact on tourism, the main economic activity of the region, although it did not cause any deaths.

The Federal Emergency System (SIFEM) was created by executive decree in October 1999 under the cabinet chief. The system coordinates governmental and nongovernmental action in emergency situations. SIFEM encompasses a wide array of government agencies and has an emergency ministerial cabinet consisting of the ministers of the interior, defense, finance, infrastructure and housing, health, and social development and the environment.

Vector-borne Diseases

Argentina is in a position to certify the interruption of vector transmission of *Triatoma* in eight of the provinces in which Chagas' disease was endemic (Jujuy, Salta, Catamarca, Entre Ríos, Río Negro, La Pampa, Neuquén, and Tucumán). Another six provinces have achieved an intermediate control situation, characterized by localized residual household triatomine infestation and discontinuous surveillance (Córdoba, Corrientes, Misiones, Santa Fe, Mendoza, and Chaco). A third group, consisting of La Rioja, San Luis, San Juan, Formosa, and Santiago del Estero, is still at risk of vector transmission. The national Chagas' disease control program has carried out a sustained effort, resulting in achievement of 97% of the insecticide-spraying goal and 96.5% of the household entomological surveillance goal. Interruption of vector transmission in all provinces within the next four years is considered feasible.

Since 1997, the nation's blood banks, which process some 800,000 units per year, have screened 100% of blood donations for *Trypanosoma cruzi*, finding a prevalence rate of around 55 positives per 1,000 donors. Seroprevalence studies conducted in 2000 among 21,427 children between 6 months and 14 years of age in endemic areas showed a prevalence of 1.94%. Among 131,900 pregnant women, the prevalence was 6.4%, with an average vertical transmission rate of 4.7% and a range of 2% to 12.4%.

The presence of *Aedes aegypti* has been confirmed in 17 of the country's 24 provinces. Of a total of 854 municipalities inspected in the areas at risk, the vector was found in 581. Of these, 111 were classified as high-risk, 400 as medium-risk, and 70 as low-risk. During the first three months of 2000, indigenous cases of classical dengue (dengue-1) reappeared in the northwest in the departments of Iguazú and Clorinda, located in the provinces of Misiones and Formosa, respectively. These cases were associated with an epidemic in Paraguay. The province of Salta also reported cases of classical dengue (dengue-2). Also in 2000, 617 non-indigenous probable cases were reported in eight provinces (clinically diagnosed and IgM positive). During the summer of 2000–2001, no outbreaks were reported in the areas considered at risk, but isolated non-indigenous cases continued to be reported.

Malaria occurs most frequently in a risk area in the province of Salta, which borders Bolivia (departments of Orán and San Martín, where the annual parasite incidence is 2–3 per 1,000). Second most affected is the province of Jujuy. In the northeast, the provinces of Misiones and Corrientes experience occasional epidemic episodes. During 2000, a total of 461 cases of malaria were reported, of which 114 (25%) were indigenous; the remaining cases can be associated with migration that occurred in the region.

Owing to the existence of an ecological niche that could enable yellow fever to spread and with the large volume of people who travel from endemic areas in Bolivia and Brazil, the provinces of Jujuy, Salta, Formosa, Chaco, Corrientes, and Misiones are considered potentially at risk, although they have reported no cases of the disease. In recent years, the yellow fever vaccine has been administered to people who travel to endemic areas or live along the border. The vaccination program has been expanded with the goal of vaccinating the entire population over 1 year of age in the aforementioned provinces. An estimated 1,600,000 people still need to be vaccinated to reach that goal.

Diseases Preventable by Immunization

The last reported case of poliomyelitis caused by wild poliovirus in Argentina dates back to 1984. As of the end of 2000, a total of 136 suspected cases of poliomyelitis or acute flaccid paralysis (AFP) had been reported. The rate was 1.32 per 100,000. In 2000, selective weekly reporting from all provincial operational units was instituted. In early 2001, 10 of the 24 jurisdictions (with 64% of the total population under 15 years) were reporting selectively, and all 24 provinces were reporting suspected AFP cases weekly. Ninety-one percent of the AFP cases reported in 2000 were investigated within 48 hours from the onset of paralysis, and stool samples were obtained from 73% of the cases within 14 days of paralysis onset. Since 1995, polio vaccination coverage has been above 90%, although the rate varies significantly among provinces.

Since 1990 vaccination coverage for measles has been over 90%. Thanks to a large-scale campaign mounted in 1993, coupled with surveillance and laboratory investigation of all cases of febrile rash illness, the number of measles cases reported declined dramatically between 1994 and 1996, dropping to 0 in the latter year. Following the occurrence of cases in 1997, a nationwide follow-up campaign was conducted in 1998 among children aged 2 to 5. The MMR vaccine against measles, mumps, and rubella was administered to children under age 1, and a coverage rate of 95% was achieved. However, between 1997 and 1999, Argentina experienced a measles outbreak that caused 121 confirmed cases in 1997, 10,229 confirmed cases in 1998, and 351 confirmed cases in 1999. In 2000, 935 suspected cases were reported, most in children under 5 years of age, but only six were confirmed. In 1999, 10,806 cases of rubella were reported and, in 2000, 6,007 cases were reported. In both years, all Argentine provinces reported cases of rubella, although the majority were reported in the province of Buenos Aires. In 1999, 23,938 cases of mumps were reported and, in 2000, the number was 17,630.

Since 1990, coverage with the DPT vaccine has been over 80%. In 1997, the vaccine against *Haemophilus influenzae* type b (Hib) was introduced as a separate vaccine. In November 1998, the DPT–Hib vaccine was incorporated into the regular immunization schedule for children, and in 1999 a coverage level of over 85% was achieved. In 2000, coverage with three doses of DPT or DPT–Hib was 83%, with rates among the 24 jurisdictions ranging from 65% to 99% and a median rate of 84%. In 1999, 65 cases of meningoencephalitis due to *H. influenzae* were reported. In

2000, the number decreased to 35. In 2000, 3,682 cases of meningitis were reported; 46.9% were of unspecified etiology. Of the cases with specified etiology, 80% were bacterial, and the most frequent etiologic agents isolated were *Streptococcus pneumoniae*, *Neisseria meningitidis*, and *Haemophilus influenzae*. With respect to 1999, these values represent a decrease of 23% in total reported cases, 30% in cases of bacterial meningitis, and almost 50% in cases of *Haemophilus influenzae* meningitis. In 1989–1990, an outbreak of diphtheria occurred, resulting in 51 cases in the provinces of the northeast. The number of cases declined steadily from 1991 to 1997, when no cases were reported. In 1998, two cases were reported in the province of Misiones, but no cases were reported in 1999 or 2000. In 1998 and 1999, the number of cases of pertussis increased in some provinces. During 1999, 657 cases were reported in 22 of the 24 provinces; only Jujuy in the north and Tierra del Fuego in the south reported no cases. In 2000, a total of 567 cases were reported, including 139 in the province of Buenos Aires and 105 in the province of Santa Fe. The number of cases of neonatal tetanus decreased from 21 in 1988 to 0 in 1998 and 2 in 1999; all occurred in the northeast. No cases of neonatal tetanus were reported during 2000. Tetanus cases in all age groups decreased from 220 to 19 during the period 1980–1999. In 2000, 13 cases were reported in 8 jurisdictions, most in the northern part of the country.

Intestinal Infectious Diseases

By 1999, a total of 4,834 cholera cases had been reported since the first case was reported in February 1992. Case-reporting showed a seasonal and epidemic pattern. Most of the cases occurred in the northwest region (Salta and Jujuy) among adult males, probably because they tend to move around more than other population groups. The last case was reported in the province of Santa Fe in 1999.

Chronic Communicable Diseases

In 1999, 11,871 new cases of tuberculosis were reported. Most cases were concentrated in the province of Buenos Aires, but the highest incidence rates were in the north. While the national rate was 32.5 per 100,000 population, the figure ranged from 12.7 per 100,000 in the province of San Luis to 100 per 100,000 in Jujuy. The national rate is 47% lower than the rate registered 20 years ago. This is the result of a decrease in the incidence of tuberculosis in almost all provinces, except Formosa, where the rate rose 47% between 1980 and 1999. The decline in incidence was larger in the population aged 15–29. In 1999, mortality from this cause was 2.8 per 100,000 population (1,019 deaths). The province of Jujuy registered the most deaths per population (10.4 per 100,000). Mortality rates in the oldest age groups were the highest, rising to 14.3 per 100,000 in the group aged 75 years and older. AIDS and HIV infection play an important role in tuberculosis mortality in the groups aged 20–34 , in which around 50% of tuberculosis deaths are associated with HIV infection. In 628 patients studied between 1999 and 2000, initial drug resistance was found in 10% and multidrug resistance was found in 1.7% (with values of 8.8% and 0.8%, respectively, in HIV-negative patients and 24.5% and 13.2% in HIV-positive patients).

The endemic area of leprosy encompasses 12 provinces in the northeast and northwest, center, and along the coast. In 2000, a total of 364 cases were reported and the national prevalence rate was under 1 per 10,000 population (0.75), which is consistent with the control and elimination goal proposed by PAHO. However, the provinces of Chaco, Formosa, Entre Ríos, and Corrientes have higher rates.

Acute Respiratory Infections

Acute respiratory infections (ARIs) account for 37% of all diseases reported to the National Epidemiologic Surveillance System (SINAVE) (889,578 cases in 2000) and are a major cause of death in the population under 5 years of age, especially in association with nutritional problems.

Zoonoses

Animal rabies continues to be an endemic problem in the northern part of the country, especially among bovine cattle. In 1999, 66 cases of animal rabies were reported (34 in bovines, 16 in dogs and cats, 8 in bats, and 8 in other animals). Most of the cases in dogs and cats were associated with an outbreak in the province of Salta (communities of Orán, Hipólito Irigoyen, and Pichanal), which required focus control, mass vaccination, and restriction of animals in public streets. In 2000, the number of canine and feline cases fell 30% with respect to the previous year.

HIV/AIDS

From the beginning of the epidemic through the year 2000, a total of 18,824 AIDS cases were reported; however, allowing for delays in reporting, the true number of cases is estimated at 21,000. The number of cases registered annually rose between 1984 and 1996, when 2,640 cases were reported (rate of 75 per 1,000,000), but since then the number of cases has decreased slightly. The epidemic has affected all jurisdictions, but because a large proportion of the population is concentrated in large cities, 87% of the cases are in the city of Buenos Aires and the provinces of Buenos Aires, Santa Fe, and Córdoba. The disease has consistently been more frequent among men than women, but the ratio of 12:1 in 1989 had declined to 3:1 in 2000 (Figure 6). Most affected are those in the group aged 25–29, which accounts for 26% of the cases, and the group aged 30–34, with 22.3% of the cases. Seven percent of the cases are in children under 10 years of age. The risk factor profile for the reported cases has shown an increase in heterosexual transmission of the disease in both sexes, although among females this mode of transmission accounts for over 60% of cases. Since 1990, the proportion of cases in male intravenous drug users has remained around 50%. The HIV-infected drug users are younger than those who become infected by

other routes (80% are under 35). Vertical transmission causes 96% of cases in children. The proportion of cases due to transfusions and antihemophilic factors has dropped from 22.6% in 1982–1990 to under 1% in the most recent years. The proportion of blood screened for HIV in blood banks increased from 84.5% in 1995 to 100% in 1999. The national AIDS standard in perinatology requires that diagnostic testing be offered to all pregnant women, which has improved detection and facilitated treatment of infected mothers, thus reducing the incidence of AIDS due to vertical transmission by 50% between 1996 and 2000. During the year 2000, studies conducted in various population groups yielded HIV infection prevalence figures of 0.56% among pregnant women, 3.56% among people who sought care for sexually transmitted infections, 2.47% among prisoners, 0.08% among blood donors, 0.05% among armed forces personnel, 5% among sex workers, and 12% among men who had sex with men. The number of AIDS deaths fell from 1,829 in 1997 to 1,673 in 1998 and 1,469 in 1999. This decline, despite the rise in the number of people infected, can be attributed to the increased availability of free antiretroviral therapy (the number of people receiving treatment grew from 2,500 in 1993 to 14,500 in 2000) and to the use, since 1998, of triple-drug therapy for those infected with HIV.

Sexually Transmitted Infections

The number of syphilis cases (5,000) and unspecified gonococcal and suppurative infections (20,000) has remained stable in recent years. However, the situation has not been the same with congenital syphilis, which has increased from 126 cases in 1994 to 378 in 2000. A study by epidemiology unit in the city of Córdoba during the first months of 2001 showed that underreporting of congenital syphilis in the previous three years was over 50%. This points up the need for greater attention to reporting of and care for sexually transmitted infections, especially during the prenatal period.

Hantavirus Pulmonary Syndrome

After the first cases of this disease were diagnosed in 1995, it was found that the majority of cases were occurring in three areas of the country: the central area, the Andean-Patagonian area, and the northwest. The cases show a seasonal distribution. In the north, most cases are reported between March and June, while in the center and south cases occur from March to October. Except for an outbreak in the Andean-Patagonian area in 1996, most reported cases have been isolated cases. Eighty-one cases were reported in 1999 and 69 in 2000; 81% of all cases occurred in men. The case-fatality rate fell from 80% in 1995 to 20% in 2000. This decline is attributed to heightened awareness of the disease, early diagnosis, and better knowledge and treatment practices.

Viral Hepatitis

Although case-reporting has improved in terms of capacity to discriminate between the various types of hepatitis, in a high percentage of cases the virus type is still not being specified. Since 1994, the number of cases reported has remained relatively constant at around 30,000 cases per year. Almost 90% of reported cases of hepatitis A occurred in children under the age of 14. In 2000, 926 cases of hepatitis B and 566 of hepatitis C were reported from 19 jurisdictions. The prevalence of the disease is believed to be higher than reporting indicates, however. In 2000, the Ministry of Health added the hepatitis B vaccine to the national immunization schedule for newborns. The proportion of blood donations screened for hepatitis B and C in public-sector blood banks increased from 66% and 53%, respectively, in 1995, to 99.9% and 93% in 1999. In the latter year, the prevalence of hepatitis B in 810,259 units of blood was 6.1 per 1,000 and that of hepatitis C was 6.6 per 1,000.

Nutritional and Metabolic Diseases

The nutritional status of children in Argentina reflects the simultaneous presence of problems of both deficiency and excess. A survey by the Department of Nutrition within the Ministry of Health (1995–1996), which examined children under the age of 6 who received care in public sector outpatient facilities, showed that 12.9% suffered from stunting (chronic malnutrition), while 8.7% were overweight. The highest rates of global (as measured by weight-for-age) and chronic malnutrition were found among some of the provinces in the lowest-income groups (Chaco, 8.1% and 16%; and Tucumán, 7.5% and 19.7%). The prevalence of anemia (Hb <110 g/L) among children under 2 over the last decade was estimated at around 20%, with some values as high as 50%. In response to this problem, maternal and child health programs have instituted iron supplementation, and fortified milk is now being included in food aid programs. In 1999, a study on vitamin A deficiency among children aged 6 months to 2 years in three jurisdictions indicated that the prevalence of low serum retinol was 26%, 32%, and 46%, respectively, in the three areas studied.

Diseases of the Circulatory System

Although it is known that these diseases cause more than one-third of deaths and account for a very high proportion of morbidity and disability, there have been no studies that would make it possible to accurately determine their prevalence. However, various surveys have provided information on the frequency of risk factors, showing prevalence rates of 30% for sedentary lifestyles, 9% to 24% for hypertension, up to 11% for high cholesterol and/or triglyceride levels, and 5% for diabetes. As for tobacco use, 46.8% of males and 34% of females were smokers in 1999.

Malignant Neoplasms

In 1999, breast cancer was the leading cause of cancer deaths among women (20.5% of all cancer deaths), followed by cancer of the uterus and cervix (11.1%), colon (9.4%), and lung (7.4%). Among men, lung cancer caused 23.3% of all deaths due to

malignant neoplasms; prostate cancer, 11.8%; colon cancer, 8.5%; and stomach cancer, 6.8%.

Accidents and Violence

In the last 10 years, the number of accidents and violent events rose from around 88,000 in 1990 to close to 180,000 in 1999, which is an increase of slightly over 100%. According to official information supplied by the police, almost 30% of these events were due to traffic accidents, which caused 50,681 injuries and 3,668 deaths. This last number is higher than the 3,446 deaths due to homicide. SINAVE is now collecting data on morbidity due to accidents, but the degree of underreporting is high. In 2000, a total of 589,258 events were reported to SINAVE, including 362,902 accidents in the home, 106,912 traffic accidents, and 119,444 unspecified events.

Oral Health

The National Oral Health Program pursues the following lines of action: promotion of oral health in childhood, fluoridation and defluoridation of drinking water, and enhancement of the quality of care. The priority groups targeted by the program are children under 12 and pregnant women. Through school programs aimed at some 800,000 children, tooth-brushing and a healthy diet have been promoted and topical fluorides, sealants, and caries inhibitors have been applied on temporary teeth. Continuing education programs enable oral health professionals to update their knowledge of technical standards, cavity prevention, early detection of oral cancer, and AIDS.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

Argentina's national health policies are based on the strategic-political framework established under Decree 455 (2000) and are detailed in an official health policy document. The seven major policies defined in this document are: concerted health action between the federal, provincial, and municipal levels; health sector management that emphasizes development of local capacity; rational use of available financial resources; action to rectify gaps, inequalities, and inequities; coordination of public, private, and civil society resources in each jurisdiction; support for the activities of nongovernmental organizations working in the areas of promotion, protection, and rehabilitation of health; and promotion of active social participation in the care of individual and collective health at the municipal level.

The Health System

Institutional Organization

To understand the complex organization of the health system in Argentina it is necessary to recognize the extent to which responsibility for various aspects of national life, including health, has been decentralized to the provincial level. The system is so decentralized that any national legal provision approved by law or decree that is to apply to the provinces must be endorsed through specific provincial legislation. The other noteworthy aspect of the system relates to the important role that the labor movement has historically played in the country. By the middle of the 20th century, labor unions were the main source of financing for health care, which was provided through union-sponsored employee benefit programs known as *obras sociales.* More than 300 of these *obras sociales*, each with its own health plan, continue to operate today, with varying degrees of effectiveness.

Law 25,233, enacted in 1999, modified the Law on Ministries and restructured the Ministry of Health, creating two new subdivisions: the Secretariat for Health Care and the Secretariat for Health Policy and Regulation. Two undersecretariats exist within the former: one concerned with primary health care and the other with health promotion and disease prevention programs. The latter comprises the Undersecretariat for Planning, Control, Regulation, and Inspection; the Undersecretariat for Coordination; and the Undersecretariat for Research and Technology. Other significant developments include the emergence of the Federal Health Council (COFESA) as the primary coordinating entity in the sector, the creation of the Council of Federal Health Agencies and the corresponding Network of Federal Health Agencies, the emphasis on subregional integration within MERCOSUR, the creation of a national health information system, and the implementation of a system of national health accounts. Within this reform framework, a system was also established for dealing with issues related to biomedical ethics, and the regulatory framework governing the *obras sociales* was modified to strengthen the Solidarity Fund.

Resolution 939/2000 established the new Compulsory Health Plan for agents of the National Health Insurance System. The plan mandates coverage for primary care, health promotion activities (such as smoking cessation), preventive services (for example, breast and cervical cancer screening), rehabilitation, and palliative care. Despite the considerable opposition it may face on the part of health care providers and financers, the implementation of the new nationwide *obras sociales* plan should go a long way towards progressively regulating the health care delivery component of the health sector.

In the provinces, services are provided by means of a network of provincial primary and secondary care services and by the private sector. Very few health care facilities are administered by the national or municipal governments. With a few exceptions, such as in the cities of Buenos Aires and Rosario, there are no large municipal health service networks. Some provinces, including Buenos Aires, Mendoza, and Río Negro, are working actively to shift responsibility for primary care to the municipal level, a phenomenon which, should it spread throughout the country,

could signify a major change in the health care model. In the private sector, there is a clear division of functions, since most financing entities (*obras sociales* and insurance companies) do not operate their own services. However, some hospitals, especially those that serve the most affluent segments of society, do offer their own health plans.

In 1995, 49.7% of the population was affiliated with an *obra social*, 11.5% had private insurance (prepaid health care plans), and 7.8% had other coverage, bringing the total proportion of the population with health care coverage to 69.0%. The remaining 31.0% was not covered under any formal system. Of those that did have coverage, 19.4% were covered under two or more systems simultaneously. The percentage of covered population is highest in the wealthiest group of provinces. When the population is stratified by income level, the proportion without coverage rises from 15.1% in the highest-income stratum to 23.0% in the middle-income strata, 31.9% in the lower-middle income stratum, and 45.9% in the low-income stratum. The uninsured population receives care from the provincial health systems that serve the entire population indiscriminately. These systems provide a large volume of services per capita, and their health care expenditures rival those of the *obras sociales*. In the case of the provinces in Group I (highest income), spending per capita on the uninsured population is even higher than in the case of the *obras sociales*. Part of this expenditure results in cross-subsidization, since the public hospitals also provide both inpatient and outpatient care to the insured population, especially members of some of the less structured and solvent *obras sociales*.

Private prepaid health care plans account for 17.1% of total health spending. That amount combined with 27% in fee-for-service spending brings the private share of total health sector financing to 44.1%. Of the 155,749 hospital beds in the country in 1995, 67,198 (43.15%) were in private sector establishments. Of the 16,085 ambulatory care facilities in 2000, 8,873 (55.2%) were private.

Organization of Regulatory Actions

The Ministry of Health establishes basic regulations for the delivery of health services and the operation of health facilities. Most of the 24 provinces also have an extensive set of regulations, though they may not necessarily be complete. The Ministry, through its National Program for Quality Assurance in Health Care, sponsors workshops aimed at forging conceptual consensus and encouraging stakeholder participation in the development of basic normative instruments for all the provinces.

The practice of medicine, dentistry, and allied health occupations is regulated by National Law 17,132, enacted in 1967, which entrusts responsibility for supervising practice and licensing of these professions to the former Secretariat of State for Public Health, now the Ministry of Health. The legal framework covers all activities relating to medical and social services and other personal care and hygiene services, to the extent that they are related to people's health. Licensing requires the provider to submit academic degrees or certificates to the Ministry of Health, which issues a license that may be suspended by judicial order. Certification in medical specialties may be awarded jointly by the Ministry of Health and the Argentine Medical Association (AMA); by the Council for Certification of Medical Professionals, which grants academic certificates endorsed by the National Academy of Medicine; by the provincial ministries of health or provincial medical schools; and by scientific societies. The National Academy of Medicine and the AMA have put forward a proposal for a system of voluntary certification and periodic recertification that would be open to all health professionals and would be awarded on the basis of peer review through scientific societies and other entities participating in the system.

Since 1992, the National Food, Drug, and Health Technology Administration (ANMAT) has provided the country with an extensive and reasonably complete set of normative instruments and practices for regulating food, drugs, and medical supplies. The pharmaceuticals market generates about US$ 3,640 million a year, and 85% of the drugs are manufactured in the country. Drugs account for 15.8% of total national spending on health (US$ 23,900 million in 1999), while medical equipment and devices account for 1.7% of total health spending. Of the total US$ 318 million in medical equipment and devices purchased, one-third were domestically produced. Ten percent of domestic production in this area was exported.

During the 1990s, responsibility for managing most potable water and sanitation services was transferred to the private sector, but not all the necessary regulatory and control mechanisms were put in place, which resulted in gaps in regulation and control. At the end of the decade, these functions were being carried out by the jurisdictions that granted the private concessions (national, provincial, or municipal governments), and there was still no centralized system for regulating the services. Quality standards for drinking water and guidelines for quality monitoring have been regulated by the National Food Commission under the National Food Code.

On the basis of Law 20,284 concerning prevention of air pollution, provincial and municipal governments have formulated laws and standards, establishing their own definitions of air quality alert and alarm levels. The Secretariat for Social Development and Environmental Policy is the agency that enforces the law on hazardous waste (including chemical substances), which prescribes standards for fixed-source gaseous emissions and recommended levels for hazardous substances, while jurisdictional authorities enforce limits for vehicle emissions. Municipal ordinances allow for flexibility in solving pollution problems at the local level.

Law 24,051 regulates hazardous waste, which includes pathogenic medical waste. In the province of Buenos Aires, Law 11,347 calls for incineration or autoclaving of such waste. The City of

Buenos Aires has enacted Law 154/99 on pathogenic waste, but the corresponding regulations have not yet been issued. Within the sphere of the Ministry of Health, the regulatory framework established under Law 349/94 on biological waste produced by health care facilities permits treatment of these wastes by incineration, autoclaving, or burying in a safe landfill. The same regulatory guidelines call for segregation of medical waste and treatment on site.

Since 1967, the Argentine Food Code has regulated provisions relating to food hygiene and safety, food science, and labeling of foods. The code assigns responsibility for control to the national health authorities, represented by the Ministry of Health and by provincial and municipal governments in their respective jurisdictions. The National Food Control System was established in 1999 with a view to assuring full compliance with the Argentine Food Code. The Directorate of Food Quality and Standards—an agency of the National Directorate of Food within the Undersecretariat of Food and Markets, which, in turn, is a division of the National Secretariat of Agriculture, Cattle, Fisheries, and Food—serves as the national coordinating center for the FAO/WHO Codex Alimentarius Commission. Within MERCOSUR, two technical working groups deal with food-related issues—one works on technical standards and the other on agricultural policy. Standards set in the framework of MERCOSUR are incorporated into the Argentine Food Code.

Organization of Public Health Care Services

Health Promotion

Relatively little headway has been made thus far in the area of health promotion in Argentina. The bulk of health promotion activities are concentrated in health services, and greater involvement of other sectors is needed. In addition, many health promotion initiatives, programs, and activities are undertaken by independent groups and sectors, and lack of coordination among them results in fragmentation or duplication of effort. More than 120 nongovernmental organizations are currently working on the issue of HIV/AIDS, for example. The Ministry of Health has created an office to coordinate the work of these NGOs with programs of the Ministry.

There is an incipient healthy municipalities movement that has the political and technical support of the Ministry of Health and receives technical cooperation from PAHO. Ten municipalities have projects under way and three others are formulating project proposals.

The Secretariat of Criminal Policy and Prison Affairs within the Ministry of Justice and Human Rights has launched a "healthy prisons" project in Argentina's federal penitentiaries. The project is supported by PAHO and the Secretariat for Health Policy and Regulation of the Ministry of Health. Around 40,000 people are imprisoned in Argentina, 7,351 of them in federal penitentiaries. An estimated 24% of prison inmates suffer from some health problem, and heavy use of alcohol, drugs, and tobacco, continuous violence, and high risk of HIV infection and AIDS are priority problems. Under the project, an interinstitutional and interdisciplinary team, a network of "partners," and prison staff work to address mental health and communicable disease problems through an approach that emphasizes health promotion and respect for prisoners' right to health.

The first National Forum on Risk Prevention and Health Promotion was held in 2000. It culminated with a declaration on health promotion in Argentina, which seeks to bolster the normative role of the Ministry of Health and lays out the framework for the development of a national health promotion plan.

Disease Prevention and Control Programs

The Maternal and Child Health Program provides coverage for women and children at highest risk, emphasizing prenatal care, skilled attendance at childbirth, and monitoring of child health and development. It includes prevention and health promotion activities, aimed at children and adolescents, in areas such as sexual health, addiction, violence, and eating disorders. The program also encourages the development of responsible parenthood programs, and it cooperates with the provinces by transferring funds for the purchase of powdered milk, drugs, and equipment for basic health services, health education, and social communication. The program is developing an information system comprising basic indicators that can be applied across the heterogeneous health care structure of the provinces, and it is carrying out a program of surveillance of maternal mortality and morbidity and infant mortality.

The Expanded Program on Immunization (EPI) increased vaccination coverage progressively over the period 1980–1999, achieving coverage levels of over 80% in all provinces since 1990 and over 85% since 1995. In 2000, vaccination coverage at the national level was 91% for the polio vaccine (third dose), 92% for DPT (third dose), and 95% for the measles vaccine. The coverage figures are also broken down by province and by department within provinces. Figure 7 shows vaccination coverage among the population under 1 year of age in 2000.

The national vaccination guidelines were updated in 1997, and the MMR vaccine was introduced in 1998, the Hib vaccine in 1999, and the hepatitis B vaccine in 2000. A national evaluation of the immunization program was conducted in April 2000.

Other programs exist for the prevention and control of specific diseases. One is the tuberculosis control program, which continues to advocate directly observed treatment, short course (DOTS). There are also specific programs on vector-borne diseases (such as Chagas' disease, dengue, and malaria), leprosy, and cholera and a program on blood banks. The activities of these programs are coordinated between the national and provincial levels.

The program on human retroviruses and AIDS supplies antiretroviral drugs free of charge, supports viral load testing for

uninsured patients, and carries out information dissemination activities among both high-risk groups and the general population. These activities involve community and nongovernmental organizations as part of a strategy in which community participation is critical. Other areas of government, such as the Secretariat of Programming for the Prevention of Drug Addiction, are also involved.

To support control of noncommunicable diseases such as cancer and cardiovascular disease and risk factors such as tobacco use, commissions have been formed under the auspices of the Ministry of Health to help formulate programs and policies. Their members include representatives of scientific associations, nongovernmental organizations, and health service professionals.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

The national health statistics program produces statistical information on living conditions and health problems, as well as information on vital statistics (marriages, births, and deaths), morbidity, and hospital performance. It also provides information on the availability and use of health resources for management purposes at the various levels. The program stresses the development of uniform standards and procedures for information collection and data processing. The program comprises three levels (national, jurisdictional, and local), which are interrelated and not administered vertically. It uses permanent records, censuses, property registers, and population surveys. Permanent records include the records in the Subsystem of Vital Statistics, which draws information from civil registries, and Subsystem of Statistics on Hospital Services, Performance, and Morbidity, which are derived from records relating to health services provided in health establishments. The jurisdictional level receives, controls, codes, enters, and processes data, which it submits to the national level yearly. The Subsystem of Statistics on Health Resources and Services utilizes census data, while the Subsystem of Statistics on Coverage, Demand, Service Use, and Out-of-pocket Spending on Health relies on population surveys, in particular the periodic household surveys.

The National Epidemiological Surveillance System (SINAVE) is responsible for the registration of diseases subject to obligatory reporting, which was established in 1960 by Law 15,465. This system is also structured by levels and comprises the Directorate of Epidemiology at the national level and the provincial-level epidemiology directorates, departments, or units within ministries of health. The system compiles information on reportable diseases and laboratory data weekly.

The Dr. Carlos G. Malbrán National Health Institutes and Laboratories Administration, which consists of 11 institutions, has served as the national reference laboratory and has coordinated the laboratory network since 1997. It generates knowledge in its area of expertise, trains health service personnel, produces biologicals, establishes technical procedure standards, and provides advisory services, thus functioning as both a research and service institution.

Potable Water and Sewerage Services

The country's drinking water supply and sanitation services (urban and rural) are operated by a total of 1,548 companies or agencies, 68% of which are cooperatives, neighborhood associations, or private concessions. The remaining 32% are provincial or municipal agencies. Private concessions account for only 3.2% of the service providers but they supply services to 60.6% of the population in urban areas. In 2000, 67% of the population had potable water supply (72% in urban areas and 27.6% in rural areas). However, the distribution of water supply services is extremely unequal. In the wealthiest provinces (Group I), potable water coverage was as high as 93.1%, while in the remaining groups it was under 66%. Unplanned urban growth in recent decades has exacerbated the deficiencies in the large cities, creating high-risk situations, especially in areas inhabited by the poor.

Solid Waste Services

The variety, quantity, and quality of the urban solid waste generated by the approximately 1,600 municipalities in Argentina are such that it is impossible to accurately determine per capita waste production. Although households are encouraged to recycle their waste, there are no regulations on recycling or separate collection of recyclables. There are also no regulations on treatment of waste aimed at recovering energy, minimizing the amount of waste generated, and reducing health and environmental risks.

Some municipal governments do promote the recovery of materials for reuse or recycling, an activity in which youth ecoclubs have played a key role in more than 90 municipalities. In the Buenos Aires metropolitan area (which comprises 21 municipalities) and the cities of Mendoza, Santa Fe, and Córdoba, waste is disposed of in sanitary landfills. Smaller communities (with populations of between 2,000 and 15,000) eliminate waste by a variety of means, ranging from open-air burning to fumigation, with the resulting deterioration of the environment. The Ministry of Health is collaborating in the development of a MERCOSUR document containing guidelines for sanitary management of solid waste in border areas and transport terminals.

No accurate information is available on the amount of solid waste generated by the various health care establishments. Different provinces have different procedures for disposing of these wastes, but the most common method is incineration, generally in pyrolitic ovens.

Pollution Prevention and Control

A variety of factors have had a negative impact on the environment in general and air pollution in particular, including population growth without adequate land use planning, heavy concentration of the population in large cities, the often

inappropriate location of industries, scarcity of green spaces, and the growing fleet of private and public transport vehicles. Six cities with air quality problems are part of the Global Environment Monitoring System (GEMS). The National Network on Air Quality and Health is currently registering information in 16 provinces and municipalities with a total population of 17,029,799. The network takes continuous or sporadic measurements of air pollution.

In some provinces, responsibility for environmental surveillance has been transferred to municipal governments, which are linked to the area of health through the National Network. In recent years, these municipalities have increased their investment in equipment for continuous monitoring, using their own resources or external financing. The National Program on Air Quality and Health of the Ministry of Health supports the provinces in the area of human resources with the aim of forming multidisciplinary teams for the evaluation and management of health risks caused by environmental pollution.

Food Safety

The provinces and municipalities are expected to establish complementary regulations in order to carry out national laws, monitor compliance with those regulations in food production and marketing processes, advise food producers and vendors, and conduct health education campaigns in the community. The extent to which these functions are being fulfilled varies considerably, and they are not all centralized in a single agency. The National Food, Drug, and Medical Technology Administration (ANMAT), through its National Food Institute (INAL), authorizes, registers, controls, and monitors processed foods, dietary supplements, additives, sweeteners, and other ingredients. INAL also has a food surveillance network. The National Food Safety and Quality Service (SENASA) carries out activities related to food safety in the area of inspection of products of animal and plant origin. It issues quality certificates for plant products intended for sale on domestic and export markets, verifying that they meet national and international standards, and it monitors the use of techniques, equipment, and procedures in slaughtering, processing, transport, and marketing of products, by-products, and derivatives of animal origin.

SINAVE has recently incorporated reporting of outbreaks of foodborne disease. During the period 1998–1999, 36 outbreaks were reported and investigated. These incidents affected 1,988 people and caused 2 deaths. During 2000, reporting improved substantially and 50% of the jurisdictions in the country were participating.

Food Aid Programs

Several food assistance programs operate concurrently. Numerous feeding programs in governmental and nongovernmental sectors (programs for schoolchildren and infants, as well as municipal, community, and neighborhood programs) make a significant nutritional contribution to the diet of needy groups. The Maternal and Child Health Program provides milk for children and pregnant women receiving prenatal care. The Aid for Older Adults Program distributes food rations to persons over the age of 60 who lack social security coverage and have incomes below the minimum retirement pension. Other provincial and municipal programs also carry out nutritional support activities. The Child Food and Nutrition Program targets children aged 2 to 14 who have basic unmet needs, providing them every month with boxes of food that supply 1,200 calories a day. One of the objectives of the National Tax and Social Security Identification System, created in 1998 under the Chief of the Cabinet of Ministers, is to identify and maintain a database of the beneficiaries of these nutritional programs so as to avoid duplication or exclusion.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

All the provinces have organized networks of hospital and outpatient services, some of which are quite complete, such as those in the city of Buenos Aires and the provinces of Buenos Aires, Mendoza, Córdoba, Santa Fe, La Pampa, and Neuquén. Some municipalities, such as Rosario (province of Santa Fe), have a complete network of services which offer broad coverage and response capacity. Many others have primary care services, though they are not always well integrated with the provincial networks. Some provinces, including Córdoba and Buenos Aires, have turned over all responsibility for primary health care to the municipalities.

Auxiliary Diagnostic Services and Blood Banks

The auxiliary diagnostic services in the public sector are part of the hospital network. In the private sector, as well, most are located within health care establishments, but in the largest cities there are also generally autonomous diagnostic services that contract with health plans to provide services.

Since 1996, Argentina has had a national program to train blood bank personnel. In 1999, the country had 781 blood banks (440 public and 341 private). This excessive number makes control and inspection extremely difficult. Some provinces have established legal instruments for applying the national regulations.

Specialized Services

Although the number of disabled persons in the country is not known and there is not a complete list of the institutions that assist them, recent legislation (Laws 22,431 and 24,901) standardizes terminology, integrates activities carried out by various sectors (health, education, labor, and social development), establishes criteria for categorizing rehabilitation services, and creates a single national registry of beneficiaries, which implies a

single system of benefits. Of the 24 provinces, 12 have formally adopted the new system, which has made it possible to identify 320 organizations, as of early 2001, that work with the disabled.

In the area of mental health, during the period 1997–1998, the National Mental Health Epidemiology Program identified 11,460 patients institutionalized in public facilities, 15% of whom were suffering from disorders related to use of psychotropic substances (13% suffered from alcoholism and 35% from schizophrenia, schizophrenia-like disorders, and delusional disorders). A de-institutionalization program initiated at the Hospital Montes de Oca seeks to transform psychiatric institutions for chronic patients into institutions open to the community and prioritizes rehabilitation and prompt reintegration of the mentally ill into the community.

Health Supplies

Virtually all the end products sold on Argentina's drug market are made in the country; however, only 25% of the inputs are of national origin. Though there are no current data on the volume and structure of immunobiological production in Argentina, it is estimated that 85% of the biologicals used in the country are imported and 15% are made by domestic manufacturers that have met the necessary quality standards. Human erythropoietin, human interferon, colony-stimulating factors, growth hormone, and insulin are produced for domestic consumption and export by four private laboratories that generate approximately US$ 80 million a year in sales. In the area of vaccines for human use, Argentina continues to produce BCG and antivenins on a limited basis. A local producer manufactures the recombinant hepatitis B vaccine. In the private sector, there are about eight international drug producers operating in the country and two laboratories authorized to import semimanufactured products. The domestic market for reagents is worth US$ 120 million annually; 75% of the products are imported. Forty-seven percent of total national production is exported.

Human Resources

The findings of the national network of the regional Observatory of Human Resources in Health Sector Reform indicate that in 1998 the country had 440,100 workers in the health sector. That number represented 3% of the economically active population. Of these resources, 24.7% were physicians, 6.6% dentists, and 19.6% nurses and nursing auxiliaries (Table 2). The apparent decline in the participation of health workers in the labor market might be explained by the changes that have occurred in health service management, in workplace processes, and in new hiring schemes that mean that some health workers are being counted as members of the labor force in other sectors of the economy.

During the period 1993–1998, 12 universities graduated 23,762 new physicians, an average of 3,960 a year. In 1998, 3,789 physicians, 916 dentists, 830 pharmacists, 716 biochemists, 429 nurses, 2,115 psychologists, 545 kinesiologists, and 264 nutritionists completed their studies. The number of nurses is increasing, thanks to various professional training programs and curricular enhancements, such as the Federal Professionalization Program for Nursing Auxiliaries. Around 50% of the physicians graduated each year go on to do postgraduate study through the system of health residencies. In 1999, the Ministry of Health, the province of Buenos Aires, and the government of the city of Buenos Aires invested close to US$ 105 million to promote these health residencies.

TABLE 2. Health human resources (estimated), Argentina, 1998.

Category	Number	Percentage
Physicians	108,800	24.7
Dentists	28,900	6.6
Pharmacists	15,300	3.5
Biochemists	11,100	2.5
Psychologists	43,000	9.8
Kinesiologists	9,800	2.2
Dietitians/Nutritionists	5,300	1.2
Nurses	29,000	6.6
Auxiliary nurses and staff without formal training	57,000	13.0
Sanitary engineers[a]	1,000	0.2
Social workers[a]	3,300	0.7
Veterinarians	13,000	3.0
Technicians (excluding professionals)	11,100	2.5
Administrative and general services personnel	103,500	23.5
Total	440,100	100.0

[a]Data for 1992.

The distribution of the health workforce in the country is far from even. Although in 1998 there was one doctor per 332 population at the national level, when groups of provinces are analyzed by income levels, this ratio varies from 1 doctor per 132 population to 1 doctor per 500 population. The disparities are even larger with other health resources. In the case of dentists, for example, the national average was 1 dentist per 1,267 population, but in the city of Buenos Aires the ratio was 1 dentist per 367 population and in Tierra del Fuego it was 1 per 4,279 (almost 12 times lower).

Health Research and Technology

Health research is an area that has always enjoyed great prestige within the national research community. Under the country's rather unusual research financing system, doctoral positions and fellowships are awarded by the Secretariat for Science and Technology through the National Council for Scientific and Technical Research (CONICET) to scientific and technological investigators at different levels, who go on to work in a wide variety

of institutions, most of them public and academic. The national universities and the Ministry of Health, through the Undersecretariat for Research and Technology, also contribute to this financing through research grants.

With technical cooperation from PAHO/WHO, Argentina has begun establishing and developing the Argentine branch of the regional Virtual Health Library, which will include components in the areas of pediatrics, dentistry, environmental health, and health and equity. This process is gradually involving all the stakeholders in the information cycle: authors, editors, librarians, information specialists, health professionals, and end users, thereby fostering the development of an integrated system of information in the health and environmental sciences.

Health Sector Expenditure and Financing

In 1997, 55% of health spending was public and 45% private. Of the public expenditure, 60% was financed through the social security system and 40% was financed directly out of tax revenues. The country's total health expenditure in 1999 was estimated at US$ 23,900 million, which is equivalent to per capita expenditure of about US $750.

In 1999, the proportion of public spending on health paid out directly for prevention was 2.9% of the total national health expenditure, while 4.2% was expended on preventive services as part of general social assistance spending. No data exist on the distribution of expenditure in the public and private sectors. In 1999, the central government's share of total health spending was 3.3%, while the provincial and municipal shares were 16.6% and 3.8%, respectively. The *obra social* for retirees (PAMI) accounted for 8.2% of the total, the national *obras sociales* for 16.3%, and the provincial *obras sociales* for 8.3%. Individuals and households accounted for 44.1%, through both copayments and private insurance plans (prepaid) and direct out-of-pocket expenditures. Of total out-of-pocket spending, 47% was for drugs, 39% for health insurance, and 14% for other health-related items. In 1999, businesses contributed 10.7% (US$ 2,200 million) of the total amount spent on health. Of that sum, national *obras sociales* accounted for 90.7% and PAMI for 9.3%.

External Technical Cooperation and Financing

The largest financial contributions come from loans for projects provided by the IDB and the World Bank. In 1997, a second loan for US$ 71 million enabled Argentina to carry out the second phase of the Maternal and Child Nutrition Program (PROMIN II), which is still under way. The activities of these projects have overlapped with those being carried out by the national and provincial ministries in the area of maternal and child health, and there has been a lack of coordination between them. Since the beginning of 2000, a significant effort has been made to address this problem, integrating activities and unifying areas of work.

Two new projects were launched in 1996 with loans from the World Bank for US$ 101.4 million and US$ 375 million, respectively: the first concerns provincial health sector reform and the second, restructuring of the *obras sociales* and the Social Security Institute for Pensioners and Retirees. The Program for Prevention of AIDS and STDs (LUSIDA) was initiated in 1997 with a loan for US$ 15 million, also from the World Bank. In the early stages, LUSIDA and the HIV/AIDS control program of the Ministry of Health were pursuing parallel but separate lines of action, which made it difficult to apply an integrated approach. The areas of action have since been unified, thereby facilitating the development of an integrated program and enhancing the sustainability of the actions. LUSIDA has entered into two agreements, one with GTZ for the printing of publications to support the program and another with UNESCO for collaboration in the establishment of a telephone hotline.

In early 2000, the IDB granted Argentina a loan for US$ 100 million for its Primary Health Care Program, which seeks to improve the coverage, quality, and efficiency of health services by applying the primary health care approach under the family health framework with these services to be financed through demand subsidies.

Finally, in November 2000, Argentina signed an agreement with the World Bank for a loan in the amount of US$ 52.5 million, to be used to develop a program to strengthen the epidemiological surveillance system and support disease prevention and control. Its main areas of action are training human resources, hiring staff to work in the national and provincial epidemiology units, developing a computer system for epidemiological surveillance, strengthening the network of diagnostic laboratories, and carrying out a campaign to discourage tobacco use and promote healthy habits.

During the year 2000, the Unit for Coordination of Externally Financed Programs and Projects was created to link the various technical and financial cooperation programs and projects to one another and to the programs of the Ministry of Health and other government institutions.

FIGURE 1. Gross domestic product, annual growth (%), Argentina, 1991–1999.

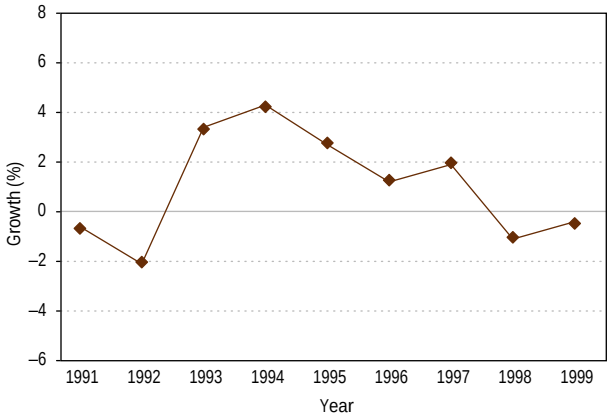


FIGURE 2. Population structure, by age and sex, Argentina, 1999.

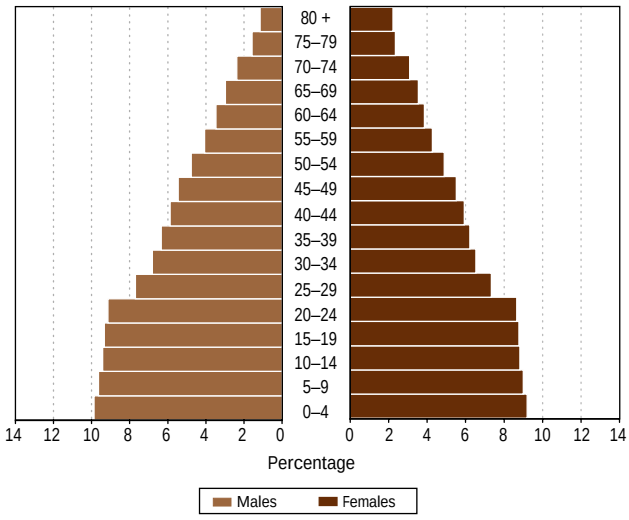


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Argentina, 1995–2000.

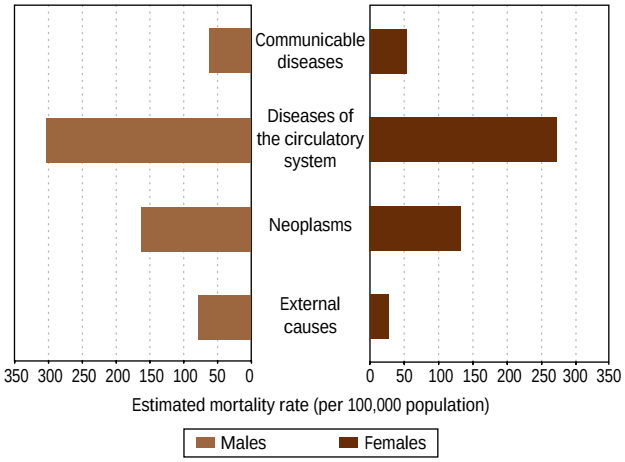


FIGURE 4. Distribution of infant mortality, Argentina, 1999.

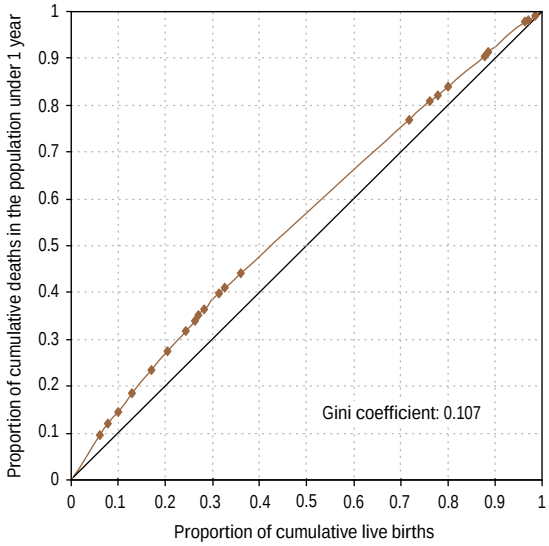


FIGURE 5. Distribution of maternal mortality, Argentina, 1999.

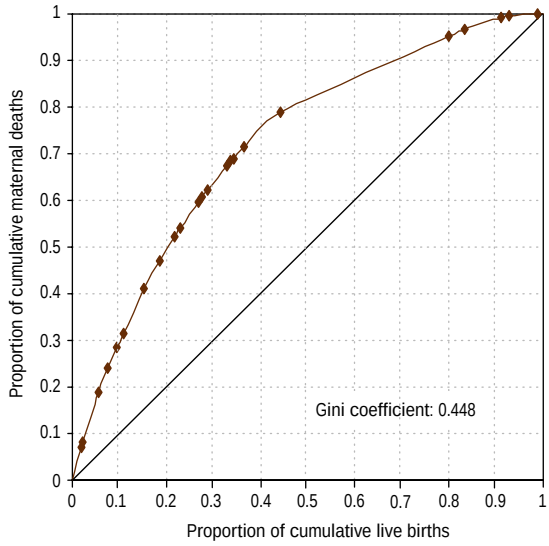


FIGURE 6. AIDS incidence, by sex, with male-female ratio, Argentina, 1994–2000.

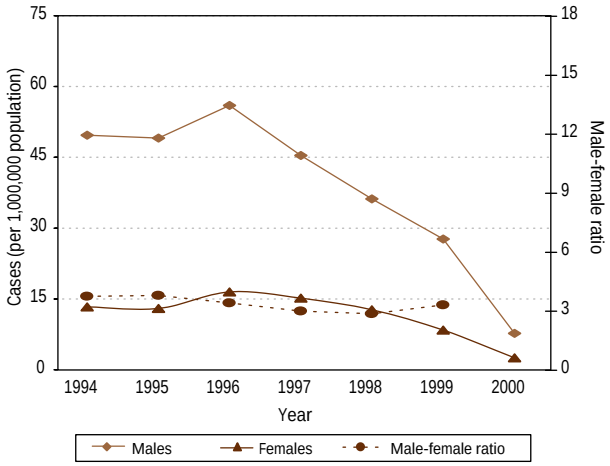
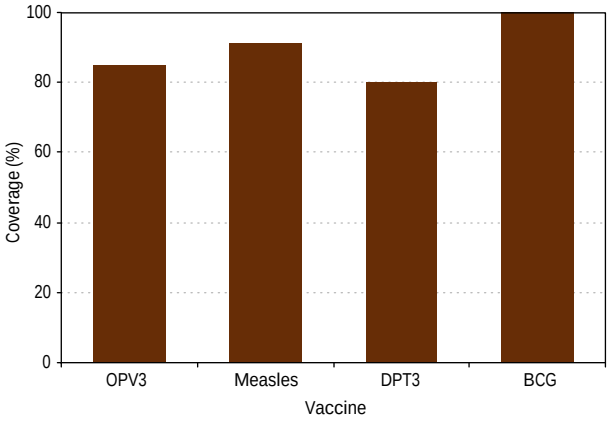


FIGURE 7. Vaccination coverage among the population under 1 year of age, by vaccine, Argentina, 2000.



ARUBA

OVERVIEW

Aruba is part of the West Indies and the smallest and westernmost island of three Dutch Leeward Islands—Aruba, Bonaire, and Curaçao. Aruba covers roughly 180 km^2; it is divided into eight districts, and its capital is Oranjestad. The island has a tropical climate cooled by trade winds; temperatures range between 75 and 85 ºF. Rainfall averages around 18 inches per year, most of it falling in January. Aruba lies outside the hurricane belt and at most experiences only minor effects of nearby tropical storms.

Dutch is the official language, used both in education and in the civil service; the native language, Papiamento, is used in Parliament and in the media; it only is spoken on these three Dutch islands. English and Spanish are compulsory in the last grades of primary school and are spoken by much of the population.

Aruba used to be part of the Netherlands Antilles, along with Bonaire, Curaçao, St. Maarten, Saba, and St. Eustatius. In 1986, it separated from this federation, to become a separate entity within the Kingdom of the Netherlands.

Aruba's Constitution is based on Western democratic principles. Legislative, executive, and judicial powers are vested in Parliament, which consists of 21 elected members. The cabinet consists of a maximum of nine ministers and is headed by the Prime Minister. Aruba is autonomous in its administration and policy making, but matters of defense, foreign affairs, and Supreme Court decisions are under the Kingdom of the Netherlands. Aruba continues to have strong economic, cultural, and political ties with Holland.

Between 1986 and 1990, the average growth of the real GDP in Aruba was 16.3% each year, while in the 1991–1998 period, the growth rate slowed to 3.8% annually. Purchasing power parity reached US$ 11,352 in 2000. Throughout the 1990s, the country experienced imbalances in the labor market, housing, utilities, health, education, and in other sectors (see Figure 1).

The rapid growth of the Aruban economy led to relatively high inflationary pressures in the early 1990s: the annual inflation rate was 3.2% in 1996, and the Government succeeded in lowering inflation to 2.3% in 1999.

The most active section in the economy is the service sector, and tourism by far plays the most important role and continues to gain in importance. Of all jobs held in 1997, approximately 17% were directly related to the hotel industry. Aruba's share in the Caribbean tourism market increased from 2.1% in 1986 to 4.3% in 1997. From 1986 to 1997, hotel rooms nearly trebled, increasing from 2,524 to 6,687, and the number of stay-over visitors increased from 181,012 to 649,893. Yearly average occupancy rates in hotels exceeded 70%. Tourists from the United States made up almost 62% of arrivals, followed by tourists from Venezuela (15.2%) and the Netherlands (4.7%).

While the employed population increased from 29,127 in 1991 to 41,501 in 1997, the total population grew more quickly. As a result, the unemployment rate also increased, rising from 6.1% in 1991 to 7.4% in 1997.

The Government of Aruba established a free zone in 1995 in order to suppport trade, light industry, and services, thereby fostering economic diversification. To further stimulate the financial sector, in 1996 the Government established a financial center to oversee offshore activities and trust companies, develop new financial products, and market Aruba as a high quality financial center.

The total population increased from 66,687 in 1991 to 95,201 in 1999, a 43% increase, most of which is attributed to immigration (see Figure 2). In 1997, the non-Aruban population represented 27% of the working age population, of which 49.4% were males and 50.6%, females. Population density increased steadily from 341 inhabitants/km^2 in 1985 to 529 in 1999. The capital, Oranjestad, was the most populated area, with approximately 22,850 inhabitants in 1999. Fertility rates during 1995–1999 decreased steadily from 68.2 per 1,000 women aged 15–44 years in 1995 to 52.7 in 1999. The crude birth rate also decreased, from 17.4 per 1,000 population in 1995 to 13.0 in 1999. In 2000, life expectancy at birth was 73.2 years for males and 81.2 for females. A full 21.3% of the population was younger than 15 years old and

15.4% was older than 60 years old, of which 4.7% were males and 10.7%, females (see Figure 2).

Mortality

Between 1995 and 1999, the crude mortality rate varied between 6.2 and 5.8 per 1,000 inhabitants. The three leading causes of death in 1994–1999 were diseases of the circulatory system; malignant neoplasms; and endocrine, nutritional, metabolic, and immunological disorders. In 1999, the last year for which figures on causes of death are available, of a total of 548 deaths, 37.0% were attributed to diseases of the circulatory system and 19.2% to malignant neoplasms. The detailed data for the causes of death for 1999 show some differences between the sexes. Heart and cerebrovascular diseases constituted the leading cause of death for both males and females. For males this was followed by malignant neoplasm of prostate; hypertensive disease; and malignant neoplasm of trachea, bronchus, and lung. For females this was followed by diabetes mellitus, diseases of the urinary system, and malignant neoplasm of digestive organs and of reproductive organs.

Communicable diseases accounted for only 8.0% of the total mortality. Of these cases, almost a third were due to acute respiratory infections (30.0%) and less than a fourth to HIV/AIDS (22.7%). The proportion of the data classified as "ill-defined conditions" declined from 25.4% in 1993 to 7.4% in 1999.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Between 1996 and 1999, there were 47 deaths in children under 1 year old, including 30 perinatal deaths. In 1998, the infant mortality rate was 3.8 per 1,000 live births and in 1999, 6.8. In 1996, 78% of the defined causes of death for children under 1 year old were conditions originating in the perinatal period; of them, 29% were due to hypoxia, birth asphyxia, and other respiratory conditions. In 1997, 69% of the defined causes of death in this group were due to conditions originating in the perinatal period and in 1998, 50% were due to this cause; 50% of them were due to obstetric complications affecting fetus or newborn and birth trauma. In 1999, 73% of the defined causes of death were related to conditions originating in the perinatal period, with 25% of them due to maternal conditions affecting fetus or newborn.

In 1996 there were four deaths in the age group 1–4 years, two males and two females. Maternal HIV infection accounted for one of the female deaths. In 1997 there were two male deaths in this age group. In 1998 there were four male deaths recorded, one due to parasitic disease, one to disease of pulmonary circulation and other forms of heart disease, one to accidental drowning and submersion, and one to accidents, including late effects.

Schoolchildren (5–9 years)

There was only one death (a male) in this age group in 1996 and five (all males) in 1997; the causes of death for the latter were accidental drowning and submersion, malignant neoplasm of colon, acute respiratory infection, congenital anomalies, and one death due to unknown causes that was classified as symptoms, signs, and ill-defined causes. In 1998 there were four deaths: the three male deaths were due to other malignant neoplasm, diseases of pulmonary circulation and other forms of heart disease, and accidental drowning and submersion; the female death was due to malignant neoplasm of digestive organs and peritoneum, other than stomach and colon. In 1999, there were three female deaths due to septicemia, a motor vehicle traffic accident, and an accident caused by fire and flames.

Adolescents (10–14 and 15–19 years)

Two adolescent deaths were reported in 1996–1997, one due to cerebrovascular disease and the other to meningitis infection. In 1998, six male deaths were reported, one each due to acute respiratory infection; accidental poisoning; and bronchitis, chronic and unspecified and emphysema and asthma and three due to other transport accidents. In 1999, there were six male deaths due to malignant neoplasm of lymphatic and hematopoietic tissue (1), motor vehicle traffic accidents (3), and suicide and self-inflicted injury (2), and one female death due to certain vector-borne diseases.

According to a 1998 survey, 20% of children 6–14 years old who attended school do not eat breakfast before going to school; more than three-quarters (76%) of the children, however, consumed a warm meal every day or almost every day. The survey also found that children attending primary school had a higher frequency of eating fruits (46%) than vegetables (39%). Consumption of soft drinks seems to be the preferred habit for 45% of the children, at a frequency of at least one bottle per day. Approximately 70% of the children bring food and a beverage to school.

In 1997, a study on drug use among young men aged 17 to 25 years old found that the average age for marijuana use was just under 21 years old and the average age for cocaine and crack use was slightly older than 23 years. Of great concern is the survey finding that roughly one-third of the persons (30%) in this age group used drugs.

In the 1995/1996 school year, the Foundation against Drug Abuse carried out a survey among 635 high school students (the response rate was 98%) to determine their beliefs concerning the effect of drugs on health; establish whether legal and/or illegal drug use had increased or decreased; examine the students' family composition; and establish differences among districts and among sexes in level of use, availability of drugs, and occasions in

which drugs are used. Of the 98% who responded, 25% admitted legally or illegally using drugs. Of these, 19.3% admitted to drinking beer, 16.5% drinking wine, and 12.2% drinking rum or whisky; 5.6% used marijuana, 0.4% cocaine, and 9.1% cigarettes. Most of the time, drugs were acquired on the street, at discotheques, and at friends' houses.

Adults (20–64 years)

In 1998, there were 117 male deaths and 70 female deaths in the age group 20–64 years old. More than 29% of the male deaths in this period were due to diseases of the circulatory system, of which ischemic heart disease and pulmonary circulation and other forms of heart disease predominated. Among females, 31% of the deaths were due to neoplasms, with most attributed to breast cancer. In 1999, 120 male deaths and 72 female deaths were recorded; 28% of male deaths were due to diseases of the circulatory system; most of these deaths were caused by ischemic heart disease. Among women, 28% of the deaths were due to neoplasms, of which carcinoma of the uterine cervix; the uterus, body, and unspecified parts; and breast cancer were the most common.

A 1997 retrospective study showed that, on the average, first-time drug users began using drugs at age 17 years, with the youngest respondent having started at age 7; 13% of interviewees began at the age of 12. Most respondents (84%) started drug use with marijuana, followed by cocaine (15%) and crack cocaine (1%). According to 41% of interviewees, they first began to use drugs on the street, followed by 27% who began experimenting with drugs with friends. Most respondents (47%) said they began using drugs out of curiosity, followed by as a result of peer pressure (15%) and, more worrisome, through the influence of a family member (7%). Among users, 25% had finished elementary school, 32% had finished basic job training education or completed a few years of high school, and 43% had finished high school or a higher education. More than 40% of them were unemployed, and 15% had part time jobs. Some 10% of drug users used pills such as MDMA (also known as Ecstasy or XTC), other amphetamines, and hashish.

Family Health

According to the 1991 census, 6,186 persons aged 55 and over were heads of family, representing 32% of the single family population. Among all heads of family 55 years and older, 22% were aged 75 years or older.

There were no certified maternal deaths between 1998 and 2000. The fertility rate was 67 live births per 1,000 women in 1996, 65 in 1997, 57 in 1998, and 53 in 1999. Throughout 1996–1999, women aged 25–29 years and 30–34 years had consistently higher fertility rates than other age groups, except in 1999, when the age group 25–29 far outdistanced any other age group, with a fertility rate of 450 live births per 1,000 women.

Aruba's Family Planning Foundation promotes responsible parenthood in the context of the island's cultural and religious traditions; the Foundation distributes contraceptives through its clinic. In 1998, the prevalence in utilization of contraceptive methods was 47.8% for oral contraceptives, 35.8% for condoms, 8.0% for injectibles, 5% for intrauterine devices, 2.5% for sterilization, and 1.1% for other methods. After a US$ 15.00 membership fee was imposed, Foundation clients declined by nearly half, dropping from 6,750 in 1995 to 3,684 in 1998. The fee entitles members to a supply of contraceptives, four check-ups, and a cervical test each year.

Aruban women can choose whether a general physician, a midwife, or a gynecologist will provide them with prenatal care. Before the introduction of general health insurance (AZV), not all women had this choice. Women who had private health insurance, public sector employees, and women working in the private sector did, but women who carried cards for low income or poor people could only opt for a midwife.

Abortion is punishable by law in Aruba. Data from the Horacio Oduber Hospital indicate that there were 117 and 148 abortions in 1998 and 1999, respectively, although these numbers may be unreliable, since some abortions are registered as curettages.

Workers' Health

A public sector agency conducts pre-employment health controls and monitors sick workers. It also handles the prevention and control of occupational risks, the educational aspects of the worker, the registry of accidents, and occupational diseases. In 1999, there were 7,072 workers registered with the agency, which represented a 6.5% increase from the previous year. The average yearly rate of absenteeism in the public sector was 4.6%; in both 1998 and 1999, the average length of absenteeism was 4.5 days; the most frequent causes contributing to labor absenteeism are the flu, digestive disorders, and headaches.

The Disabled

According to the 1991 census, there were 3,700 disabled persons in Aruba (5.5% prevalence). The most frequent disability is limb impairment (28.7% of disabilities), followed by motor disabilities (18.3%) and visual disabilities (13.2%). Men have a slightly higher prevalence of disability (5.7%) than women (5.4%).

By Type of Health Problem

Vector-borne Diseases

In 1998, the first case of dengue was reported in an outbreak that affected the country for five months. In 1999, a total of 202 suspected cases were reported; of these, 180 were laboratory confirmed. No cases of dengue hemorrhagic fever occurred in 1999.

In 2000, there were 198 suspected dengue cases, 128 of which were laboratory confirmed. There were two cases of dengue hemorrhagic fever, one of which was fatal. All serotypes, except type 4, have been seen. There were no cases of malaria, yellow fever, Chagas' disease, schistosomiasis, or plague reported.

Diseases Preventable by Immunization

There were no cases of poliomyelitis, acute flaccid paralysis, diphtheria, pertussis, or tetanus in the reporting period. In 1998, there were two registered cases of measles; none in 1999 or 2000. No cases of mumps were registered between 1998 to 2000.

Between 1998 and 2000, there were 50 cases of hepatitis A: 9 in 1998, 12 in 1999, and 29 in 2000. In the same period, there were 31 cases of hepatitis B: 11 in 1998, 11 in 1999, and 9 in 2000. No cases of hepatitis C were reported in 1998; there were two and three cases in 1999 and 2000, respectively.

Consolidated data for vaccine coverage is unavailable, but DPT coverage has been estimated at 80% for children 1 and one-half years old and at 100% for children aged 6 years.

Intestinal Infectious Diseases

There were no reported cases of cholera. In 1998, there were 17 cases of shigellosis, 28 cases in 1999, and 8 in 2000. There were 50 cases of salmonellosis in 1998, 30 in 1999, and 26 in 2000.

Chronic Communicable Diseases

In 1998–2000, the highest incidence of tuberculosis was reported in 2000, with 11 cases. In 1998 and 1999 there were 5 and 6 cases, respectively. There were no reported cases of leprosy in the period 1998–2000.

Acute Respiratory Infections

According to hospital discharges, acute respiratory infections were 4.1 per 1,000 population in 1998 and 7.4 in 1999. The figure is three times higher in the age group 1–4 years old and in the group aged 65 years and older.

Zoonoses

There were no reported cases of rabies in the review period.

HIV/AIDS

Between 1997 and 2000, there were 115 registered cases of AIDS.

Sexually Transmitted Infections

There were 56 cases of syphilis in 1998 and 87 each in 1999 and 2000.

Nutritional and Metabolic Diseases

There is no data on protein-energy malnutrition in children under 5, nor on breast-feeding.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Government's goal is to attain high quality and affordable health care that is accessible to all. To that end, Aruba's Department of Public Health has identified the health sector's most pressing problems—the rising cost of health care, insufficient availability of medical care, and flawed quality control—and has set specific targets to achieve the goal.

Health Sector Reform Strategies and Programs

The most far-reaching health care reforms in Aruba involve the reorganization of the Department of Public Health and the health services under its jurisdiction and the introduction of a general health insurance plan.

Historically, the Department of Public Health has provided direct medical care services through the operation of a medical center, a psychiatric service, ambulance services, the public health laboratory, and an occupational health center, and by retaining medical doctors on its payroll. Reforms plan to gradually privatize all of these services, and most medical doctors will be removed from the payroll. In addition, there are plans to reorganize and expand the Medical Center, expand the occupational health department to include services to private companies, improve health care inspection services, enhance mental health care services, automate the public health laboratory and construct a new building, and improve overall hospital care. Some existing services will merge as a way to gain in efficiency.

The planned introduction of a general health insurance plan intends to attain equal and universal access to health care, regardless of income, age, and health risks; achieve and maintain high quality, cost-effective care; bring about more uniformity in the financial administration of medical costs; and develop the means to control health care expenditures.

The new general health insurance plan would entitle the insured to a basic package of services, including primary medical care provided by general physicians; secondary care provided by medical specialists, obstetricians, and physical therapists; and coverage for prescription drugs, hospitalization, home nursing, dental care, and ambulance transportation. These services are contracted out. According to the general insurance plan, an insured person would not be reimbursed for medical expenses, but instead would receive direct health services. The general health

insurance agency contracts with individual health professionals or health care institutions to provide service to the insured.

The Health System

Institutional Organization

The Department of Public Health falls under the jurisdiction of the Ministry of Public Health, Social Affairs, Culture and Sport. The Department is charged with promoting overall public health; it also operates the Dr. Rudy Engelbrecht Medical Center, the psychiatric ward, and the public laboratory. In addition, the Department is responsible for ensuring compliance with public health laws.

The Public Health Department embraces about a dozen services with which it carries out prevention, inspection, and medical activities. Services include youth health care, youth dental care, occupational health, yellow fever and dengue vector control, food inspection, veterinary public health, health promotion and education, epidemiology and research, social psychiatry, the Dr. Rudy Engelbrecht Medical Center, ambulance service, and the public laboratory.

Aruba's health care system is structured into three levels of care: primary care, specialist care, and hospital care. A person must be referred from one level of care to a higher one.

Private Participation in the Health System

In the last few years, specialists have increasingly opened private practices, most of them clustered near the hospital. Private clinical laboratories also have begun to emerge on the island; quality assurance programs need to be established for them.

Health Insurance

With the current health insurance scheme, every citizen of Aruba has compulsory medical insurance to cover medical costs, which means that healthy people help pay for those incurring high medical expenses. Aruba has an old-age pension program designed to guarantee a minimum income to senior citizens; eligibility for receiving full social security benefits begins at age 60.

Organization of Regulatory Actions

Aruba's health care legislation falls into two categories—general laws, also known as organizational regulations, and specific, or individual laws. The general regulations that set the institutional organization of the health system are based on the Public Health Act. According to this law, the Department of Public Health is entrusted with the organization that looks after health care and the supervision and promotion of health. Specific regulations deal with the functioning of such issues as health professions, mental health, supervision of drugs and narcotics, hygiene, and diseases.

Certification and Professional Health Practice

The Director of the Department of Public Health is responsible for inspecting medical proceedings, thus ensuring the quality of medical professional services in Aruba. The office of Medical Inspection is an autonomous institution headed by a pharmacist that is entrusted with supervising the production and delivery of medicines; it also is charged with supervising the practice of pharmacists and assistant pharmacists.

Organization of Public Health Care Services

Health Promotion

The Department of Public Health's health promotion section provides information on health issues to the general public. It publishes information and educational materials based on inputs from other Department services and committees, and from governmental and nongovernmental organizations, and oversees departmental promotional campaigns and activities regarding such health issues as nutrition, AIDS, dengue prevention, youth health, and dental care. Other Department services also give lectures to the general public, including schools.

The Youth Dental Service conducts dental hygiene and fluoridation activities at primary schools. Professionals in this department, along with those from the Department of Education, have developed educational materials to be used at the preparatory and primary schools. Currently, 14 primary schools and 3 preparatory schools participate in the fluoride-rinsing program.

The Department's Juvenile Health Service works on children and youth issues. It is staffed by 5 physicians, 5 school nurses, 1 psychologist, 1 dietitian, and 1 clerical staff member.

In 2000, the Department of Public Health launched a multidisciplinary effort dealing with various nutrition and healthy lifestyle related areas, such as education, physical activity, and agriculture. Representatives from a variety of sectors will come together to develop a 10-year plan in this regard.

Disease Prevention and Control Programs

Within the Department of Public Health, the AIDS task force works on preventing and controlling HIV infection, reducing mortality and morbidity from HIV infection, and diminishing the effects and consequences of HIV and AIDS on the community. The task force organizes public awareness campaigns and conducts seminars and workshops on relevant topics; it also carries out research on the population's knowledge, attitudes, and practice regarding HIV and AIDS. In 1999, the UNAIDS group, integrating both governmental and nongovernmental organizations, was established.

A committee to combat dengue was established in 1999, in response to an epidemic of dengue fever. The committee provides information to the general public on how to prevent the spread of breeding sites for the mosquito vector, *Aedes aegypti;* conducts an

ongoing evaluation of the dengue situation based on epidemiological and clinical information from Aruba and the Region; and takes necessary action. Information on the clinical diagnosis and treatment of dengue is passed on to the country's medical professionals. The Department of Health's Division of Vector Control enforces measures regarding the presence of *Aedes aegypti* in households, including imposing a fine on owners after the third consecutive positive find. The division also monitors the presence of the vector in three sites on the island and treats water deposits through biological control. In 1999, the Department of Public Health created a team to deal with dengue outbreaks; team members meet on a regular basis to evaluate the situation and to take preventive measures.

The Youth Health Service of the Department of Public Health vaccinates infants and primary schoolchildren. Children are vaccinated against diphtheria, pertussis, tetanus, poliomyelitis, mumps, measles, rubella, and *Haemophilus influenzae* type b. Vaccination coverage is approximately 80%, but awareness campaigns have been launched in an effort to increase coverage.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

In 1994, as part of a UNDP technical cooperation program to help implement the country's 1993–1997 national development plan, the Department of Public Health implemented a project to develop and manage an epidemiology section within the Department staffed with trained personnel capable of implementing surveillance activities, investigating outbreaks, collecting necessary data, setting health care policies, conducting research, and carrying out health promotion actions. As a result, the Department of Public Health now has a well-equipped and staffed epidemiology unit, databases and data sources have been identified, and the unit is now able to provide data to other Department sections and to other governmental departments and nongovernmental institutions. Epidemiological data have been used in outlining strategic plans for several health issues such as AIDS, dengue, and nutrition. In addition, the unit has conducted at least one survey each year for the last two years, including surveys on eating habits and physical activity among primary schoolchildren; on knowledge, attitude, beliefs, and practice on HIV/AIDS; and on nutrition and exercise among adolescents; the unit also provides methodological and data-analysis assistance to other departments and sections in conducting surveys.

The epidemiology unit issues regular bulletins for physicians such as *Epi-Alert,* a bulletin on epidemics or outbreaks in Aruba or in the Region, and *Info-Epi*, an epidemiological information bulletin. The unit provided courses for physicians and at the end of 2000, it began pilot testing a physician-based sentinel surveillance project in which six physicians participate. The project is intended to estimate the incidence of rash, fever, diarrhea, and cough in the general population, as well as to follow some health conditions for one to two years, in order to determine the impact of interventions such as vaccination campaigns and other prevention efforts, and to study clinical approaches to health conditions in general physician practice. Participating physicians fill out surveillance forms each week and send them to the epidemiology unit. This surveillance functions in parallel to the regular surveillance system for notifiable diseases.

Law mandates that health care providers report diagnosed or suspected cases of infectious diseases listed as notifiable diseases to the Department of Public Health's Contagious Disease Service; the service's public health nurses follow up on patients. The Service also undertakes control measures to prevent possible outbreaks of these diseases.

The Public Health Laboratory provides a range of public health services, including clinical laboratory diagnoses at the request of physicians, specialists, and the hospital. The laboratory is equipped with state-of-the-art instruments and has a well-trained staff; it is enrolled in the external quality control survey programs of five different international authorities. The Public Health Laboratory tests for HIV infection. All positive cases are reported to the Department of Communicable Diseases and receive counseling services. In addition to counseling and clinical care for HIV-infected persons, control measures include education and epidemiological surveillance especially of prostitutes, patients with sexually transmitted diseases, and all blood donors.

Potable Water, Excreta Disposal, and Sewerage Services

Aruba has no natural source of fresh drinking water and very little rainfall. The island's water and energy company produces drinking water by desalinating marine water; water quality is extremely high. Tap water is distilled water, filtered through beds of coral stones; tap water is safe for consumption without further treatment such as boiling. Aruba's water and energy company has procedures in place to ensure the safety and quality of the water supply and the distribution system. The company tests water for chemicals on a daily basis at its laboratory, and testing also is done on a monthly basis at 21 strategic sites throughout the island. The public laboratory also does bacteriological testing twice a month at these same strategic sites, and the bacterial count is consistently below detectable levels. The salt content in Aruba's drinking water is substantially below WHO standards for maximum dissolved salts per million.

The water and energy company's water distribution system covers all the island. It serves more than 29,000 registered customers and provides drinking water to more than 7,000 hotel rooms, each one consuming 1 metric ton of water per day on the average. An average 200,000 tons of drinking water are supplied annually for Aruba's cruise ship tourism.

Aruba has an adequate sewerage system: sewage is put through a water purification system and then drained into one of the largest inland waterways. Every house and building in the capital, Oranjestad, is connected to the sewerage system, representing about 30% of all houses and buildings on the island. Of

the remainder, about 62% of houses rely on cesspools or septic tanks and some 8% drain their sewage directly into the ocean. An additional sewerage system has been planned to serve the southern part of Aruba; the target year for creating it is 2003.

Solid Waste Services

Throughout the 1990s, there was uncontrolled dumping in a 12.5 hectare site in the south of the island. Waste dumped at the site is not separated for reuse or recycling, and includes household, office, and industry waste, as well as refuse from hotels, restaurants, construction and demolition activity (including asbestos), scrap iron, and old automobiles. Waste at the dumpsite is incinerated continually, and the prevailing winds normally take much of the smoke to sea. Other solid waste problems include illegal dumping, littering, inefficient waste collection, and dumping of reusable material.

Hospital waste also is transported and disposed of at the municipal dump. Infectious waste is burned in an incinerator, but it is poorly operated and maintained.

Food Safety

A division within the Department of Public Health is responsible for overseeing animal treatment and ensuring that meat products are safe for human consumption. The division monitors agricultural and domestic animal laws, controls meat products for human consumption, supervises the management of butcher shops, oversees the veterinary diagnostic laboratory, and advises regarding the granting of licenses, registry of protected animals, preventive attention of animals, research, and field and laboratory analyses.

Aruba's reliance on tourism—some 750,000 tourists come to the island each year—makes food safety particularly important for the territory. Almost all food is imported, at a value of nearly US$ 106 million annually. To date, there have been no recorded outbreaks of food transmissible diseases, because the statistical register is not designed to detect them. Each year, the Public Health Laboratory tests all persons working in food preparation or sale for shigellosis, salmonella, and tuberculosis. Those that test negative are given a health certificate, and no one without such a certificate is allowed to handle food. The Division on Contagious Diseases makes sure that the people who handle the food take required tests. The Division on Sanitary and Food Inspection regularly visits the establishments that serve food. Samples are taken and sent to the laboratory to determine the presence of any contamination.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

Aruba's single hospital, the Dr. Horacio Oduber Hospital, is a private, nonprofit hospital administered by a foundation and located to the island's northwest. It provides the bulk of hospital care on the island, and offers internal medicine, surgery, cardiology, urology, gynecology and obstetrics, pediatrics, otorhinolaryngology, ophthalmology, neurology, neurosurgery, orthopedics, dermatology, plastic surgery, and psychiatric services. The hospital has 264 inpatient-care beds and 41 beds in its psychiatric ward. In 2000, there were 11,718 admissions, for an occupancy rate of 92.0%. The average length of stay was 8.7 days, with internal medicine and surgery having the longest (9.1 days) and obstetrics and the delivery room having the shortest (3.1 and 1.2 days, respectively). The hospital has a 24-hour emergency room, which in 1999 attended 30,128 patients, 3,295 of them tourists (11.0%). The hospital also provides outpatient care, as well as hemodialysis, physiotherapy, wound care, and radiology services. In addition to X-ray equipment and a CT-scanner, the Dr. Horacio Oduber Hospital plans to buy MRI equipment and to develop a state-of-the-art nuclear medical technology section for oncology medicine, rather than referring patients abroad, as is done now.

Deliveries are normally carried out in Dr. Horacio Oduber Hospital, which has two modern delivery rooms, but women also can opt to give birth at home. Premature births are relatively uncommon; if a premature birth is suspected, the mother is transferred to Curaçao; premature babies also are transferred to Curaçao as soon as possible, if necessary. There is no policy promoting breast-feeding in Aruba; many mothers breast-feed their babies, although baby-bottle food is provided as a supplement.

The Dr. Rudy Engelbrecht Medical Center provides medical care—mainly primary care—to the population living in Aruba's southeast and to inmates at the Correctional Institute. The medical center has a 24-hour emergency room that is under the supervision of a general practitioner. The Dr. Rudy Engelbrecht Medical Center is currently being managed by the Department of Public Health, but it will eventually be privatized. Plans are in place to expand and improve the facility.

When a patient needs medical treatment or diagnostic services that are unavailable on the island, arrangements can be made to refer the person abroad. A specialist wishing to refer a patient abroad must fill out an application and submit it to a government appointed committee specifically convened to review such applications based on established criteria; in emergencies, decisions can be reached within 24 hours. In 1999, 741 requests were approved for referral abroad. Most patients were referred to Venezuela (41.8%), the United States of America (23.6%), Curaçao in the Netherlands Antilles (20.0%), and the Netherlands (14.4%). Referrals abroad were mostly for diagnostic procedures (36.6%), heart disease treatment (17.5%), and neoplasms (17.1%); 89.0% of diagnostic procedures were MRIs done in Venezuela.

Specialized Services

The Department of Public Health is attempting to increase home nursing care, which is particularly critical for Aruba's many diabetics and the elderly.

The Aruba Heart Institute is a nonprofit organization dedicated to the advancement of the understanding and treatment of cardiovascular disease through innovative research, education, and patient care programs. The Institute is located next to the Dr. Horacio Oduber Hospital and patients receiving treatment at the Institute also can be hospitalized in the Dr. Horacio Oduber Hospital. The Aruba Heart Institute works closely with three institutions in Texas (U.S.A.)—the Texas Heart Institute, St. Luke's Episcopal Hospital, and the Texas Medical Center—on research and training designed to improve patient care. The Institute includes a state-of-the-art cardiac catheterization laboratory and a cardiology day-care ward. By 2000, more than 300 cardiac diagnostic procedures will have been performed.

Aruba also has a private hemodialysis center, the Posada Clinic, which provides services to locals and tourists.

NGOs also provide many critical health care services in Aruba. The White Yellow Cross, for example, specializes in providing home nursing care. Its clients include new mothers and their infants, the elderly, diabetics, terminal patients, and other persons needing home care. White Yellow Cross also provides courses for future mothers and fathers, teaching them such things as how to feed their baby and giving them information on the growth and development of the fetus, hygiene, lactation, delivery, and postnatal care, safety at home, child care, and vaccination.

The White Yellow Cross also provides home care and post-hospital care for the elderly; as of May 1994, 432 elderly people had received care. About half of the elderly receive nursing care and the other half receive assistance with daily living activities such as bathing. The organization also provides assistance with check-ups, contact with the family, and nutritional and information services; it can also refer the elderly to other agencies and professionals. In addition, there are two day-care centers, providing mainly recreational programs in the mornings primarily to vital and mobile older adults. There also is an organization that provides recreation for elderly persons who are physically impaired; it also operates only in the mornings. Stichting Algemene Bejaardenzorg Aruba (SABA) provides attention to adults aged 60 years and older through three nursing homes with a total capacity of 236 beds, covering around 4% of this population.

Psychiatric care in Aruba is under development. For now, the general hospital operates a 40-bed psychiatric ward, in which chronic patients occupy half the beds. The outpatient facility accommodates 15 patients, and 10 of its beds are reserved for crises. About 40 Aruban patients are hospitalized in Curaçao's psychiatric hospital. Outpatient services for chronic psychiatric patients are provided through the social psychiatric service currently under the jurisdiction of the Public Health Department; these services will be eventually privatized. Patients are given drugs and therapy and also receive support in their communities. A new nonprofit organization plans to offer halfway houses for chronic psychiatric patients. The Government has set up a foundation whose goal is to consolidate Aruba's mental health organizations. In addition, there are plans to expand the present psychiatric ward in the general hospital, and transform it into an independent psychiatric hospital.

The Government has appointed a National Drugs Coordinator as a way to centralize efforts in this regard. The current approach involves admitting drug addicts to the general hospital's psychiatric ward and detoxifying them. Nongovernmental organizations also provide rehabilitation services for drug addicts and alcoholics; some also work on prevention, providing information and education on drugs and alcoholism to the community, especially to youth. Aruba also has chapters of Alcoholics Anonymous, Al-anon (for family and friends of alcoholics), and Narcotics Anonymous.

Four institutions offer drug rehabilitation programs, all of them dealing with persons between 22 and 59 years old. Centro Dakota and SAMBA offer inpatient rehabilitation to 30 and 15 patients, respectively; SAMBA also sees clients as outpatients. The other two institutions only offer group therapy sessions and temporary rehabilitation. Outpatient clinics will only admit clients who have successfully completed the rehabilitation programs in either of the inpatient institutions.

In addition to the child care services provided by the Department of Public Health, several NGOs give shelter to abused or homeless children and promote recreational activities and job opportunities for youth. Nongovernmental organizations serve the interests of the mentally handicapped, the deaf, the blind, and the physically disabled.

The Government subsidizes the personnel costs of the foundations that provide community welfare services; these costs are the highest in NGO budgets.

Aruba has sat as an observer at the Caribbean Community and Common Market (CARICOM) since 1992, which means that it is entitled to participate in the working groups prior to CARICOM's Ministerial Meeting. Aruba has participated in discussions on education and labor. In 1996, Aruba became a member of the Caribbean Epidemiology Centre (CAREC).

Aruba also has been a member of Parlatino (Parlamento Latino Americano) since 1986, where two members of Parliament represent the island of Aruba in the permanent committee on health issues. In 1999 a UNAIDS-theme group, chaired by UNDP's representative in Trinidad, was established for Aruba. The group will support the territory's efforts to effectively and comprehensively combat HIV/AIDS.

Human Resources

There are 38 general practitioners distributed over the island, usually practicing alone, although they sometimes team up. Aruba also has a wide range of specialists, including surgeons, gynecologists, internists, pediatricians, a neurosurgeon, neurologists, psychiatrists, ophthalmologists, orthopedic surgeons, radiologists, cardiologists, plastic surgeons, urologists, pathologists, otorhinolaryngologists, and a traumatologist. In addition, there

is a complement of other health care providers such as occupational health physicians, dentists and orthodontists, midwives, and emergency physicians.

Aruba's health care system also taps the services of physicians from abroad. For example, agreements have been made with an oncologist, a dental surgeon, and a cardiologist from Curaçao, whereby they regularly visit the island on set days each week or month to see patients, using Aruba's consultation rooms, secretary services, and equipment. The island does not have enough nurses. In the last few years, nurses have been recruited from abroad, especially from the Philippines, where nursing education is similar to Aruba's. The number of nurses will continue to be insufficient, however, given plans to expand the Dr. Rudy Engelbrecht Medical Center and home nursing care.

Most physicians obtain their degrees at accredited institutions in the Netherlands, followed by medical schools in the United States, Costa Rica, Colombia, and Venezuela. Aruba's educational system offers a lower and intermediate nursing degree that graduates auxiliary nurses. Most who want to obtain a graduate nursing degree go to Curaçao or to the Netherlands. In 2000, the Dr. Horacio Oduber Hospital launched a postgraduate program in nursing in close cooperation with the University Hospital of Rotterdam in Holland, as a way to update the nursing staff's knowledge and understanding of the latest developments in medical treatment and technology and offer nurses expanded career possibilities. Through an agreement with the University of Rotterdam in Holland, the study program in Aruba will mirror the curriculum, exams, and degree level of the program in Holland. The Medical Inspection registers all certified health care professionals.

Health Sector Expenditure and Financing

Since 1990, health care has taken an increasing share of the Government's budget. In 1998, the proportion of Government expenditures allocated to health was about 5.3% of the total expenditures. Between 1990 and 1998, government expenditures in health grew from US$ 47 million to US$ 81 million, with an average annual increase of 10%. Population growth and aging, as well as an enormous increase in the use of medical facilities, are the main reasons for the increase in health care expenses.

External Technical Cooperation and Financing

Cooperation funds from the Kingdom of the Netherlands decreased from US$ 9 million in 1998 to approximately US$ 1 million in 1999. In 1997, a committee of the Government of the Netherlands issued a report recommending that the Dutch cooperation program be terminated in 2010 in order to make Aruba more autonomous financially. Until that year, US$ 72 million will be committed for Government projects and US$ 88 million for other programs and expenses. Up to 1998, Dutch contributions represented approximately 44% of total public investments.

In 1999–2000, the Department of Public Health's Disease Control Section received US$ 10,000 from the European Union and US$ 10,000 from the Dutch Development Cooperation. The funds were channeled through UNAIDS for use in Aruba's UNAIDS Theme Group campaigns. Aruba's Kiwanis Key Club also donated US$ 5,700 to the theme group.

FIGURE 1. Gross domestic product, annual growth (%), Aruba, 1996–2000.

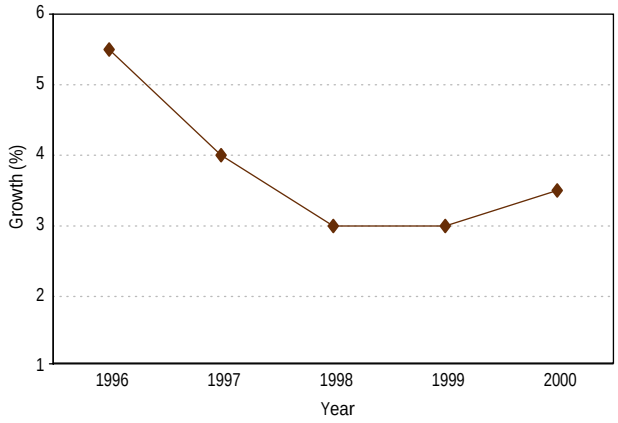
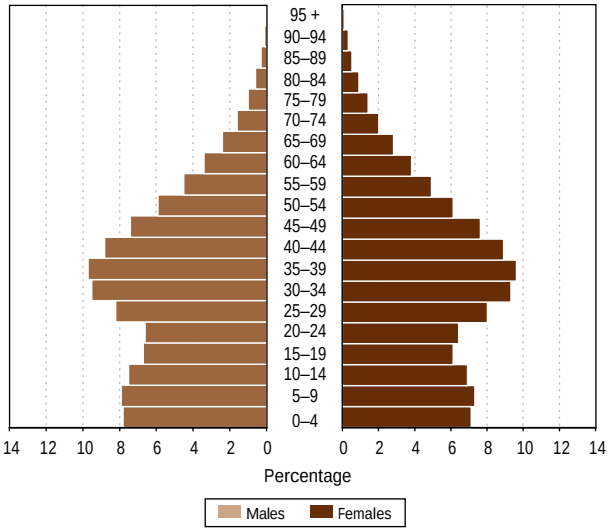


FIGURE 2. Population structure, by age and sex, Aruba, 1999.



BAHAMAS

OVERVIEW

The Commonwealth of the Bahamas is an archipelago of some 700 islands, with a land mass of 5,382 mi^2 scattered over 80,000 mi^2 of the Atlantic Ocean, off the southeast coast of Florida, USA. It is an independent unitary state within the British Commonwealth of Nations, governed by a parliamentary democracy based on the Westminster/Whitehall model.

The total population in 2000 was estimated at 307,000; nearly 90% of the total population resides on three of the 40 total inhabited islands and cays. The two major population centers are Nassau, the capital, located on New Providence (with 70% of the population), and Freeport, located on Grand Bahama (with 15% of the population); the remaining islands and cays are known as the Family Islands. About 30% of the population is under 15 years of age and about 5% is over 65 years of age (Figure 1). The dependency ratio was 55.4 per 100 in 2000. Life expectancy at birth was estimated at 71.0 years for males and 77.6 years for females in 2000. The crude birth rate was estimated at 21.7 per 1,000 population in 2000. The estimated total fertility rate was 2.6 children per woman in 2000.

There is universal access to all essential social services, including health, education, and housing. Approximately 35% of the national recurrent budget is allocated to the social sectors. In the 1999–2000 fiscal year, a total of US$ 132.5 million was allocated to health, which represented 14.8% of the national budget. During the period 1996–2000, annual health expenditure per capita increased steadily from US$ 362 to US$ 420.

Education is compulsory to age 14 years. Tertiary education is provided at the Government-owned College of the Bahamas and at a number of private institutions which offer associate's, bachelor's, and selected master's degrees.

Since 1972, the exchange rate with the U.S. dollar has been 1:1. Tourism and tourism-related commerce are the most important economic activities, accounting for over 50% of GDP and 60% of employment. Service industries, including the public sector, tourism, banking, insurance, fishing, and agriculture employ approximately 80% of the labor force. The working population increased from 146,635 in 1996 to 157,640 in 1999. Women were the main contributors to this growth, as female participation in the labor force grew by 8.3%; male participation grew by 6.7%. The overall unemployment rate in 1999 was estimated at 7.8%, with local rates of 7.8% on New Providence and 9.5% on Grand Bahama. Annual per capita income was estimated at $15,500 in 1999.

The co-existence of conditions such as cardiovascular diseases (hypertension and ischemic heart disease); communicable diseases (HIV/AIDS, tuberculosis, sexually transmitted infections, acute respiratory infections, intestinal infections); malignant neoplasms (breast and prostate cancer); injuries and violence (road traffic accidents, homicides, child abuse, and domestic violence); drug and alcohol abuse; and teenage pregnancy and abortion are a challenge for the health system. Inequities in health are a concern with respect to gender, socioeconomic status, and access to quality health services. Gender inequity is reflected in the differences in the mortality and morbidity patterns of adolescents age 15–19 years and men and women age 20–59 years. Adolescent boys and young adult men are the groups most vulnerable to premature mortality due to violence (homicide), land transport accidents, and HIV/AIDS. Women and girls, while also vulnerable to HIV/AIDS, are more vulnerable than males to violence associated with sexual abuse. Conditions associated with poverty, such as tuberculosis and nutritional deficiencies, are also present in the health profile. The implementation of targeted public health interventions produced positive health outcomes, particularly the prevention of mother-to-child transmission of HIV, the strengthening of maternal and perinatal care, the provision of family planning services, and the provision of comprehensive care for people living with HIV/AIDS.

Mortality

The crude death rate remained fairly constant during 1996–2000, showing an important difference between males and females. In 2000, there were 1,625 deaths, yielding a crude death rate of 533.1 per 100,000 population. The crude mortality rate for 1996–2000 averaged about 625 per 100,000 males, ranging from

a low of 585 in 1999 to a high of 679 in 1998. Among females, the crude mortality rate averaged 485 per 100,000 over the same period, about 140 per 100,000 fewer deaths than for males.

In 1996–2000, communicable diseases and diseases of the circulatory system, with mortality rates of approximately 140 per 100,000 population, were major problems for males, followed by deaths from external causes and malignant neoplasms, with rates approximating 85 per 100,000 population (Figure 2). The number of deaths from external causes was nearly double that of the previous review period. Diseases of the circulatory system were the leading cause of death for females, with a rate of 143 per 100,000 population, followed by communicable diseases (93 per 100,000 population) and malignant neoplasms (72 per 100,000 population).

In 2000, diseases of the circulatory system accounted for 28% (458) of all deaths, followed by communicable diseases, for 20% (323); malignant neoplasms, for 14% (224); and external causes, for 13% (217).

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

The infant mortality rate decreased from 18.4 per 1,000 live births in 1996 to 15.8 per 1,000 live births in 1999. The cause-specific mortality rate due to conditions originating in the perinatal period (as per registered events) dropped from 23.6 per 100,000 population in 1996 to 9.5 per 100,000 population in 2000. During 1996–2000, important progress was made toward reducing infant mortality, particularly mortality due to conditions originating in the perinatal period and to mother-to-child transmission of HIV. With regard to preventable deaths and morbidity, conditions originating in the perinatal period, intestinal infectious diseases, acute respiratory infections, HIV/AIDS, injuries, and child abuse are areas of concern for this age group. Hypoxia and other conditions originating in the perinatal period, which accounted for 50% (153) of total infant deaths, is also a concern.

In 2000, approximately 10.4% of newborns had low birthweight (<2500 g). There were very few cases of diseases preventable by immunization among infants: nine in 1997, two in 1998, and none in 1999 or 2000.

Between 1996 and 2000, HIV/AIDS was the leading cause of death in the 1–4 years age group, accounting for 18.6% (19) of total deaths (102), followed by land transport accidents, which accounted for 7.8% (8) of total deaths.

Approximately 52% (4,694) of all hospital discharge diagnoses[1] in the under-5 years age group during 1996–2000 were due to acute respiratory infections, injuries, and intestinal infectious diseases; approximately 6% (511) were due to slow fetal growth, malnutrition, and immaturity.

Children under 5 years of age are highly vulnerable to child abuse. According to one study in New Providence, they accounted for 42% of all reported cases of abandonment and neglect, and for 27% of the total reported cases of sexual abuse during 1997–2000.

Schoolchildren (5–9 years)

Acute respiratory infections, intestinal infectious diseases and parasitic diseases, injuries, HIV/AIDS, and child abuse are priority problems for children aged 5 to 9 years.

During 1996–2000, land transport accidents and accidental deaths by fire (7 each) accounted for 19.4% of all deaths (72) in this age group; there were 9 registered deaths due to HIV/AIDS and 3 due to nutritional deficiencies and anemias.

Of the 4,789 total hospital discharge diagnoses among this age group during this period, 1,115 (23%) were acute respiratory infections, 800 (17%) were intestinal and other infectious and parasitic diseases, 635 (13%) were injuries, 471 (10%) were bronchitis and asthma, and 152 (3%) were nutritional deficiencies and anemias.

Approximately 29% of the total cases of child abuse and 32% of incest and sexual abuse cases reported between 1997 and 2000 were children between 6 and 11 years of age.

Adolescents (10–14 and 15–19 years)

Injuries (due to violence and land transport accidents), early onset of sexual activity, teenage pregnancy, HIV/AIDS, and alcohol and drug abuse among adolescents are of major concern. Child abuse is also a problem, as 135 cases of incest and 78 cases of sexual abuse were reported for these age groups on New Providence during 1997–2000. Acute respiratory infections, intestinal infectious diseases, and nutritional deficiencies and anemias are important contributors to morbidity. Diabetes mellitus appears among the ten leading hospital discharge diagnoses during 1996–2000. Morbidity data reveal important differences between boys and girls, indicating different vulnerability and levels of risk.

During 1996–2000, a total of 41 deaths were registered in the 10–14 years age group: 6 due to land transport accidents, 4 due to homicides, and 2 due to HIV/AIDS. Injuries represented 17% of total hospital discharge diagnoses (472 of 2,736), for a male-female ratio of 2.1:1. Acute respiratory infections and intestinal infectious diseases accounted for 23% (633) of total hospital discharge diagnoses, followed by nutritional deficiencies and anemias (3.5% or 95); and diabetes mellitus (2% or 54). Diabetes mellitus was among the ten leading hospital discharge diagnoses for females in this age group, and complications of pregnancy accounted for 6% (77 of 1,247) of all hospital discharge diagnoses for females in this age group.

[1] Hospital discharge diagnosis refers only to the primary diagnosis with defined cause.

There were 112 deaths registered among 15–19-year-olds for the period 1996–2000. Approximately 60% were due to external causes, mainly homicides (42) and land transport accidents (25). The male-female ratio was 7.4:1 for homicides and 4:1 for land transport accidents. There were five registered deaths due to HIV/AIDS in this age group during 1996–2000.

Injuries accounted for 46% (563 of 1,217) of the total hospital discharge diagnoses for males, while complications of pregnancy accounted for 72% (2,599 of 3,604) of the total hospital discharge diagnoses for females. There were 331 abortions recorded in the 15–19 years age group, 14% due to spontaneous abortion, 0.8% due to legal abortion, and 85% due to unspecified abortion.

Mental disorders (including alcohol and drug abuse) appear among the ten leading hospital discharge diagnoses for this age group, accounting for 2.4% (118 of 4,822) of the total discharge diagnoses from Princess Margaret Hospital and Rand Memorial Hospital during 1996–2000, for a male-female ratio of 2.1:1.

Approximately 20% of the 3,703 cases of child abuse reported on New Providence by the Department of Social Services during 1997–2000 were in the 12–18 years age group, but this number rises to 33%, if neglect is excluded. Of the reported cases of sexual abuse and incest among children, 38% were in this age group. Within this age group, females 18 years and younger accounted for 84% of all cases of reported sexual abuse and incest. In contrast, males of the same age group comprised 16% of reported cases. In the 1997 National Youth Health Survey, 5% of males aged 10–19 years reported having been sexually abused. The same survey also revealed that 19% of male students aged 10–19 years had carried a weapon to school during the previous month, 15% had been injured by a weapon, 20% had gang experience, and 56% had engaged in sexual intercourse.

TABLE 1. Leading causes of mortality among males 20–59 years of age, Bahamas, 1996–2000.

Cause	Number	% of total deaths with defined cause (*n* = 2,217)	Male-female ratio
HIV/AIDS	764	34.5	1.6:1
Homicide	172	7.8	7.2:1
Land transport accident	135	6.1	4.7:1
Ischemic heart disease	108	4.9	2.6:1
Cerebrovascular disease	76	3.4	1.8:1
Diabetes mellitus	64	2.9	1:1
Chronic pulmonary disease	63	2.8	2.3:1
Chronic liver disease	61	2.8	1.7:1
Diseases of the pulmonary circulatory system	61	2.8	2.3:1
Hypertensive disease	60	2.7	1:1

TABLE 2. Leading causes of mortality among females 20–59 years of age, Bahamas, 1996–2000.

Cause	Number	% of total deaths with defined cause (*n* = 1,302)
HIV/AIDS	471	36.2
Breast cancer	70	5.4
Diabetes mellitus	63	4.8
Hypertensive disease	59	4.5
Ischemic heart disease	42	3.2
Cerebrovascular disease	42	3.2
Chronic liver disease	36	2.8
Land transport accident	29	2.2
Chronic pulmonary disease	27	2.1
Homicide	24	1.8

Adults (20–59 years)

There were 3,567 deaths in this age group (2,252 males and 1,315 females), with a male-female mortality ratio of 1.7:1 over the period 1996–2000. Although the overriding issue in this age group is deaths from HIV/AIDS, which accounted for 36% of total deaths, there are marked differences between mortality and morbidity patterns for men and women.

In 1996–2000, the leading causes of death among males were HIV/AIDS, homicides, land transport accidents, ischemic heart disease, and cerebrovascular disease (Table 1). Among females, the leading causes of death were HIV/AIDS, breast cancer, diabetes mellitus, hypertensive disease, and ischemic heart disease (Table 2).

Acute respiratory infections and parasitic diseases accounted for approximately 9% of the total reported hospital discharges (39,992) for this age group in 1996–2000. There were 12,582 reported hospital discharges for men; injuries and HIV/AIDS accounted for 25% and 7%, respectively. Mental health problems, particularly alcohol and drug abuse, were also a concern for males aged 20–59 years.

Additional issues of particular concern to females aged 20–59 years were maternal morbidity, abortion, domestic violence, and mental health, particularly depression. Complications of pregnancy accounted for 50.7% (18% due to lacerations and 14% due to abortions) of the total hospital discharge diagnoses for females (27,410) in 1996–2000. There were 2,215 abortions recorded in the 20–59 years age group, 14% due to spontaneous abortion, 0.4% due to legal abortion, and 86% due to unspecified abortion. Data from the Crisis Centre for 1997 showed that 76% (223 of 295) of victims of domestic violence were females.

The Elderly (60 years and older)

This age group accounted for 3,873 deaths and had the highest mortality rate (approximately 633 per 100,000 population) during the period 1996–2000. It also had the lowest male-female mortality ratio (0.9:1). The leading causes of mortality among males and females in this age group are presented in Tables 3

and 4. More females than males in this age group are dying from hypertension (male-female ratio = 0.6:1), diabetes (male-female ratio = 0.5:1), and cerebrovascular disease (male-female ratio of 0.7:1); these ratios are similar for hospital discharge diagnoses for these conditions as well.

During 1996–2000, hypertensive disease, cerebrovascular disease, ischemic heart disease, and diseases of pulmonary circulation accounted for 31.4% of all hospital discharge diagnoses (3,284 of 10,457) for this age group. Other important conditions were diabetes, acute respiratory infections, diseases of the urinary system, and diseases of other organs of the digestive system.

Workers' Health

Based on processed claims, data from the National Insurance Board indicate that musculoskeletal problems, fractures, sprains, strains, dislocations, and infections (including HIV/AIDS) were among the most common causes of absenteeism in the workplace. The most common causes of invalidity were HIV/AIDS, psychiatric disorders, cardiovascular disease, arthritis, fractures, and skin and neurological disorders.

By Type of Health Problem

HIV/AIDS was the leading cause of death every year during 1996–2000, followed by hypertension, diabetes, cerebrovascular disease, and ischemic heart disease. In 1996, land transport (motor vehicle traffic) accidents and homicides began to appear among the 10 leading causes of death and to move up in the rankings.

TABLE 3. Leading causes of mortality among males aged 60 years and older, Bahamas, 1996–2000.

Cause	Number	% of total deaths with defined cause (*n* = 1,860)
Ischemic heart disease	256	13.8
Hypertensive disease	179	9.6
Cerebrovascular disease	179	9.6
Malignant neoplasm of the prostate	165	8.9
Diabetes mellitus	137	7.4

TABLE 4. Leading causes of mortality among females aged 60 years and older, Bahamas, 1996–2000.

Cause	Number	% of total deaths defined by cause (*n* = 2,013)
Hypertensive disease	283	14.1
Ischemic heart disease	255	12.7
Diabetes mellitus	252	12.5
Cerebrovascular disease	251	12.5
Diseases of pulmonary circulatory system	76	3.8

Natural Disasters

Hurricanes are the most threatening natural disaster to the Bahamas. In 1999, the islands were hit by Hurricane Floyd, which caused extensive infrastructural and property damage in several of the Family Islands, but no deaths and few personal injuries. Several cases of posttraumatic stress syndrome were reported. Concerted efforts were made to restore services, remove debris, control insect proliferation, provide bottled water, and to advise the public to boil drinking water. A widespread outbreak of conch poisoning occurred on New Providence following the hurricane.

Vector–borne Diseases

Malaria is not endemic to the Bahamas, though the vector (the *Anopheles* mosquito) is present. In 1997, there were eight reported cases of malaria (imported). In 1998 and 1999, there was a marked increase in malaria activity, with 21 and 30 reported cases, respectively. In 2000, there were only two cases of malaria (imported).

There have been no cases of yellow fever in the Bahamas since the 1970s, though the vector (*Aedes aegypti*) is present. There was one confirmed case of dengue in 1998; prior to that, the last reported case was in 1996.

Diseases Preventable by Immunization

Diseases preventable by immunization are a top priority for the Bahamas. Vaccination coverage rates are high (Figure 3), and sustained immunization efforts have resulted in important reductions in this group of diseases. The last cases of polio were recorded in the 1960s. Continuing the trend seen over the 1993–1996 period, there were no cases of diphtheria, measles, or neonatal tetanus during 1997–2000. There were no cases of whooping cough over the 1997–2000 review period. There was one case of tetanus in an adult in 1998.

Since an outbreak in 1990, there have only been sporadic cases of rubella, with a peak of seven cases in 1997. A mass MMR vaccination campaign was successfully conducted in 1997, interrupting transmission; two cases were reported after the campaign. However, four cases of congenital rubella syndrome were reported in 1998. Data on laboratory-confirmed new cases of hepatitis B infection show an increase from 162 in 1996 to 353 in 2000, though this may be partly due to better reporting.

Intestinal Infectious Diseases

No cases of cholera were reported during the review period. A total of 1,317 foodborne illnesses were reported in 2000: 305 cases of fish poisoning, 225 cases of ciguatera, and 787 cases of other food poisoning.

There were 4,484 hospital discharge diagnoses of intestinal infectious disease (for all age groups) during 1996–2000. A total of 1,857 cases of diarrhea were reported among the population aged 5 years and older, and only 1,103 cases were reported among children under 5 years of age in 2000. However, intestinal infectious diseases are a leading hospital discharge diagnosis among children under 5 years of age and among those aged 5–9 and 10–14 years.

Chronic Communicable Diseases

New reported cases of tuberculosis ranged from 59 in 1996 to 82 in 2000. Over this period, the proportion of new reported HIV-negative tuberculosis cases rose from 25% (22 of 88) in 1997 to 56% (46 of 82) in 2000. Leprosy is not endemic in the Bahamas; however, a case was diagnosed in 1996.

Acute Respiratory Infections

Of the 239 registered deaths due to acute respiratory infections during 1996–2000, 59% occurred among the elderly (60 years of age and over), 31.4% occurred among 20–29-year-olds, and 5.4% occurred among infants. Acute respiratory infections were among the ten leading hospital discharge diagnoses for all age groups during 1996–2000.

Zoonoses

There were no cases of human or canine rabies reported during 1996–2000.

HIV/AIDS

The HIV/AIDS mortality rate decreased from 97.2 per 100,000 population in 1996 to 80.4 per 100,000 population in 2000. However, for each year over that period, HIV/AIDS was the leading cause of death in the general population. As of December 31, 2000, a total of 3,810 cases were reported, of whom 2,699 (71%) have died. A further 4,537 individuals were known to be HIV positive, without symptoms of the disease.

While the number of reported cases of HIV generally declined, from 734 in 1994 to 386 in 1999 and 461 in 2000, the number of deaths due to AIDS increased due to the rising prevalence of HIV/AIDS. There were 764 male and 471 female deaths due to HIV/AIDS in 1996–2000, representing 35% of deaths with defined cause. The incidence peaked for males in 1995 at 1,768 per million population and declined to 1,284 per million population by 1999; for females, incidence peaked in 1997 with 1,088 per million population and declined to 829 per million population in 1999 (Figure 4). Males' risk of contracting HIV was approximately 1.6 times greater than that of females from 1990 to 1999. One factor contributing to the decrease in HIV incidence was the implementation of interventions to reduce mother-to-child transmission of HIV in 1996. In contrast, the increased death rate from AIDS is a reflection of the cumulative effects of the disease since 1989.

Sexually Transmitted Infections

The Surveillance Unit reported 1,632 new cases of sexually transmitted infections in 1996–2000: 797 cases of chlamydia (49%), 416 cases of syphilis (26%), 384 cases of gonococcal infection (24%), and 35 cases of congenital syphilis (2%).

Nutritional Diseases

Reports from Community Health Clinics throughout the Bahamas indicate that in 1997, 16.5% of screened women attending prenatal clinics had hemoglobin levels of 10 g or less.

There were 1,049 hospital discharge diagnoses of nutritional deficiencies and anemias during 1996–2000; these conditions were among the ten leading hospital discharge diagnoses for children and the elderly.

Diseases of the Circulatory System

Cardiovascular diseases were major causes of mortality, especially among adults aged 20–59 years and the elderly. Hypertension, cerebrovascular disease, and ischemic heart disease were among the leading hospital discharge diagnoses and causes of death during 1996–2000.

Malignant Neoplasms

There were 1,172 registered deaths due to malignant neoplasms during 1996–2000, with the age groups 20–59 years and 60 years and over being the most affected. Prostate, breast, and uterine cancers were major contributors to mortality and morbidity due to this cause. There were 2,036 hospital discharge diagnoses of malignant neoplasm over the period; of these, cancer of the female breast accounted for 19.1%, prostate cancer accounted for 10.6%, cancer of digestive organs and peritoneum accounted for 12.1%, uterine cancer accounted for 8.7%, and cancer of trachea, bronchus, and lungs accounted for 6%. Breast cancer (70) represented 5.3%, and uterine cancer (31) represented 2.4% of total deaths in the age group 20–59.

Accidents and Violence

Deaths due to external causes increased over the 1996–2000 period. The most important contributors to this increase were homicides and land transport accidents, which mainly affected male adolescents and young adults. Injuries also ranked high among hospital discharge diagnoses for all age groups during the period.

During 1996–2000, the police reported an increase in murders (51 registered cases in 1996 and 74 registered cases in 2000), fatal accidents (22 in 1996 and 76 in 2000), and accidents with injury (148 in 1996 and 474 in 2000).

Cases of child abuse reported by the Department of Social Services also increased in this period. Domestic violence is recognized as a problem that affects mostly women.

Mental Health

The number of new cases of substance abuse treated at the Community Mental Health Clinic of the Ministry of Health increased during the period 1996–2000. New cases of alcohol abuse increased from 91 in 1996 to 149 in 2000, and new cases of cocaine and marijuana abuse increased from 186 in 1996 to 313 in 2000. The Clinic recorded 131 cases of depression, 42 cases of schizophrenia, and 120 cases of psychological disorders in 2000. Drug and alcohol abuse accounted for 49.3% (1,924 of 3,896) of the total discharge diagnoses from the national psychiatric hospital, Sandilands, during 1996–2000.

Oral Health

Data provided by the Oral Health National Survey 1999–2000 shows that among 1,060 5-year-old children examined, the prevalence of dental caries in the primary dentition was 58%. The prevalence of dental caries in the permanent dentition of 12- and 15-year-old schoolchildren was 55% and 61%, respectively. Five-year-olds had, on average, 2.42 decayed, missing, and filled teeth (DMFT) and 4.43 decayed, missing, and filled surfaces (DMFS). The mean DMFT and DMFS scores for 12-year-olds were 1.56 and 2.30, respectively. The mean DMFT and DMFS for 15-year-olds were 1.98 and 2.96, respectively.

There were important inter-island differences in the prevalence and severity of dental caries. Overall estimates were higher for Andros, Abaco, and Long Island among all age groups, among 5-year-olds in Cat Island, and among 15-year-olds in Bimini. Between 55% and 65% of students examined required treatment at the time of examination; 9% to 14% required urgent treatment due to history of pain or infection.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Government of the Bahamas is implementing institutional reforms to improve the social safety net and maintain a climate conducive to domestic and international investment. The main objectives of monetary and fiscal policies are the maintenance of macroeconomic stability, improved competitiveness, and stimulation of sustainable development in partnership with the private sector.

The Ministry of Health is committed to fostering evidence-based decision making for the strategic guidance of the reorientation of the health services. The National Health Services Strategic Plan envisions an effective health response, which requires the further integration of the health promotion strategy and the strengthening of the public health functions. It also requires that vulnerable groups be identified and that targeted interventions be developed to address their specific needs as well as differences in the health profile.

In 2000, the Ministry of Health completed a National Health Services Strategic Plan (2000–2004), which calls for the integration of the health promotion strategy at all programmatic levels and outlines five strategic directions: healthy people, healthy environment, maximized resources, quality service, and health care planning. The priority program areas are maternal and child health; school-based adolescent health programs; family planning; health of older persons; communicable and chronic noncommunicable disease prevention and control; food and nutrition; mental health; substance abuse prevention and control; oral health; rehabilitative services; injury prevention and control; emergency medical services; disaster preparedness; pharmaceutical services; tourist health; and HIV/AIDS.

To improve service quality, efficiency, and effectiveness, the Government invested in the health infrastructure both on New Providence and on the Family Islands, and in human resources. Recognizing the need for greater social participation and intersectoral collaboration, the Ministry of Health also embarked on a process to establish sustainable relationships with nongovernmental organizations (NGOs), and to establish an NGO desk within the Ministry.

The Health System

Institutional Organization

The reorganization of the health system increased the Ministry of Health's regulatory role. The Public Hospitals Authority, created in 1999 and governed by a board that reports to the Minister of Health, is responsible for the management of hospital care. The Ministry of Health, through the Department of Public Health, continues to be responsible for the provision and management of primary health care services and the development and implementation of public health programs.

A series of Technical Advisory Committees have been addressing the challenges resulting from this reorganization to ensure programmatic integration and continuity of care. Priority was given to the reorganization of the Planning Unit and the strengthening of information systems.

Developments in Health Legislation

As a member of the Regional Nursing Body and the Caribbean Medical Examination, the Bahamas has actively participated in the process of developing common examinations for the regional registration of nurses and physicians.

Decentralization of Health Services

Decentralization has been advanced through the creation of the Public Hospitals Authority and the development of health services on various Family Islands.

Private Participation in the Health System

In the area of ambulatory care, private physicians have individual practices, and in some instances, have hospital privileges at the private hospital. There is a private ward within Princess

Margaret Hospital, managed by the Physicians' Alliance. At the programmatic level, the private sector participates in the National Breast Screening Program.

Health Insurance

The Government of the Bahamas is responsible for ensuring universal access to essential health services, regardless of ability to pay. In addition, private health insurance is offered by a number of companies. All workers in both the private and public sectors are required by law to participate in the National Insurance Scheme, which provides sickness, disability, and death benefits to its contributors, as well as retirement, occupational injury, maternity, and survivorship benefits.

Organization of Regulatory Actions

Health Care Delivery

The Ministry of Health is responsible for regulating and monitoring the national health care system. The Hospitals and Health Care Facilities Act was passed in 1998, enabling the Minister of Health to create a board to oversee the licensing of these facilities on the Ministry's behalf. The board is empowered to regulate and inspect private and public sector hospitals and health care facilities, and to undertake investigations of matters pertaining to patient management, diagnosis, and treatment. The Ministry of Health continues to be responsible for establishing standards, norms, and guidelines for health care delivery and patient care. Protocols for maternal care are in place in both the private and public wards of Princess Margaret Hospital (National Hospital), though the monitoring and enforcement of the protocols are inadequate.

Certification and Professional Health Practice

Through the Medical Council, Dental Council, and Nursing Council, the Ministry of Health is responsible for regulating doctors, dentists, and nurses. Through the 1998 Health Professions Act, the Ministry also regulates all other health professions.

Basic Health Markets

The Pharmacy Act regulates the dispensing and control of narcotics and psychotropic substances, but not the registration of imported drugs.

Environmental Quality

The Department of Environmental Health Services has the mandate for monitoring and ensuring air, water, soil, and housing quality, and for monitoring the security of hazardous substances.

The monitoring of water quality is conducted by the Public Analyst Laboratory and the laboratory of the Water and Sewerage Corporation. A Joint Water Quality Committee was established to develop guidelines and mechanisms to monitor water bottling plants.

Due to indiscriminate dumping, including batteries, the Department of Environmental Health Services developed a comprehensive solid waste plan for the establishment of sanitary landfills on New Providence and the Family Islands.

Food Quality

Food quality is regulated jointly by the Ministries of Agriculture and Health. The Department of Environmental Health Services has an inspectorate that monitors eating establishments and outbreaks of foodborne illness. All food handlers are required to complete a training program and undergo an annual medical exam.

Organization of Public Health Care Services

Health Promotion

As a strategic approach identified in the National Health Services Strategic Plan, 2000–2004, the Bahamas has begun to integrate health promotion into national planning and programming, as shown through the work done to develop the Healthy Schools Initiative.

Disease Prevention and Control Programs

A number of disease prevention and control programs are in place to address communicable diseases, including HIV/AIDS and other sexually transmitted infections, as well as chronic noncommunicable diseases, including diabetes, hypertension, and cancer (particularly breast cancer).

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Efforts were undertaken to strengthen surveillance systems, especially for communicable diseases. Information systems and evidence-based decision-making were clearly recognized as priority areas in the National Health Services Strategic Plan.

The public health laboratories are linked to Princess Margaret Hospital, Rand Memorial Hospital, and the Public Analyst Department. Facilities on Grand Bahama also monitor water and food quality.

Potable Water, Excreta Disposal, and Sewage Services

On Grand Bahama, the Grand Bahama Utility Company provides water and sewerage services to some 8,300 customers. On Paradise Island, water is supplied by the Paradise Island Utility and a large number of private wells. The Water and Sewerage Corporation provides water services on New Providence and operates 50 water systems on 13 Family Islands. On the Family Islands, some 2,200 households have private wells.

The Water and Sewerage Corporation is the primary provider of sewerage services on New Providence, covering approximately 16% of the population; the remainder use septic tanks. Sewerage on the Family Islands is disposed of mainly through septic tanks and latrines.

Major hotels and resorts have on-site sewerage treatment and disposal systems.

Solid Waste Services

The Department of Environmental Health Services on New Providence and the Local Authority on the Family Islands are responsible for municipal solid waste collection services. The Department provides technical support to the Family Islands.

Pollution Prevention and Control

Prevention and control of air pollution is the responsibility of the Department of Environmental Health Services.

Food Safety

Protection and control of food is also the responsibility of the Department of Environmental Health Services. Department staff at ports monitor the quality of imported foods. The Department also has a food inspectorate, which monitors food quality and collaborates in the surveillance of foodborne illnesses. Meat and food inspectors at the abattoir on New Providence inspect animals to be slaughtered. Department officers stationed on the Family Islands perform the aforementioned functions, and depend on the Public Analyst Department on New Providence for laboratory support.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

Individual health care services are provided through hospitals and community clinics in the public and private sectors.

Two public hospitals—Princess Margaret Hospital on New Providence and Rand Memorial Hospital in Freeport—provide general, specialized, and emergency services (secondary and tertiary level). The Sandilands Rehabilitation Centre, located on New Providence, provides psychiatric, mental, geriatric, and rehabilitative care on an inpatient and outpatient basis. The only private hospital, Doctor's Hospital, on New Providence, provides general, specialized, and emergency services.

Under the direction of the Department of Public Health, primary health care facilities (community clinics) offer ambulatory curative and preventive health services, and limited inpatient care throughout the Bahamas.

The Public Hospitals Authority is responsible for the Emergency Medical Services. The Emergency Medical Services has a fleet of ambulances, some of which are equipped to offer advanced life support. Though ambulance service is only available on New Providence and Grand Bahama, health staff on the Family Islands have been trained in advanced cardiac life support. A number of volunteers on each of the Family Islands have been trained in basic life support and are classified as first responders.

The Bahamas Air Sea Rescue Association is a non-profit voluntary organization that responds to emergencies at sea or in the air.

Auxiliary Diagnostic Services and Blood Banks

Diagnostic services are offered through the public health system, but some services are also offered by the private hospital. The laboratories perform various levels of microbiological and clinical analyses. There are a number of small private laboratories with limited diagnostic capacity.

There are three blood banks in the Bahamas: one at Princess Margaret Hospital, one at Rand Memorial Hospital, and one in the private sector. All blood for transfusion is screened for HIV, hepatitis B and C, and syphilis.

Radiological services are offered in both the public and private sectors, though service quality varies. Although deficiencies have been identified and addressed, continuous quality monitoring remains a challenge.

Specialized Services

Rehabilitative services are offered at the hospital and community levels. Rehabilitation services for cerebrovascular and land transport accidents are offered at the hospitals, but other services are limited. Community-based rehabilitation services have grown and are well established in three of the most populated family islands (i.e., Abaco, Eleuthera, and Long Island). These programs have been successful in rehabilitating many disabled individuals and assisting with the integration of children with disabilities into the school system.

A variety of oral health services are provided in hospitals and community clinics. The School of Dental Health Service, which operates in 60 primary schools, offers preventive and restorative care. There is a permanent dental service in Abaco, Andros, Eleuthera, Exuma, and Grand Bahama which provides preventative and restorative care; a visiting service provides care on the other islands.

The school health services offer hearing and vision screening, monitor nutritional status, and make referrals for treatment.

The mental health services are based mainly at Sandilands Hospital, where inpatient and community services are offered. The Crisis Centre provides counseling and support for domestic violence, substance abuse, and other mental health problems. The community mental health services' coverage is limited.

Reproductive health services are offered through community clinics, family planning clinics, and the adolescent health clinic. Maternal care is offered throughout the Bahamas, and prenatal care coverage increased during 1996–2000.

Health Supplies

No drugs, biologicals, reagents, or equipment are produced locally. Drugs and reagents are imported via a competitive bidding process in the public sector.

Human Resources

Availability by Type of Resource

In 1996, there were 453 physicians per 10,000 population and 667 nurses registered in the public sector.

Training

Health personnel are trained locally and overseas. The Nursing School trains all categories of nurses in collaboration with the College of the Bahamas. Most postgraduate training in nursing is done at the University of the West Indies (UWI). All physicians are trained in the Caribbean, North America, or the United Kingdom. In 1997, the Government entered into an agreement with UWI to provide clinical training to UWI medical students. Training is provided through Princess Margaret Hospital, Sandilands Rehabilitation Centre, and community health clinics. UWI also started a clinical training program at Princess Margaret Hospital for undergraduate medical students. All training in public health is conducted either at UWI or in North America or the United Kingdom.

Continuing Education

There is no human resources development policy addressing continuing education. Government and private institutions offer a variety of courses to address needs arising from the health reform process. Both public hospitals have a continuing education program in place for physicians. Professional bodies also organize meetings and conferences, which offer continuing education opportunities. A human resources policy for the training of physicians in the public sector has been developed for implementation.

Job Market

The emigration of health personnel is not a problem for the Bahamas, which attracts health professionals from around the world.

Health Research and Technology

Health research is recognized as an essential component of the National Programmes in the Bahamas. During 1996–2000, the Bahamas implemented various clinical research protocols and participated in the Adolescent Health Survey carried out in the Caribbean region. The Abbot Study, which examined the efficacy of the new protease inhibitor in children (ABT 378/r), commenced in 1999; the U.S. National Institutes of Health (ACTG 316) Nevirapine Study was also conducted that year.

Health Sector Expenditure and Financing

In the 1999–2000 fiscal year, a total of US$ 132,492,992 was allocated to health, which represented 14.8% of the national budget. Public health expenditure per capita was US$ 419.56 in 1999–2000, most of which went for hospital-based services. The portion of the health budget allocated to the Public Health Department, which manages the national public health programs and the community clinics, increased slightly in the last fiscal year of the review period.

External Technical Cooperation and Financing

In the health sector, the two agencies that provide technical cooperation and financing are the IDB and PAHO/WHO. The IDB supports the health sector strengthening project, which aims to improve the delivery and quality of care and to develop and strengthen the managerial and institutional capacity of the Ministry of Health and the Public Hospitals Authority. The IDB also supported the Solid Waste Management Project and the Family Islands Water Project. The first project involves the construction of sanitary landfills on New Providence and 10 Family Islands, as well as the institutional strengthening of the Department of Environmental Health Services. The second project aims to increase the efficiency and quality of sanitation services in the Family Islands. The IDB also provided funds for the Adolescent Reproductive Health Education project during the review period.

PAHO/WHO worked in partnership with the Ministry of Health and other health-related agencies during the review period to enhance programs in such priority areas as strategic planning, information systems and evidence-based decision-making, health promotion, adolescent health, reproductive health, communicable diseases, HIV/AIDS, and mental health.

UNAIDS worked through the Bahamas Theme Group and the PAHO/WHO office in the implementation of the first UNAIDS grant (1996–1997).

FIGURE 1. Population structure (estimated), by age and sex, Bahamas, 2000.

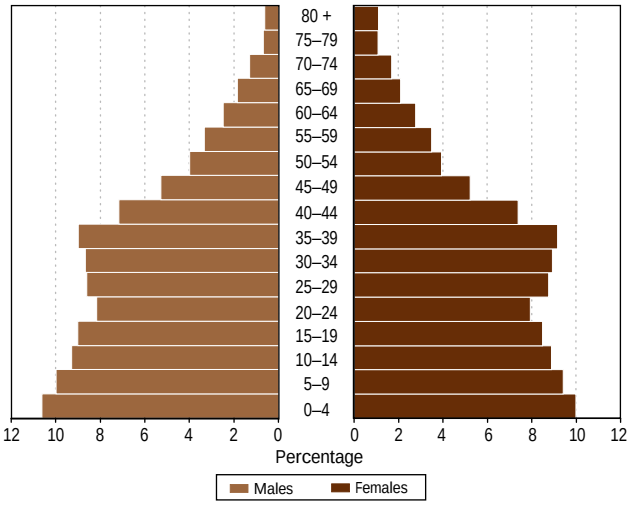


FIGURA 3. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage for women of childbearing age, Bahamas, 2000.

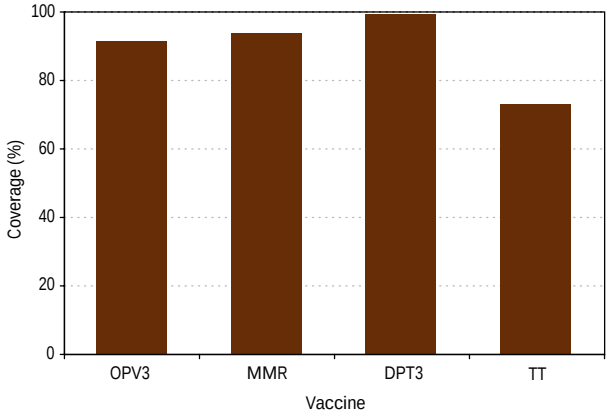


FIGURE 2. Estimated mortality, by broad groups of causes and sex, Bahamas, 1996–2000.

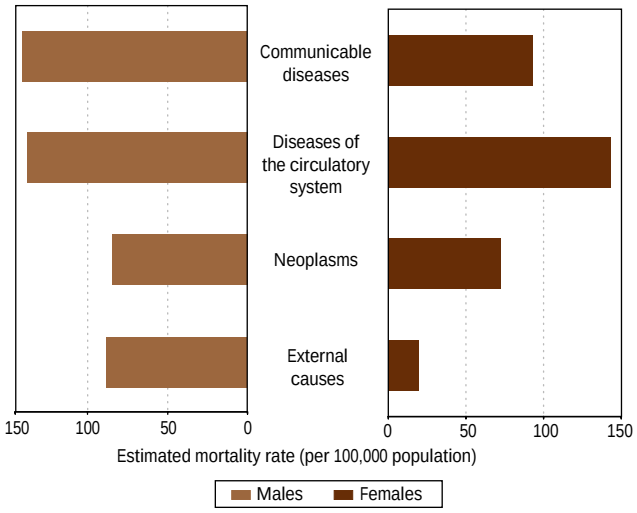
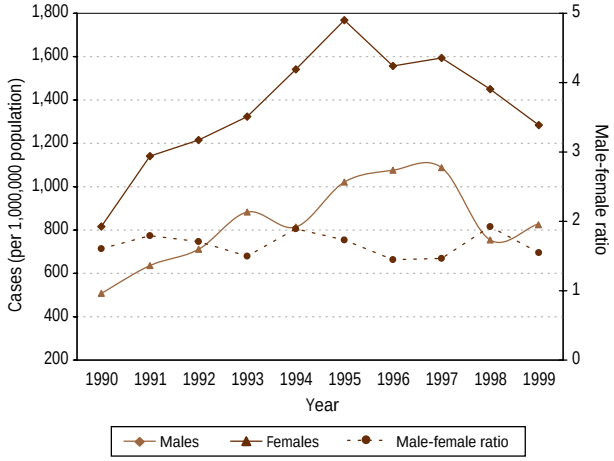


FIGURE 4. AIDS incidence, by sex, with male-female ratio, Bahamas, 1990–1999.



BARBADOS

OVERVIEW

Barbados, the easternmost Caribbean country, lies at latitude 13.3° North and longitude 59° West; it covers a 430 km^2 land area. The average temperature is 27° C and annual rainfall is approximately 1,524 mm, most of which falls between June and November. Barbados lies within the hurricane belt, and each year there is increased vigilance during the hurricane season, from June through November. There were no natural disasters in the review period, although some districts experienced flooding.

Barbados is divided into eleven parishes, and has a population of 270,000, based on a 2000 estimate. The parish of Saint Michael, where the capital, Bridgetown, is located, is the most densely populated, with a total of 97,516 persons (37.4% of the country's total population). The country's excellent network of roads link the airport; the capital, Bridgetown; the seaport; the industrial areas; and the tourist belts along the west and south coasts. Barbados also has an efficient public transportation system.

Barbados has a democratic system of government with parliamentary elections held every five years. Legislative power is vested in Parliament, which comprises a House of Assembly of 28 elected members, a Senate of 21 nominated members, and the Governor General, who is the Head of State. The Constitution provides for a Privy Council (whose members are appointed by the Governor General after consultation with the Prime Minister) and the Cabinet. The Cabinet, which is comprised of ministers, is the principal policy organ and is presided over by the Prime Minister.

In 1999, Barbados experienced its seventh consecutive year of economic growth. Gross domestic product grew from US$ 1.4 billion in 1992 to US$ 2.1 million in 1999. During the 1993–1999 period, the annual average rate of growth was 2.8%, which is in line with the 3% target set by the Government as the nation's sustainable growth rate (Figure 1). Per capita GDP increased from US$ 5,650 in 1992 to US$ 7,750 in 1999.

The main sectors contributing to the economy were tourism, financial and business services, manufacturing, agriculture, and construction. Tourism contributed approximately US$ 225.4 million to GDP in 1997, US$ 241.1 million in 1998, and US$ 232.2 million in 1999. Most tourists came from Canada, the U.K., the U.S.A., and CARICOM countries. In 1999 there were 517,870 long-stay arrivals and 432,854 cruise ship passenger arrivals.

The Government was fiscally stable during 1997–1999. Current government expenditures increased from US$ 723.6 million in fiscal year 1997/1998 to US$ 834.2 million in 1999–2000. Capital expenditure during this period also increased, from US$ 122.9 million to US$ 128.4 million. The Government's current revenues increased from US $729.2 million to US $802.2 million during this period, resulting in an overall fiscal deficit of approximately 1.5% of nominal GDP, which is well within the Government's annual target of a fiscal deficit of 2.5% of GDP.

Since the 1950s, successive governments have prepared five-year development plans to guide Barbados' economic, social, and physical development. In view of the rapid pace of globalization and world trade liberalization, however, the current Government is reforming the mechanisms for sectoral and national planning. The 1996 Medium-Term Economic Strategy Paper was prepared as a rolling plan to the end of 1999; it will be succeeded by the National Strategic Plan 2000–2010.

In 1999, the mid-year population estimate was 267,400 persons; 48% were males and 52%, females (Figure 2). Approximately 21.8% of the population was under 15 years old, while 11.6% was over 65 years old. The birth rate was 14.5 per 1,000, the highest since 1992, when it was 15.6 per thousand. The crude death rate in 1999 was 8.3 per 1,000. Life expectancy at birth was 74.1 years for men and 79.1 years for women.

The population older than 15 years old at the end of December 1999 was 201,800 persons. The total labor force stood at approximately 135,500, 53% males and 47% females; the labor participation rate was estimated at 73.3% for men and 61.8% for women. At the end of 1999, the unemployment rate stood at 10.4%, compared to 12.3% at the end of 1998. The Barbados population is approximately 80% black, 4% white, and 16% other ethnic groups.

Education in Barbados is compulsory for all children up to the age of 16 years. The literacy rate is estimated at 97.4%.

Information from the 1990 Barbados Population and Housing Census indicated there were 75,170 households, with women heading approximately 44%; the average household size was 3.5 persons. Information also showed that 70,693 households (94%) had potable water piped into their houses; the remaining 6% had easy access to potable water supplies. More than 75% of households had telephone service and more than 90% had electricity installed.

Mortality

During the 1997–1999 period, the mortality rate declined from 9.3 per 1,000 population to 8.3. Diseases of pulmonary circulation and other forms of heart disease, which ranked second among the ten principal causes of death in 1997 and 1998, moved into first position, overtaking cerebrovascular disease. Diabetes and ischemic heart disease remained in third and fourth places respectively. Diseases of pulmonary circulation and other forms of heart disease was the leading cause group of mortality, accounting for 885 deaths, with a rate of 110 per 100,000 population in 1997–1999. During this same period, cerebrovascular diseases caused 745 deaths, with a rate of 62 per 100,000, and malignant neoplasms of the digestive organs except stomach were responsible for 298 deaths, with a rate of 37 per 100,000 population.

The infant mortality rate had dropped to 10.9 per 1,000 live births in 1998, but it increased to 12.8 per 1,000 live births in 1999. This increase may be related to the fact that more high-risk pregnancies now come to term, rather than ending in spontaneous abortions as in the past. The neonatal death rate was 8.5 per 1,000 live births in 1999, 6.7 in 1998, and 7.1 in 1997. Neonatal deaths accounted for 57% of all infant deaths and 66% of all neonatal deaths were in the age group 1–6 days old. The leading causes of death in children under 5 years were conditions originating in the perinatal period, followed by congenital anomalies.

In 1999, deaths in the age group 5–14 years old were due mainly to cancer, diabetes, asthma, and diseases of the digestive system. Among the main causes of death in the age group 15–24 years old were road traffic accidents, violence, and HIV/AIDS, while in the age group 45–64 years old, heart disease, diabetes, cerebrovascular disease, malignant neoplasms, and HIV/AIDS were the main causes of mortality.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

There were 3,516 live births in 1998 and 3,836 in 1999; approximately 11% of these newborns weighed under 2,500 g. Malnutrition in children is uncommon and is seldom a cause for hospital admission. Approximately 75% of all newborns were seen in the polyclinics and the remainder were seen in the private sector. There were no deaths from HIV/AIDS in children under 1 year old in 1997 or 1998.

Between 1997 and 1999, more than 90% of children between 0–4 years were immunized against poliomyelitis, diphtheria, pertussis, tetanus, measles, mumps, and rubella. According to the Government's policy, all children must be immunized prior to entering primary school.

Schoolchildren (5–14 years)

There are 20,004 children in this age group (7.5% of the total population), and the health status of the group is good. Children are immunized against tuberculosis with BCG vaccine at age 5 years and older. In 1999, deaths in the age group 5–14 years old were due mainly to cancer, diabetes, and diseases of the digestive system.

Adolescents (15–24 years)

Among the main causes of illness and death in this age group were road traffic accidents, bronchitis, chronic and unspecified emphysema, asthma, and HIV/AIDS. Other health problems include mental health problems related to depression, substance abuse, suicide, and violence.

Information from the drug rehabilitation unit at the Psychiatric Hospital indicates that marijuana and cocaine continued to be the main substances abused by those under 20 years old. According to the 1999 preliminary report of the Barbados Global Youth Tobacco Survey that was conducted in schools, 36% of students had experimented with cigarettes, but only 1% were considered to be daily smokers.

Data from the Government Statistical Department indicated that births to adolescent mothers increased in 1997 and 1998, but decreased in 1999. The Ministry of Health recognizes that adolescent health programs must be strengthened.

Adults (25–64 years)

Motor vehicle accidents, violence, and other injuries are the main causes of illness and death among persons 25–44 years old. In the age group 45 to 64 years old, heart disease, diabetes, cerebrovascular disease, malignant neoplasms, and HIV/AIDS were the main causes of mortality. Chronic noncommunicable diseases have increased among those 45 years and over.

Data from the Barbados Family Planning Association indicate that for the 1998–1999 period, the main birth control methods used were condoms and oral contraceptives. In 1997–1999, the fertility rate of women in the age group 15–44 years decreased. Two maternal deaths were reported in 1997; none were reported in 1998 or 1999.

The Elderly (65 years and older)

In 1999, there were 30,781 persons over 65 years old (11.6% of the total population); 40% were men and 60% were women.

Approximately 5.9% were 75 years and older. In 1999, there were 25 centenarians, the oldest being 107 years old.

The main causes of death in this age group were diseases of pulmonary circulation and other forms of heart disease, cerebrovascular disease, diabetes mellitus, acute myocardial infarction, and pneumonia. The most common reasons for medical consultation were related to hypertension and cardiovascular diseases, respiratory tract infections, osteoarthritis, diabetes mellitus, malignant neoplasms, and skin disorders.

Most of the elderly live alone or with relatives; about 3.5% live in institutions. The Government-administered National Insurance Fund provides a contributory pension to persons who contributed to the fund when they were employed; all other persons over age 65 years are provided with a fixed old-age pension. Pensions are the only source of income for many of the elderly 65 years old and older.

Family Health

Given that many women are single parents and heads of household, the impact of the work environment on women's health and on family life needs to be further investigated. Decision-makers in the public and private sectors are being encouraged to consider gender issues in formulating policies and developing projects.

Workers' Health

Statistics from the National Insurance Department show that the number of sickness and injury claims received increased from 57,768 for sickness and 7,347 for injury in 1997, to 66,193 and 7,616, respectively, in 1999. Trade unions have been calling for safety and health in the workplace, as more and more cases of stress-related illnesses, including carpal tunnel syndrome, occur.

The Disabled

Around 1999, there were 2,197 disabled children registered at the Children Development Centre. Among those aged 1–12 years old, most were mentally challenged. Public education programs have been responsible for a growing acceptance of persons with disabilities. The disabled have been registered nationwide, and the rights and responsibilities of disabled persons have been promoted in print and electronic media. To facilitate the integration of physically and mentally challenged persons into community life, issues related to parking facilities, seating on public transport, mobility on city streets, access to buildings, and greater opportunities for education and employment were supported by nongovernmental organizations, trade unions, and Government agencies.

By Type of Health Problem

Vector-borne Diseases

Dengue fever continues to be endemic: There were 511 confirmed cases and 5 deaths in 1997; 237 cases and 6 deaths in 1998; 696 cases with 4 deaths in 1999; and 909 cases and 4 deaths in 2000. Viral serotypes 1, 2, and 4 were circulating in Barbados prior to 1998; by 1999, serotype 3 had been introduced. The Government has implemented a three-pronged strategy to control the outbreak and prevent loss of life: eradicating the *Aedes aegypti* mosquito, the disease's vector; conducting community education programs; and improving case management.

Diseases Preventable by Immunization

In 1998, CARICOM's Council for Human and Social Development accorded that rubella and its devastating complication, congenital rubella syndrome, should be eradicated from the Caribbean by the end of 2000. To this end, the Ministry of Health embarked on a campaign to immunize all men and women aged 21–35 years (approximately 64,000 persons). Women in the postnatal period were the first to be vaccinated; nurses immunized the remainder of the population at work. By December 2000, 51% of the targeted population had been immunized.

Barbados has been free of poliomyelitis since 1994. However, since 1999, surveillance was increased with booster coverage for children over 4 years old. No cases of diphtheria or whooping cough were reported during the period under review. Since 1994 no cases of tetanus have been reported.

A very high proportion of children under 5 years old are immunized against diphtheria, pertussis, tetanus, poliomyelitis, measles, mumps, rubella, and tuberculosis. The overall goal for immunizations continued to be 100% coverage as set out by the World Charter on Immunization. In 2000, Barbados had achieved 97% coverage with DPT, 96% coverage for polio, and 92% coverage with MMR (Figure 3).

Intestinal Infectious Diseases

No cases of cholera were reported. Since the threat of cholera in the Americas in 1993, the Government has introduced a weekly monitoring program of water supplies. There have been no reported cases of hookworm or trichuriasis.

Chronic Communicable Diseases

No cases of tuberculous meningitis have been reported for more than 10 years, and no cases of pulmonary tuberculosis have been reported in children under 15 years old. The incidence rate of tuberculosis varied between 8 per 100,000 population in 1995 and 1 per 100,000 population in 1999.

Acute Respiratory Infections

In 1997, 11,588 asthma episodes were treated at the Emergency Department of Queen Elizabeth Hospital; the number fell to 9,301 in 1998, but rose again to 11,447 in 1999. In that last year, the incidence of bronchopneumonia in children under 5 years old was 96.3 per 100,000 population. Asthma was a significant cause of morbidity among children, with more asthmatic episodes occurring during the rainy season in all age groups.

Admissions to hospitals due to asthma increased by 3% over the period. The Ministry of Health strengthened the case management of asthma by providing training for health care workers in Queen Elizabeth Hospital's emergency department and chest clinic, as well as for nurses in the polyclinics. In addition, a pilot project was implemented in the schools to train children with asthma to self-manage the disease.

Zoonoses

There is no rabies in the country. Leptospirosis was the only zoonotic disease reported between 1997 and 1999; the number of cases declined since the previous period, dropping from 34 cases and 8 deaths in 1995, to 23 cases and 4 deaths in 1996, 6 cases and no deaths in 1998, and 6 cases and 1 death in 1999.

HIV/AIDS

The prevalence of HIV/AIDS in the adult population has been estimated at 2%. Of the reported HIV/AIDS cases, 89% were in the sexually active group aged 15–49 years old.

As of 2000, a cumulative total of 2,525 persons had tested positive for HIV. Of these, 1,242 AIDS cases had been reported, and 1,025 deaths were registered. During the 1997–2000 period, there were 590 new HIV/AIDS cases, with 388 deaths. The major mode of transmission was through heterosexual contact. The male to female ratio for HIV/AIDS cases was 2.9:1 in 1990–1998 and 2.5:1 in 1996–1998 (Figure 4). As a result of a 1995 policy to treat HIV-positive pregnant women with AZT, the transmission of HIV to infants of HIV-positive mothers has been reduced by 83%.

Sexually Transmitted Infections

The number of first attendances for syphilis and gonorrhea decreased from 7,715 in 1997 to 6,878 in 1999. Sexually transmitted infections are not notifiable by law. All pregnant women attending antenatal clinics are counseled and tested for sexually transmitted infections, including HIV.

Nutritional and Metabolic Diseases

Surveillance and monitoring of the nutritional status of children under 5 years old is part of the maternal and child health program in the polyclinics. Protein energy malnutrition in children under 5 years does not pose a significant problem in Barbados. The prevalence of obesity among the Barbadian population, however, has increased, mainly due to the adoption of high-fat diets and sedentary lifestyles. Data shows that 58% of women and 29% of men are overweight, and 30% of Barbadian women are obese. It is estimated that by the age of 40 years, 40% of Barbadians have high blood pressure and 18% have diabetes. The management of diabetes, especially in the age group 65 years old and older, continued to be of concern, particularly the number of amputations of lower limbs.

Diseases of the Circulatory System

Heart and cerebrovascular diseases are among the leading causes of illness and death in adults. Discharges for strokes declined from 296 in 1997 to 245 in 2000. These cases occurred in persons 65 years old and older.

Malignant Neoplasms

Breast and cervical cancers were among the most frequent cancer sites in women, while the prostate was the leading cancer site among men. Based on the referrals from Queen Elizabeth Hospital's department of radiotherapy, between 1994 and 1998 there was an annual average of 71 new breast cancer cases, 33 new cases of cancer of the cervix, and 28 new cases of cancer of the prostate. Cervical cancer screening is offered to women of childbearing age as part of the family health program in the polyclinics. Women over age 45, however, do not routinely receive Pap smears. The Government conducted a survey to assess women's knowledge and attitudes regarding cervical cancer screening, as a way to implement better intervention strategies. The Barbados Cancer Society is planning a breast-cancer screening project to promote early detection and reduce premature death due to breast cancer.

Oral Health

The national oral health survey of children indicated that the combined efforts of the private and public sector dental care were insufficient to meet the needs and demands for services. The Dental Health Service provides early disease prevention, detection, and intervention for all school-aged children up to age 18 years old. On average, there are over 21,000 visits to public sector dental clinics each year, many of which are using fluoride releasing materials. Limited oral and maxillo-facial surgeries are performed.

RESPONSE OF THE HEALTH SYSTEM

National Health Plans and Policies

The mission of the Ministry of Health is "to provide the leadership and environment which will promote the total well being of each citizen, through well-regulated and financially sustainable services which are easily accessible to all, and equitably delivered by well-trained and highly motivated health-care personnel working in collaboration with all sectors of the community."

The primary health care approach continues to be an integral part of the country's health care delivery system. Health promotion and education also remain as key elements of the country's health care strategy. The importance of occupational health and safety has been underscored by a joint initiative undertaken by the Barbados Employers Confederation, the Government, and the trade unions. The initiative seeks to promote workers' health by creating awareness of healthy workplaces by training employers

and workers on how to maintain health and safety and improve air quality, reduce noise pollution, and promote healthy lifestyles. Particular emphasis is being placed on developing AIDS and drug awareness programs in the workplace. In 1999, the Government introduced a National Employees Assistance Programme aimed at providing counseling and referrals to appropriate social sector agencies for public officers and their families.

In 2000, a Green Paper outlining a national policy for persons with disabilities was completed; the proposed policy encourages citizens to acknowledge the rights and responsibilities of persons with disabilities.

The Government's policy is to provide essential drugs free of cost to patients seen in government institutions. Drugs listed in the Barbados Drug Formulary are provided free at private participating pharmacies to children under 16 years old, persons with some chronic noncommunicable diseases and those 65 years old and older.

It is the Government's policy to provide prenatal care for pregnant mothers before the 12th week of gestation. Health services for adolescents are provided at the eight public polyclinics around the island. These services seek to improve family life and reduce teenage pregnancy and child abuse among this age group.

The country is committed to ensuring that all citizens have access to potable water, proper sanitation, and an environment free from health hazards. Through provisions in the Health Services Act, the Ministry regulates and monitors new development projects and other commercial and industrial activities specifically with respect to their impact on drinking water quality, near shore water quality, solid and liquid waste management, hazardous waste management, and air and noise pollution. The Government has also implemented a drainage-control program involving cleaning of wells and drains and damming gullies to reduce flooding of low-lying areas. The Central Emergency Relief Organization conducts hurricane preparedness exercises each year to prepare the country for disasters and to mitigate against the impact of hurricanes or any other natural disaster.

Health Sector Reform Strategies and Programs

During the 1990s, the Government recognized that reforming the health sector was critical for improving quality of care, improving equity, improving efficiency and effectiveness, and ensuring the health sector's long-term financial sustainability. To address some of the sector's more critical areas, several initiatives have been undertaken, including mental health reforms, continuous quality improvement and accreditation, care of the elderly, care of persons with disabilities, and reform of the Queen Elizabeth Hospital.

The current mental health care system is based upon institutionalized care. The Government has prepared a strategy to shift mental health services away from this modality and towards a community-based model that promotes mental health and builds links with private sector providers for treatment and rehabilitation services.

There is an ongoing effort to develop a policy on continuous quality improvement and accreditation of health care institutions. During 2000, the Government approved a policy whereby private sector providers would provide long-term care for elderly persons who were on a waiting list. This initiative is part of a policy to increase equity and improve access to health and other social services for the elderly.

An Advisory Commission of Enquiry was set up in 1998 to review all aspects of the Queen Elizabeth Hospital, to prepare a charter for its effective management; it will recommend measures for more efficient and cost-effective provision of health care, including enhancing the hospital's role as a teaching hospital.

The Health System

Institutional Organization

The Ministry of Health has a dual role in the sector: it is the major provider of health care services and it also functions as the health sector's regulator. It is headed by a Minister who has overall responsibility for policy making and political direction. Decision-making is a centralized process. The Permanent Secretary, as the administrative head, functions as the chief executive and accounting officer and is responsible to the Minister for the proper functioning of the Ministry. The Chief Medical Officer is responsible for all technical and professional aspects of the health services.

Queen Elizabeth Hospital, for more than 30 years the main provider of acute, secondary, and tertiary hospital care, is the largest consumer of the Ministry's budget. In 1999, it had 501 beds, representing more than 90% of the acute beds in the country. The School of Clinical Medicine and Research of the University of the West Indies is based at the hospital, and uses the facilities for teaching and research. In addition, a network of five district hospitals provide long-term care for elderly persons, and there also is a mental health hospital and a halfway house, a long-term care facility, a rehabilitation center for the physically and mentally challenged, and a hostel for homeless persons with AIDS. Eight polyclinics strategically located to be within easy access to their catchment populations provide services to the community. All of the polyclinics are supplied with the necessary equipment for the delivery of quality health care. Health care services at government facilities are free at the point of delivery.

There also is a growing private health care sector that is exploiting new market niches. The private health sector consists of more than 100 general practitioners and consultants working either individually or in group practices. Providers of laboratory radiological and diagnostic services complement the work of these medical practitioners. The private Bayview Hospital

provides 30 acute-care beds, and 37 private nursing homes and senior citizens' homes provide long-term care for elderly persons. There is a referral system between clinics, hospitals, the private sector, and other support services.

Public health services cover family health, including maternal and child health; adolescent health; community mental health; dental health; nutrition; general practice clinics; and environmental health services such as food hygiene, and mosquito and rodent control. The Environmental Engineering Division is responsible for construction control, and monitoring air and water quality. The Sanitation Service Authority is responsible for refuse collection, management of the landfill, maintenance of cemeteries, and the cleaning of city streets. The Barbados Drug Service, a WHO Collaborating Center, manages the provision of essential drugs in the country, ensuring that Barbadians receive affordable quality drugs and pharmaceuticals.

Health Insurance

Insurance companies market health insurance packages specifically to credit unions, trade unions, and large organizations. As a rule, policies are basic indemnity plans, reimbursing the beneficiary on the basis of a fixed percentage for each service. Estimates of private health insurance coverage in 1995 and 1996 ranged between 18% and 20% of the population, respectively.

Organization of Regulatory Actions

The 1969 Health Services Act defines the responsibilities of the Minister of Health for the comprehensive regulation of all public health matters. Environmental health officers and the Environmental Engineering Division are responsible for regulatory functions to safeguard quality and safety of food, drinking water, air quality, solid and liquid waste management, vector control, and hazardous waste management. Public health nurses, in collaboration with environmental health officers, maintain surveillance at air and sea ports for diseases listed in the International Health Regulations, as well as investigate cases of notifiable diseases.

The Barbados Drug Service was established in 1980 and is governed by the Drug Service Act and the 1980 Financial (Drug Service) Rules. Its mandate is to provide essential drugs to the people of Barbados at a reasonable cost. Drug safety and effectiveness and the operation of pharmacies and pharmaceutical manufacturing plants are the responsibility of drug inspectors who function under the Control of Drugs Regulations. The Barbados Drug Service also collaborates with the Police Department in narcotic and drug control matters.

In 1999, new legislation was introduced to regulate and monitor the operations of private hospitals, nursing homes, and senior citizens' homes. This legislation provides for a multidisciplinary inspection team comprised of a public health nurse, an environmental health officer, a drug inspector, and a nutritionist, with other professionals to be added as required.

The professional practice of doctors, nurses, pharmacists, dentists, and paramedicals is regulated by medical, nursing, dental, pharmacy, and paramedical councils, respectively. In 1997, the Paramedical Professions Act was amended to include other professional areas such as dietetics and nutrition, osteopathy, cardiac technology, speech language pathology, counseling and educational psychology, acupuncture, reflexology, and nuclear medicine technology.

During 1999, the Government introduced legislation into Parliament designed to strengthen the control of foods imported into Barbados. Given globalization and the rules of the World Trade Organization, new protocols for food protection must be developed. The Government and stakeholders have been reviewing the food legislation in order to respond to new and future trends in the food industry.

There is need for a comprehensive review and amendment of several elements of health legislation to reflect current activities and technologies. Among laws to be reviewed and amended are the Dental Registration Act; the regulation of practitioners of alternative and complementary medicine; food hygiene and restaurant regulations; and the Mental Health Act.

Organization of Public Health Care Services

Health Promotion

In accordance with the Caribbean Charter on Health Promotion, the Ministry of Health pursues the promotion of health and wellness for all Barbadians. In 1997, the National Consultation on Health Promotion brought together government agencies, the media, trade unions, nongovernmental and community-based organizations, churches, and businesses to discuss approaches for building personal life skills, stimulating community participation, and establishing partnerships for cooperation in health. The media has taken an active role in promoting health by producing regular features on relevant topics. It also collaborates with Government, businesses, and NGOs to promote healthy lifestyles through fairs, fun walks, and other events.

A pilot project to strengthen the community's participation in reducing the incidence of dengue fever was tried in one polyclinic catchment area in 1998. The project involved training community representatives in the "healthy community" concept, and assisting them to clean and beautify their community. An evaluation showed that after the project, there was less illegal dumping, fewer mosquitoes and rodents, and a greater sense of pride and awareness of the physical environment by residents. The Government now plans to introduce the project to other communities around the island.

The introduction of Health and Family Life Education in primary- and secondary-school curricula has been a major achievement for building positive attitudes, skills, and habits

among the students. The syllabus that is being tested in schools includes modules on HIV/AIDS and sexually transmitted infections, substance abuse, personal hygiene, environmental health, and nutrition.

The elderly have access to primary care, which is available at the polyclinics, and to acute and secondary care at Queen Elizabeth Hospital and the Psychiatric Hospital. Five geriatric and district hospitals provide long-term inpatient care for elderly persons who are chronically ill and disabled. These institutions have a combined capacity of 768 beds. In addition, 37 nursing and private senior citizens homes contribute to inpatient care for approximately 530 elderly persons.

During the 1990s the demand for long-term care exceeded the availability of bed places in the Geriatric and District Hospitals. As a result of an increasing number of elderly persons occupying acute care beds at the Queen Elizabeth Hospital in 1999, the Government introduced legislation to strengthen the management and care provided for elderly persons in nursing homes and senior citizens homes. A public-private partnership in 2000 was implemented for this purpose. In keeping with the United Nations declaration that 1999 be the International Year of Older Persons, the Government set up a national committee with representation from relevant stakeholders to maintain a national focus on issues relating to aging.

Epidemiological Surveillance

The surveillance of communicable diseases is the responsibility of a team led by the national epidemiologist and integrated by environmental health officers and public health nurses working in collaboration with public health and private laboratories and the Leptosopira Laboratory. Barbados has the only leptospirosis laboratory in the subregion, and performs diagnostic analyses for other Caribbean countries and territories. Medical practitioners are required by law to notify the Ministry of Health of all cases of communicable diseases listed in the Health Services Regulations. During the 1990s, active surveillance was conducted for dengue fever, diarrheal diseases, measles, and rash/fever illnesses.

Potable Water, Excreta Disposal, and Sewerage Services

The Barbados Water Authority provides potable water to households throughout the country. Approximately 98.7% of them are connected to the water supply system, and the remainder have access to potable water. The Water Authority relies on inland deep-water wells and desalination of brackish water. The daily water demand is between 32 and 36 million gallons, with the desalination plant providing between 10%–12% of this quantity.

The Government acknowledges the importance of preserving the country's ecosystem by improving sewage disposal in Bridgetown and along the densely populated south and west coasts. Bridgetown is already connected to a sewerage system, and construction of the sewerage system on the south coast of the country is nearly complete.

Solid Waste Services

Refuse collection services are provided twice per week in densely populated districts, once per week in rural areas, and daily in Bridgetown and its environs. It is estimated that between 500 to 600 tons of refuse are disposed of daily at the landfill. The Ministry has given priority to solid waste management in order to reduce the quantity of refuse in the waste stream, and to solve the problem of illegal dumping. Through the Integrated Solid Waste Management Program, which is an IDB-funded project, a composting facility and a chemical waste storage facility will be constructed.

Food Safety

There is ongoing surveillance of food catering establishments licensed under the Health Services Act. Temporary restaurant permits are approved for vendors operating at street fairs and festivals. Each year, the Ministry of Health provides training for food service personnel who work in the food service industry and food service operators. The Ministry of Health continued to collaborate with the Ministry of Agriculture and the private sector in an effort to control the rodent population that causes economic losses due to damaged foodstuff and contributes to the leptospirosis problem.

Food Aid Programs

The school meals program for primary school students is heavily subsidized to make daily meals affordable to almost all children. The Welfare Board, the Barbados Red Cross Society, church-based organizations, and other NGOs provide food assistance to the needy. In the public sector, the National Assistance Board assigns home-helpers to prepare meals and take care of the elderly who live alone. The National Advisory Committee on AIDS facilitates a food bank program through donations of foodstuff received from the public, to be provided to persons living with HIV/AIDS.

Organization of Individual Health Care Services

Ambulatory, Emergency, and Inpatient Services

Ambulatory services are provided in both the public and private sectors. In 1999, there were 3,998 surgical cases seen at Queen Elizabeth Hospital. Outpatient clinic attendances at the hospital for the major causes of chronic illnesses—diabetes, hypertension, cardiovascular diseases, ophthalmology, and nephrology—numbered 110,194. A 1996 economic study of the Barbados health sector concluded that the private sector provided 55% of all ambulatory care visits for primary and specialist care services; the private sector provided 87% of ambulatory visits for dental services. These services are financed by consumers, either out-of-pocket or from private health insurance.

The polyclinics also provide much ambulatory care, including maternal and child health care services, dental services, and general practitioner visits. To reduce the number of nonemergency cases presenting at the accident and emergency department and the waiting times for medical care, the Government in 1999 introduced a fast track system at the polyclinic nearest to Queen Elizabeth Hospital. That year, there were 7,345 attendances processed through the system, of which 65% were walk-ins and 35% were referrals from the accident and emergency department.

Specialized Services

A referral system exists between public sector institutions and private providers of specialized health care services. These services are paid on a per capita basis and include ultrasound and mammogram, angioplasty, magnetic resonance imaging, renal dialysis, and laboratory services. Another model of care for the elderly in Barbados is one that allows them to pursue independent living; for more than a decade, this has been provided by the local branch of Soroptomist International.

In an attempt to reverse the current trends of the HIV/AIDS epidemic, the Government implemented an aggressive expanded response with a multisectoral approach involving the Ministry of Health and other ministries, faith-based organizations, civil society, and persons living with HIV/AIDS. Recognizing the socioeconomic impact that the disease can have on the population, the Government has established HIV/AIDS as a national priority.

The National HIV/AIDS Program has a strategic focus, and operates within the context of the Caribbean Regional Strategic Plan of Action established in July 2000. This plan identifies priority areas that can be best addressed collectively at the regional level to the benefit of all, while identifying key issues for national level focus. Priority areas include the reduction of mother-to-child HIV transmission; the decrease of the incidence of HIV/AIDS among vulnerable groups; the improvement of surveillance; and the provision of treatment, care, and support for people infected and affected by HIV/AIDS.

Health Supplies

Supplies for medical and other health care purposes are obtained for the public sector through a government central purchasing agency. Most supplies are imported from outside the Caribbean.

The Barbados Drug Service contracts with private, participating pharmacies to meet the population's prescription demand. In 1999, 60% of prescriptions were filled at private pharmacies, for a total expenditure of US$ 13.2 million, of which 50% was paid to private participating pharmacies.

Immunobiologicals and Reagents

Vaccines for the Expanded Program on Immunization are purchased through the PAHO/WHO Revolving Fund. Reagents for laboratory use and for diagnostic procedures are purchased through the main medical laboratory at Queen Elizabeth Hospital for redistribution to other laboratories on the island. Bacteriological testing is done in collaboration with CAREC. Automatic and semi-automatic laboratory testing are used for hormone and cardiac testing. Barbados is in the process of setting up MRI services through public/private sector collaboration. CAT scan ultrasound, mammograms, angiograms, and X-rays are available at Queen Elizabeth.

Human Resources

At a 1997 Conference of Caribbean Ministers of Health, participants considered the issue of human resources to facilitate the movement of Caribbean health professionals between countries. Issues discussed included the accreditation of training institutions; development of a mechanism for the registration of professionals; identification of human resource needs; and reorientation of training institutions to train personnel based on regional priorities.

Queen Elizabeth Hospital is a teaching hospital used by the University of the West Indies Faculty of Clinical Medicine and Research for undergraduate and postgraduate training in medicine.

During the 1990s, an increasing number of professionals, especially nurses, migrated to the U.K. and the United States, resulting in a shortage of nurses in all areas. In light of this, the Government is training 120 nurses per year at the Barbados Community College. The Barbados Community College also trains other health professionals, such as environmental health officers, medical records clerks, laboratory technicians, pharmacists, registered nurses, nursing assistants, and rehabilitation therapy technicians.

As a small, developing country, Barbados faces a paucity of trained personnel to service and repair the full range of biomedical and other equipment used in the health services. The Ministry of Health is committed to ensuring that a cadre of well-trained health professionals are available to provide quality and effective health care services. To renew the skills of health care workers, the Ministry provides continuous education programs for health personnel through fellowships and in-service training programs.

Health Research and Technology

The University of the West Indies is the focal point for health research and technology in the country.

The Ministry of Health has also undertaken various collaborative research projects with the University, that have contributed to establish care models and guidelines for the clinical management of noncommunicable diseases.

Health Sector Expenditure and Financing

Health care services in Barbados are financed through Government expenditure on publicly provided services, out-of-pocket payments, and reimbursements to policy holders by private health insurance providers. Government allocation to the Ministry of Health accounts for between 15% and 16% of total government expenditure. In 1999–2000, Ministry of Health expenditures were US$ 147.6 million. Approximately 21.5% of this sum was allocated to the provision of preventive services, including family health, environmental health services, dental health, and health promotion. The Ministry's expenditure on the South Coast Sewerage Project and the Integrated Solid Waste Management Program represented 16.0% of the Ministry's budget in 1999–2000.

The largest share of the Ministry's allocation is for the provision of secondary and tertiary care services. In 1999/2000 this represented approximately 39%; care of the elderly and provision of pharmaceuticals accounted for 8.2% and 10% respectively.

External Technical Cooperation and Financing

The Ministry of Health has collaborated with international and regional organizations to foster health developments. Among the regional and international agencies providing technical cooperation are PAHO, the Caribbean Regional Drug Testing Laboratory, the Caribbean Food and Nutrition Institute (CFNI), the Caribbean Epidemiology Center (CAREC), the Caribbean Environmental Health Institute (CEHI), the Caribbean Health Research Council (CHRC), and the Inter-American Development Bank (IDB).

Technical cooperation received from these institutions has mainly been in the areas of environmental health, public health, human resources development, research methodology, and health promotion. This cooperation has mainly been in the form of training programs such as seminars, and technical assistance has also been received in the development and use of information systems and the improvement of laboratory testing.

The Government received two IDB loans to assist with environmental health programs and to conduct the Barbados Health Sector Rationalization Program, which is integral to the country's health sector reform process.

FIGURE 1. Gross domestic product, annual growth (%), Barbados, 1991–1999.

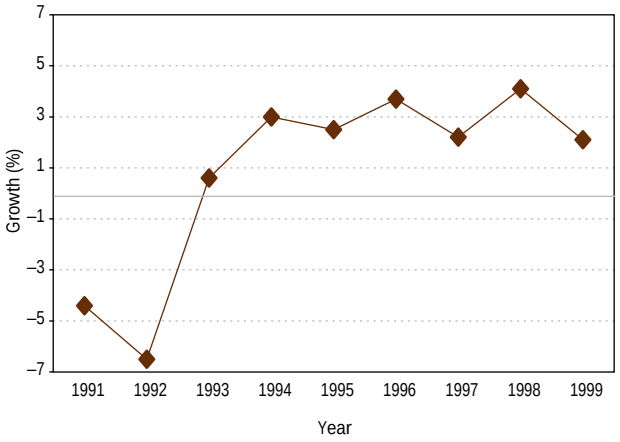


FIGURE 2. Population structure, by age and sex, Barbados, 2000.

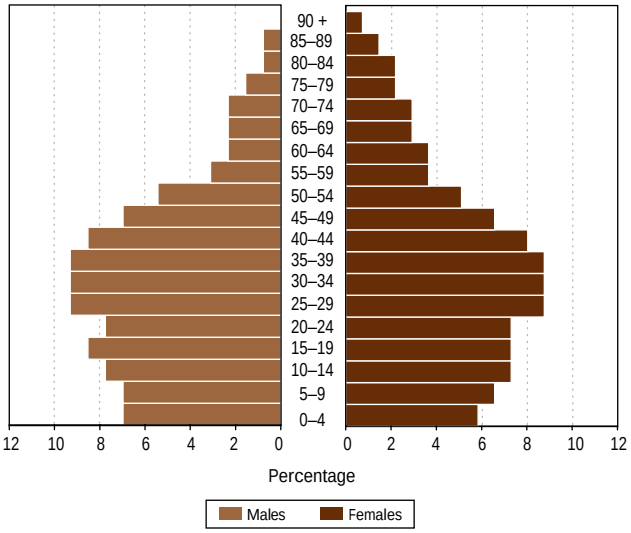


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Barbados, 2000.

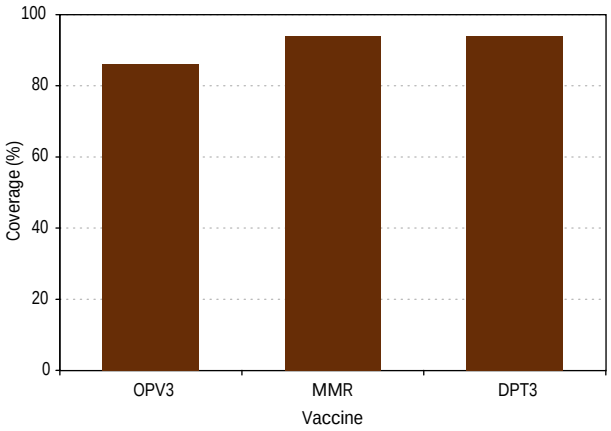
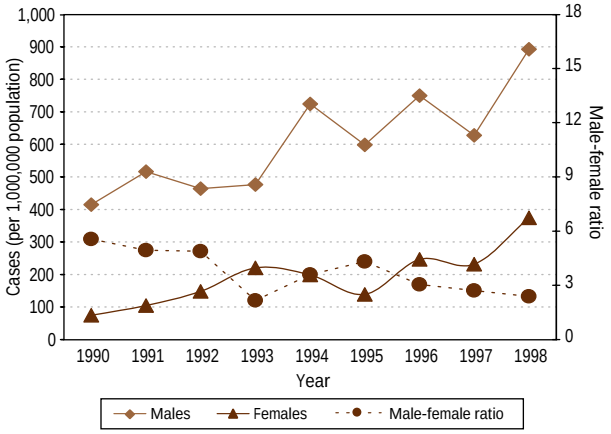


FIGURE 4. AIDS incidence, by sex, with male-female ratio, Barbados, 1990–1998.



BELIZE

OVERVIEW

Belize is located in Central America. It lies in the outer tropics or subtropical geographic belt. It is bordered by Mexico to the north, Guatemala to the west and south, and by the Caribbean Sea to the east. Belize is 274 km long and 109 km wide. The total land area is 22,700 km^2, with a population density of approximately 11 inhabitants per km^2 in 2000. A former British colony, Belize is the only English-speaking country in Central America. Its culture, politics, and economy are more similar to those of other English-speaking Caribbean countries; due to its location, however, Spanish is widely spoken.

Belize obtained its independence from Britain in 1981. It is a sovereign state governed by the principles of parliamentary democracy based on the British Westminster system. The titular head of state is Queen Elizabeth II, represented by a Governor General. A Prime Minister and Cabinet constitute the executive branch of the government, while a 29-member elected House of Representatives and a nine-member appointed Senate form a bicameral legislature, the National Assembly.

Twice destroyed by hurricanes, the capital was moved from Belize City to Belmopan City in 1981. The country has six administrative districts: Belize, Cayo, Corozal, Orange Walk, Stann Creek, and Toledo. Districts and urban areas are administered by locally elected boards, and a mayor and village council govern at the village level. Unique to this system is Belize City, which has its own nine-member elected city council. Village councils assist in village-level administration, with the traditional "alcalde" or mayoral system incorporated into the structure in the southern part of the country (Toledo District).

The national mechanisms for planning and managing development and social policy are those defined by the various ministries. Important social and economic reforms are proposed, which call for the participation of civil society and the private sector in the development and management of national policies and programs.

Belize has an open, simply structured economy based primarily on agriculture and services. The stable currency attracts foreign investments. Since 1976, the exchange rate has been pegged to the U.S. dollar (US$ 1.00 = BZ$ 2.00). Per capita income in 1999 was US$ 2,427, compared to US$ 1,664 in 1989, which represents a growth of 45.8% at current prices. GDP at current prices increased by 92% from US$ 306 million in 1989 to US$ 589.7 million in 1999. GDP had a real growth rate of 8.1% in 2000, compared to 6.4% in 1999 and 1.5% in 1996. Inflation decreased from 6.4% in 1996 to 1.2% in 1999 and 0.6% in 2000. The Ministry of Health expenditure as a percentage of the government budget was 9% in 1998; from 1994 to 1997, it was approximately 8%, and in 1992, was 10% at current prices.

Belize's economy is dominated by agricultural exports, including sugar cane, citrus, concentrate, bananas, and marine products. Forestry, fishing, and mining are also important sectors. Recent economic trends include a significant widening of the trade deficit, which has placed pressure on net foreign reserves.

Social investments in 1999 were distributed among education (40%), water and sanitation (30%), health (25%), and human development (5%). The health sector recurrent expenditure in 1998 was US$ 39,114,000. The Ministry of Health expenditure increased from US$ 9,679,450 in 1996 to US$ 15,452,604 in 1999.

Several socioeconomic indicators reveal disparities among districts (Table 1). For example, infant mortality rates vary greatly from district to district.

Belize's unemployment rate was 13.8% in 1996, 12.7% in 1997, 14.3% in 1998, and 12.8% in 1999. Approximately 70% of the employed labor force were males and 29% were females in 1996, and these proportions were similar in 1999.

A 1995 Poverty Assessment Report conducted by the Caribbean Development Bank, Kairi Consultants Ltd., the Ministry of Economic Development, and the Central Statistics Office considers 33% of Belizeans to live in poverty, with 13% considered indigent. Of male-headed households, 24% are considered poor, while 31% of female-headed households are poor. In Toledo, where the greatest concentration of Maya live, 58% of the population—nearly half the households—are considered poor. Of these households, approximately 44% are indigent. Specifically, 66% of Maya were deemed poor, and of these, 30% are indigent. Nationally, Maya account for almost 25% of the poor.

Adult literacy remained stable from 1996 to 1998, at 86.8% in urban areas and 62.7% in rural areas. Growth retardation figures in

TABLE 1. Socioeconomic indicators of inequity, by district, Belize, 1995–1999.[a]

	Infant mortality rate (per 1,000 live births)				Poverty (%)	Unemployment (%)		Growth retardation (%)
District	1996	1997	1998	1999	1995	1996	1999	1996
Belize	29.4	28.1	28.1	29.1	24.5	18.4	16.2	4.1
Cayo	17.9	15.1	14.0	13.8	41.0	15.2	14.5	17.8
Corozal	13.8	33.0	21.9	9.8	26.7	5.8	11.8	15.8
Orange Walk	32.6	20.3	23.6	13.0	24.9	6.6	5.4	16.8
Stann Creek	32.2	28.9	20.5	5.7	26.5	15.4	8.4	13.5
Toledo	30.1	23.5	13.8	11.5	57.6	14.3	16.9	39.0
Total	26.0	24.0	21.5	17.3	33.0	13.8	12.8	15.4

[a] Underregistration of deaths accounts for the low infant mortality rate outside Belize district.

1996 also showed disparity among districts: Toledo had the highest proportion of growth retardation among the 0–5 age group (39%) and Belize had the lowest (4.1%). The national average was 15.4%.

The 2000 census indicated that the total population of Belize was 249,800 (125,600 males and 124,200 females, for a sex ratio of 102:100) (Figure 1). This represents an increase of approximately 55,800 persons since the 1991 census and an intercensal growth rate of 2.7% per year. The demographic profile is one of a young population: 41% of the population was under 15 years of age and 52% was under 20 years of age. The elderly (60 years and older) accounted for 5.8% of the total population. The dependency ratio was 0.88. Women of childbearing age (15–49 years) accounted for 47% of the total female population.

From 1991 to 2000, the urban-rural population ratio remained stable at 48:52, though the district with largest rural population has shifted from Cayo to Orange Walk. The most populous village in the country, Trial Farm (3,442 persons), in Orange Walk, experienced a two-fold increase in population between the two censuses. Belize district has maintained the highest proportion of the total population, though its share has gradually decreased. Urban areas had more females than males, while the opposite was true in rural areas.

Fertility rates have gradually declined since 1970. The 1999 Family Health Survey (3,613 population sample, 48% urban and 52% rural) estimated the total fertility rate at 3.7 children per woman. The corresponding rate from the Vital Registration System for the same year was 3.3 children per woman, which compares closely with the survey figure. Differences in fertility by urban/rural residence, educational and socioeconomic levels, ethnicity, and religion estimated from the 1991 Family Health Survey revealed several facts. Rural women have, on average, two more children than urban women; non-working women have three more children than working women, and women of low socioeconomic level have four more children than those of high socioeconomic level.

Potable water and sanitation coverage is lowest in the south, where 100% of urban households have access to water, while only 69% of rural households do.

The 1991 census revealed that almost 90% of the total foreign-born population came from Guatemala, El Salvador, Mexico, Honduras, and the U.S., in decreasing order. Most immigrants from Guatemala, El Salvador, and Mexico settled in rural areas, whereas most immigrants from the U.S. settled in urban areas. At that time, an almost equal number of Hondurans resided in urban and rural areas. Since the early 1990s, there has been significant immigration from Asia, primarily from mainland China and Taiwan.

The number of naturalized immigrants was 385 in 1996, 1,878 in 1998, and 980 in 1999. There were 751 permanent residents in 1996 and 1,198 in 1999. The Government started an amnesty program in 1999 and processed the backlog of applicants for legal status.

The 1991 census revealed that over 70% of Belizean emigrants were from urban areas. Most people who left (53.6%) were between the ages of 15 and 24.

The major ethnic groups according to the 1999 Labor Force Survey are Mestizos, who account for some 46.4% of the population and live mostly in the west and north (Cayo, Orange Walk, and Corozal districts); and Creoles, who account for an estimated 27.7% and live along the mid-eastern coast (Belize District). The Maya constitute about 10% of the population, and of them, two major groups—the Mopan and the Ketchi—live primarily in the more remote Toledo District. The Garifuna (also known as the Garinagu), who live mainly in the mid-to-southeastern coast of Stann Creek District and along the Toledo District coast, make up some 6.4% of the population. Belize has other ethnic groups as well, such as East Indians (3.3%), Mennonites (3.3%), and other groups (2.9%), mainly Chinese, Syrians, and Lebanese.

In October 2000, the Government and the Maya of southern Belize signed an agreement to seek a solution to the land needs of the Maya communities. Both the Maya and Garifuna have councils that advocate for their interests and development. These groups have formed the wider Belize National Indigenous Council and the Belize Indigenous Training Institute, facilitating more organized, broader dialogue. Maya community-based organizations include the Ketchi Council

of Belize, the Toledo Maya Cultural Council, and the Toledo Maya Women's Council. The only Garifuna organization is the National Garifuna Council.

With regard to the education system, the indigenous groups are at a disadvantage. According to a 1999 paper from the Ministry of Rural Development, "as far as regular programs are concerned, none of the educational institutions in the formal education system cater to the specific needs of indigenous people." The education system reflects a skewed pattern of development across the country, with fewer resources directed to the southern rural schools. Nonetheless, the University College of Belize opened its modest campus in Toledo in 1996, which has contributed significantly to facilitating access. Few data are available on enrollment by ethnicity at any level of education; however, one study showed that Maya girls have a high dropout rate in the later grades of primary school. Out of 495 Maya women from 26 villages, only 26% had been to primary school and only one had been to secondary school. Toledo District had the lowest level of secondary-school enrollment (13%) whereas Belize City had the highest (28%).

Life expectancy at birth in Belize has increased by 3.5 years, from 68.4 in 1980 to 71.9 in 1991. Female life expectancy increased by about 4 years and male life expectancy by about 2 years.

The crude birth rate in 2000 was estimated at 29.2 births per 1,000 population, which is lower than the 1980 rate of 43.1. Births to the under-20 population have remained high: 17.9% of all births in 1996 and 18.5% in 1998.

Mortality

The crude mortality rate from 1997 to 2000 was 5.1, 5.7, 5.0, and 6.1 deaths per 1,000 population per year, respectively. There were more male deaths (3,103) than female deaths (2,138), yielding a ratio of 1.5:1. Belize District had the highest mortality rate over the period (7.3 per 1,000 population), while Toledo District had the lowest (3.0 per 1,000 population). However, the Vital Statistics Unit reports that more than 30% of deaths were not registered.

There were 5,241 deaths during the 1997–2000 period. The leading cause of mortality was diseases of the circulatory system, which accounted for 30% (1,579) of deaths. External causes was the second leading cause of death, accounting for 14% (740). Five times more males (616) than females (124) died due to external causes. Communicable diseases accounted for 13% (409 males and 263 females) of all deaths, malignant neoplasms for 12% (343 males and 281 females), conditions originating in the perinatal period for 6% (155 males and 138 females), and signs, symptoms, and ill-defined conditions for 5% (156 males and 96 females). Over the 1997–2000 period, Belize District reported the highest proportion of deaths (42%), followed by Cayo (16%), Orange Walk (13%), Corozal (12%), Stann Creek (10%), and Toledo (6%).

HEALTH PROBLEMS

The analysis of the available data from 1996–2000 indicates that communicable diseases are decreasing in Belize, while morbidity and mortality due to external causes, specifically road traffic accidents, are increasing. Such conditions as diseases of the circulatory system, metabolic illness, mental illness, and HIV/AIDS are becoming leading causes of morbidity and mortality and important public health problems.

Improvements in health status are reflected in the increase in life expectancy at birth and the reduction in infant mortality. Maternal mortality was 111 deaths per 100,000 live births in 1996, 100 in 1997, 150 in 1998, 42 in 1999, and 82 in 2000. In all, there were 25 maternal deaths from 1996 to 2000.

According to a 1996 Ministry of Education survey, approximately 15% of schoolchildren have low height-for-age. The country is in the process of being declared iodine deficiency free. Malaria is decreasing, the incidence of cholera has decreased (no cases were reported in 2000), and no cases of measles or polio were reported for the period 1996–2000.

Belize is still battling such infectious diseases as acute respiratory disease, gastroenteritis, pulmonary tuberculosis, HIV, and such chronic diseases as cardiovascular disease. Homicides and deaths and injuries due to road traffic accidents, acts of violence (including domestic violence), and drug abuse and other dependencies have increased.

The challenge, therefore, is to maintain the measurable health gains, such as the reduction of such communicable diseases as cholera and gastroenteritis, and at the same time make policy, structural, and technical adjustments in the health care system to address health needs and changing patterns of morbidity and mortality, especially the increase in road traffic accidents and violence.

By Population Group

Children (0–4 years)

The infant mortality rate was 26.0 per 1,000 live births in 1996 and 17.3 in 1999. More than half (123 deaths) of infant deaths occurred in approximately one-third of the under-1-year population in 1999.

The leading cause of infant mortality during the 1997–1999 period was conditions originating in the perinatal period, which accounted for approximately 57% (249 of 438) of deaths, increasing from 39% in 1996. Of all deaths among neonates due to conditions originating in the perinatal period, slow fetal growth, fetal malnutrition, and immaturity accounted for 41% (101 deaths); hypoxia/birth asphyxia for 22% (54 deaths); other conditions originating in the perinatal period for 12% (29 deaths); congenital anomalies for 7% (18 deaths); septicemia and meningitis for 3%; and injury and poisoning for 3%.

During the period 1997–2000, intestinal infections were the main cause of death in the postneonatal period, accounting for 11% (21), followed by acute respiratory infections (10%), congenital anomalies (9%), nutritional deficiencies and anemia (9%), injury and poisoning (6%), septicemia (5%), and slow fetal growth (3%).

The mortality rate for children aged 1–4 increased from 88 deaths per 100,000 population in 1997 to 121 per 100,000 in 2000. A total of 127 deaths occurred during 1997–2000, with 25, 38, 29, and 35 deaths in each respective year. The highest proportion of deaths (24%) were due to infectious diseases. Of these, acute respiratory infections accounted for 47%; intestinal infections, 40%; and septicemia, 10%. The second leading cause was external causes, accounting for 23% of deaths; road traffic accidents caused 31% of these deaths. Congenital anomalies accounted for 8% of deaths in this age group. All deaths due to accidents, including drowning and submersion, occurred among boys.

In 2000, 29% (331 of 1,138) of hospitalizations among this age group were due to respiratory infections, 14% (159) were due to intestinal infections, and 7% (81) were due to external causes (including 12 due to transport accidents).

According to statistics from the Maternal and Child Health Department of the Ministry of Health, there was little or no improvement in breastfeeding practices or infant feeding practices. A qualitative study on breastfeeding and infant feeding completed in 1997 found that in Toledo, while exclusive breastfeeding practices were appropriate, complementary foods were introduced too late, leading to the high occurrence of malnutrition in this age group.

Schoolchildren (5–9 years)

This age group had the lowest mortality rate (41 per 100,000 population) of all age groups in 2000, with a total of 54 deaths between 1997 and 2000 and a male-female ratio of 1.8:1. External causes, including road traffic accidents, accounted for 50% of all deaths during 1997–2000 in this age group. HIV/AIDS, accidental drowning and submersion, meningitis, diseases of the urinary system, and diseases of the nervous system other than meningitis accounted for one death each. Respiratory diseases were the leading cause of morbidity for both males and females.

The prevalence of growth retardation was 15%, as measured by height-for-age in a 1996 national census of schoolchildren. Its prevalence was higher in rural areas (23%) than in urban areas (7%); in Mayan children (45%) than in Hispanic children (18%) and other ethnic groups; and in males (18%) than in females (13%).

Adolescents (10–14 and 15–19 years)

The mortality rate for adolescents 10–14 years old varied from 38 per 100,000 population in 1997 to 62 in 2000. A total of 67 deaths occurred in this age group during the four-year period. In 2000, three of six deaths due to external causes were caused by transport accidents. This age group accounted for 4% of all hospitalizations (511 of 14,308) in 2000. Of these, 26% (132) were due to external causes, 10% to communicable diseases, acute respiratory infections, and intestinal infections, and 10% to complications of pregnancy.

The mortality rate among adolescents 15–19 years old was 96, 113, 89, and 113 per 100,000 population in 1997, 1998, 1999, and 2000, respectively. There were 411 deaths in this age group over the four-year period. In 2000, 31 deaths (29%) were due to external causes, of which 33% were due to transport accidents. Seven suicides occurred in the 10–19 age group during 1996–2000.

During 1996–2000, 31 adolescent males and 19 adolescent females were infected with HIV. This age group accounted for 13% (1,864) of all hospitalizations in 2000. Complications of pregnancy was the leading cause of hospitalization among 15–19-year-olds (70% or 1,302 hospitalizations), followed by external causes (9% or 172 hospitalizations).

There are limited opportunities for teenage mothers to continue their secondary education, as very few schools allow teenagers to return after giving birth.

Adults (20–59 years)

This age group comprises approximately 42% of the total population. The mortality rates per 100,000 population were 353 in 1997, 424 in 1998, 327 in 1999, and 398 in 2000. There were 1,515 deaths in this age group, which accounted for 29% of all deaths (5,241) over this period; more deaths occurred among males (65% or 989 deaths) than females (35% or 526 deaths).

The leading cause of death in 2000 was external causes, accounting for 30% (128) of all deaths in this age group; 34 of these deaths were due to transport accidents. The second most important cause was malignant neoplasms (mainly breast and cervical cancers), followed by cerebrovascular accidents, diabetes mellitus, and all forms of heart disease.

In 2000, complications of pregnancy was the main cause of hospitalization for women, and 79% of women hospitalized for this cause were in this age group. Complications of pregnancy accounted for 59% of all hospitalizations in this age group, followed by external causes (9%) and cervical and other cancers (1.5%). Other important causes of hospitalization were diabetes mellitus and diseases of the circulatory system. There were 22 cases of HIV/AIDS in this age group.

Approximately 95% of women received prenatal care, though only 25% attended clinic during the first trimester. The 1999 Family Health Survey found that 37.5% of women aged 15–44 were contraceptive users.

The Elderly (60 years and older)

In 2000, the elderly made up 5.8% of the population (14,500 persons), as compared to 6.8% (15,620 persons) in 1997. The mortality rate among this age group was 3,820, 2,079, 2,499, and

2,356 deaths per 100,000 population for 1997, 1998, 1999, and 2000, respectively. A total of 1,682 deaths occurred over the four-year period in this age group (32% of total deaths); of these, 62% were males and 38% were females. In 2000, diseases of the circulatory system was the leading cause of death, for 86% (477), followed by malignant neoplasms (17%), diabetes mellitus (12%), acute respiratory infections (9%), and external causes (5%).

This age group accounted for 11% (1,603) of all hospitalizations in 2000. Diseases of the circulatory system was the leading cause (34%) of hospitalization in 2000, followed by diabetes mellitus (9%), external causes (7%), malignant neoplasms (5%), and acute respiratory infections (5%).

Workers' Health

In 1999, the population at risk covered by Social Security was 57,710. Health insurance claims totaled 1,522 in 1996 and 4,152 in 1999. Most claims were due to sickness (37%) and injury (19%). The leading conditions for sickness claims were respiratory diseases, back pain, and fever. Orange Walk, Corozal, and Stann Creek districts accounted for almost 80% of all injury-related claims. It should be noted that in these districts, where agro-industry is more developed, the age group most affected was the 20–39 group, which accounted for 64.5% of all claimants.

The Disabled

Services for the disabled are provided by the Ministry of Human Development, Women and Children, and Civil Society and the Ministry of Education through its Special Education Unit. The Special Education Unit monitors the delivery of special education programs to disabled children, provides training to teachers in special education delivery, and monitors the integration of these children into mainstream schools.

In 2000, there were 1,991 school-aged children with primary disabilities. These ranged from slow learners to children with speech, visual, and physical disabilities to children with emotional, social, and behavioral disorders. Forty percent (813) of these children were categorized as slow learners, 8.5% had some form of speech or language disorder, 6% had a visual impairment, and 3% had a physical disability. Most children with disabilities live in Belize and Cayo districts, while Corozal and Orange Walk districts have the fewest disabled children. Sixty-three percent of children with primary disabilities were boys.

Indigenous Groups

In Toledo and parts of Stann Creek, where most indigenous peoples live, access to health care is a concern. Medical personnel offer fixed and mobile services to respond to the districts' needs. There is one hospital in Toledo district; a new regional hospital opened in Stann Creek in 1999.

The total fertility rate in Belize is 3.7 children per woman. Fertility rates are highest in both Stann Creek and Toledo districts (5.6 children per woman), where the Garinagu and Maya live. Maya women have a higher fertility rate—up to 10 to 12 children per woman—particularly in Ketchi communities, where marriage and childbearing begin at age 13.

By Type of Health Problem

Natural Disasters

Belize was affected by two major hurricanes during the review period—Mitch in 1998 and Keith in 2000. Although Mitch did not make landfall in Belize, it prompted the largest evacuation in the country's history. Mitch demonstrated the country's vulnerability and the need for a disaster preparedness plan. Hurricane Keith devastated the islands of San Pedro and Caye Caulker and left two-thirds of the country flooded. Keith affected approximately 72,100 persons (30% of the total population).

Vector-borne Diseases

Malaria continues to be a significant public health problem in Belize, despite the decrease in the number of cases occurring in the country during the 1996–1999 period. The number of cases reported over the period was four times lower than the number reported in 1995. Malaria cases ranged from 6,014 in 1997 to 1,441 in 1999. Most of this reduction occurred in the districts of Cayo, Orange Walk, and Corozal. Overall, Toledo District was most affected, with 1,077 (58%) cases in 1999, followed by Cayo (18%) and Stann Creek (16%); these districts accounted for 92% of all malaria cases in 1999. The highest number of cases occurred from June to August, the months with the highest rainfall. Ninety-three percent of the cases in 1996 were due to *Plasmodium vivax* and 6.3% to *P. falciparum*. The proportion of cases due to *P. falciparum* was 2.5% in 1999 and 1.3% in 2000.

In 1995, a total of 107 cases of dengue were reported, of which only 9 were laboratory confirmed. Belize does not have the capacity to conduct serological testing. There were no cases in 1996, and 38 cases were reported between 1997 and 1999.

Diseases Preventable by Immunization

There have been several significant achievements within the expanded program on immunization, such as the elimination of measles and the introduction of the MMR and hepatitis B vaccines. In 1996, when MMR was first introduced, coverage was 74%. It rose to 98% in 1997 and stabilized around 84% in 1998 and 82% in 1999 (Figure 2). Hepatitis B vaccine was introduced into the program in 1999. Coverage for BCG increased over the 1996–1999 period, rising from 90% in 1996 to 96% in 1999. DPT3 coverage increased slightly from 85% in 1996 to 87% in 1999. Coverage for OPV3 averaged 85% from 1996 to 1999.

In November 1996, an outbreak of rubella was reported in a primary school in Belize City. Of the 197 cases investigated, 75

were laboratory confirmed. Of these, six pregnant women were reported exposed to children infected with rubella, and three were IgM positive for the disease. After this outbreak, active surveillance for congenital rubella syndrome was integrated in the measles/rubella surveillance system in January 1997. Since then, 19 cases of congenital rubella syndrome have been investigated, and of these, 5 have been laboratory confirmed.

Intestinal Infectious Diseases

Cholera was first reported in Belize in January 1992. There were 69 cases from 1996 to 1999. Five deaths were reported over the period 1993–1998. Educational programs, along with the improvement and expansion of the water supply and sanitation, had a positive impact on reducing cholera outbreaks in the country, as no cases were reported in 2000.

Chronic Communicable Diseases

It is noteworthy that 42 of the 203 (21%) tuberculosis cases reported over the period 1997–2000 were associated with HIV. Coinfection with HIV increased from 11% of tuberculosis cases in 1996 to 43% in 1999. Males accounted for 69% of cases during this period. Adults aged 20 years and older are the most affected group.

Acute Respiratory Infections

Acute respiratory infections continue to be an important cause of death for all age groups. During 1999, it was the sixth leading cause of mortality among infants. Among the 1–4 years age group, upper respiratory infections were the third leading cause of death for 1998, accounting for 7.2% of deaths among boys and 15.8% among girls. In 1998–1999, it was the sixth leading cause of death among the general population.

Zoonoses

Though rabies in animals is endemic in Belize, no human cases of rabies have been reported since 1989. Rabies cases have been reported among domestic animals (including dogs and cats) and wild animals (e.g., foxes and bats) since 1995. Belize suffered an epidemic in 1997, with 18 canine and 1 bovine case. Following the epidemic, an effective vaccination program was implemented, and no cases of canine rabies were reported in 1998.

HIV/AIDS

The first AIDS case in Belize was identified in 1986. AIDS cases increased at an alarming rate over the review period. Between 1996 and 1999, 119 people died from AIDS, and the disease increased by 63%, with approximately 40% of new cases identified in 1999. Nearly 80% of cases occurred among adults between the ages of 20 and 49.

The male-female ratio of reported HIV cases fell from a high of 13:1 in 1989 to 1.5:1 in 1999 (Figure 3). In approximately 46% of new cases, the virus was transmitted through heterosexual contact, though approximately 14% of AIDS cases (compared to 27% during 1989–1995) reported bisexual activities. By year end 1999, the Central Medical Laboratory reported a cumulative total of 1,037 HIV cases.

Sexually Transmitted Infections

In the 15–35 age group, 344 males and 113 females were treated in 1997–1999 for gonorrhea. *Trichomonas vaginalis* and yeast infections were mostly identified and treated in pregnant women. Other important STIs treated in Belize include syphilis, chancroid, and herpes.

Nutritional and Metabolic Diseases

Severe undernutrition is a problem for 6% of children under 5 years. A 1996 National Height Census of 6–9-year-olds revealed that 15% suffered from growth retardation. The problem is most prevalent in Toledo District (39%) and least prevalent in Belize District (4%). Growth retardation affected more boys (18%) than girls (13%).

Diabetes caused 36 deaths in 1997, 52 in 1998, 67 in 1999, and 89 in 2000. Five out of six amputations in Belize are due to diabetes. According to the Belize Council for the Visually Impaired, 9% of cases of blindness were related to diabetic retinopathy.

Diseases of the Circulatory System

Cardiovascular disease accounted for 30% (1,579) of reported deaths during 1997–2000. The mortality rate increased during this period, from 131 per 100,000 population in 1997 to 250 in 2000.

Malignant Neoplasms

Malignant neoplasms was an important cause of death during the 1997–2000 period, accounting for 12% (624) of deaths. The mortality rate varied from 55 to 79 per 100,000 population over that period. In 1997, prostate cancer was the tenth leading cause of death, accounting for 1.7% of all deaths. In 1998, cancer of the digestive system ranked tenth, accounting for 4.8% of all deaths. In 1999, malignant neoplasms was a leading cause of hospitalization among adults aged 50 and older, accounting for 4.8% of all hospitalizations in this age group.

Accidents and Violence

Road traffic accidents were an important cause of death, accounting for 62% (297 of 483) of all deaths due to external causes during the period 1996–1999. The mortality rate for transport accidents increased from 16 per 100,000 population in 1996 to 31 per 100,000 population in 1999. The rate for males increased from 27 to 55 per 100,000 males over that period, but for females increased only from 7.2 to 7.4 per 100,000 females. The use of seatbelts on highways is mandatory. According to the National Traffic Annual Accident statistics for 2000, 51 of 2,337 traffic accidents resulted in at least one fatality.

Thirty-four suicides occurred from 1996 to 1998; most occurred in the 20–29 age group. The male suicide rate was 85% greater than that of females.

A Ministry of Health report on domestic violence from September 1999 to December 2000 revealed a total of 562 reported cases—94.5% in Belize District and 2.1% in Cayo District.

Oral Health

The number of adults seen by the oral health care services decreased over the period from 3,440 in 1997 to 2,230 in 1999. The number of children also decreased, from 715 in 1997 to 643 in 1999. A baseline Caries Index and Fluorosis Survey completed in 1999 demonstrated a continuing reduction of dental decay in the country: 15-year-olds had 1.56 DMFT and 6–8-year-olds had 2.53 DMFT; 72% of 12-year-olds were caries free. In another study done in 1999 that assessed the level of fluoride in drinking water sources, some sources in Orange Walk District were found to have higher than optimal levels.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Ministry of Health's national health plan has changed from a traditional disease-focused approach to a people-focused and a life-cycle/gender approach. One of the plan's aims was changes in the structure and management of health services, with more a limited but defined role for the central (normative) level and more resources and autonomy for the districts.

During 1997–2000, the Government developed a proposal for health sector reform and defined the main strategies for implementation. In 1998, the new government addressed the Health Sector Reform Project as a main strategy to enable the Ministry of Health to raise the health status of the population by improving the efficiency, equity, and quality of health care services and promoting healthier lifestyles. This project supports the Health Sector Reform Program, which is market oriented, with the preparation of public sector providers to obtain autonomy and become self-sustaining. The program will stress the multiple providers from the private sector and the introduction of the National Health Insurance Fund.

A National Strategic Plan for the HIV/AIDS Epidemic in Belize (1999–2003) was developed, involving the Ministries of Health, Human Development, Education, and Economic Development. A multisectoral Food and Nutrition Security Policy was approved by the Cabinet in October of 2000. A sexual and reproductive health policy was prepared and is pending Cabinet review and approval.

Health Sector Reform Strategies and Programs

The Health Sector Reform Program has three components. The first involves sector restructuring and strengthening the organizational and regulatory capacity of the central and regional levels. It stresses their regulatory and policy design roles, with five components: reorienting the Ministry of Health, deconcentrating operational authority to health regions, piloting autonomy with the Karl Heusner Memorial Hospital Authority, formulating a public information strategy, and promoting knowledge and behavioral change. The second component involves service rationalization and improving the coverage and quality of public and private sector services by restructuring public facilities and purchasing selected services from the private sector to support the public supply. Performance agreements will be designed and implemented to this end. The third component involves supporting the National Health Insurance Fund, which may be financed by payroll contributions (estimated as a percentage of wages) and by government contributions from general taxation to cover the unemployed and the poor. A pilot project is under way to ascertain the most affordable method of financing.

The Health System

Institutional Organization

The Government is responsible for providing health care for the entire population. The public sector is the main provider of health services, which are usually free. Cost recovery mechanisms, particularly for curative services, are being instituted. Private sector health services are limited in Belize, but both for-profit and non-profit health services are expanding. The respective roles of the public and private sectors are not clearly defined and no formal coordination exists between the sectors. The regulatory, financing, purchasing, and provision functions of the public health care system are not clearly separated. Management is mostly centralized and health services and programs are disease oriented. The Health Sector Reform Program established four health regions: Northern, Southern, Western, and Central.

The Ministry of Health is the only public sector health services provider, and is responsible for both primary and secondary health care. Karl Heusner Memorial Hospital is the national referral hospital. Health services, particularly in rural areas, are based on primary health care, managed mainly by nursing personnel and health inspectors.

The private health sector primarily offers ambulatory services. The inpatient care provided is mainly for maternity cases and surgeries.

Institutional Direction, Regulation, Health Provision, Insurance, and Financing

The Ministry of Health is responsible for regulation, financing, health service delivery, sectoral management, and exercise of sanitary authority. These functions are organized in a centralized and vertical structure, in which decision-making occurs at the senior level of the Ministry (Minister of Health, Chief Executive

Officer, and Director of Health Services). Insurance for occupational injury is the responsibility of Social Security.

Authority to prevent and control environmental pollution is contained in the provisions of the Public Health Act, the Pesticide Control Act, and the Solid Waste Management Authority Act. The Environmental Protection Act of 1992 established the Department of the Environment. Since 1996, legislation has been developed for the control of land and water pollution. The Housing Department has set standards for housing ventilation.

Decentralization of Health Services

The Health Sector Reform Program has decentralized responsibility to the four health regions and one autonomous hospital. Financial resources, but not authority, have been partially transferred to the district level. Districts have little control over funding and personnel decisions, particularly in relation to the main public health programs (i.e., vector control, public health, expanded program on immunization, maternal and child health, AIDS/STIs, tuberculosis, and mental health), which continue to operate in a centralized and vertical manner.

Private Participation in the Health System

Private institutions are legally registered as businesses, though there is no legislation that addresses the regulation of private sector health services. Government-employed physicians are allowed to use government facilities at no cost to provide private services. The only private, for-profit hospital is located in Belize City. There are 54 private clinics that provide ambulatory services; most are located in Belize City. Services are financed mainly through users, directly or through private health insurance.

There is one non-profit hospital (20 beds) in Cayo District. Nonprofit private health sector institutions are legally recognized as any other non-profit institution. Nongovernmental organizations that provide ambulatory services are the Red Cross, the Belize Family Association, the Belize Council for the Visually Impaired, the Lions Club, Addiction Alert, the Mercy Clinic, and others. Financing is based on cost recovery mechanisms, donations, and external aid. These organizations operate mainly in urban areas. There are no formal, defined mechanisms for referrals and interaction between private and public sector organizations.

Health Insurance

Private health insurance is limited in Belize, but has increased rapidly during the 1980s and 1990s. Many insurance companies are affiliates of large international firms. Benefit packages cover expenses for medical care in Belize and abroad, depending on the premium. Insurance companies also sell executive plans that cover services provided in the United States. Premiums are high and generally out of reach for the average worker. Family coverage can cost from US$ 60 to US$ 100 monthly (group policy), representing from 10% to 40% of the earnings of many Belizean workers. Some companies provide insurance for their employees.

In 1997, Social Security had 55,000 contributors, representing 68% of the estimated labor force as of April 1997 (80,940 workers). The Ministry of Health does not collect or process data on the various private health insurance modalities, and there is no basic package of health benefits to which all citizens are entitled.

Organization of Regulatory Actions

Health Care Delivery

The Ministry of Health is responsible for the regulation of health care delivery and the development of norms and standards for patient care.

Certification and Professional Health Practice

The laws of Belize address medical services and institutions, public health, food and drugs, and certification and practice of health professionals. The Medical Council registers medical practitioners, dentists, opticians, and nursing homes, and advises the Minister of Health on regulations concerning those categories of health personnel. The Nurses and Midwives Council is responsible for the registration and regulation of nurses and midwives. The Nursing Faculty of the University of Belize participates in an accreditation program within CARICOM countries. The Board of Examiners of Chemists and Druggists is responsible for the examination and registration of chemists and druggists.

Environmental Quality

The key environmental issues are related to agricultural expansion and agro-processing activities. The Pesticides Control Board regulates the use, importation, manufacture, distribution, sale, and disposal of pesticides.

The main threats to marine resources (especially reefs) are effluents from sugar and citrus processing facilities, fertilizer and pesticide run-off, and untreated sewage from urban areas. To address these issues, in 1997 the Government began to register all industries that release effluents into the environment. As a result, processing companies that use large quantities of water must apply for a license to discharge effluents and comply with environmental protection regulations.

Food Quality

Responsibility for food safety traditionally lies with the Public Health Bureau of the Ministry of Health. However, responsibility is now being shared with the new Belize Agricultural Health Authority.

Organization of Public Health Care Services

Health Promotion

The establishment of local health promotion coordinators contributed greatly to the decentralization of health education

and promotion. In 2000, the Mayors Association of Belize and the Minister of Health formally adopted the healthy municipalities approach for the country. The Healthy Municipalities Declaration was signed at a public forum on health and equity. The Healthy Municipalities Initiative in Punta Gorda, Corozal, and Orange Walk, and the Healthy Schools Program were started during the review period.

The Ministry of Health has various programs in place through maternal and child health clinics, pre- and postnatal clinics, and well and sick baby clinics. These include immunization services, growth and nutrition monitoring of children under 5 years old, treatment for diarrhea and minor ailments, and general health education. Some primary level specialized services, referrals, and follow-up care are offered at the health centers for hypertension and diabetes. Prevention and control programs are in place for such communicable diseases as malaria, dengue, rabies, tuberculosis, STIs, and HIV/AIDS.

Through the Health Education and Community Participation Strategy, the Ministry of Health promoted the development of intersectoral district health teams and village health teams to facilitate social participation in health.

Disease Prevention and Control Programs

The vector control program carries out systematic house spraying, particularly in rural areas. The public health bureau conducts anti-rabies vaccination programs and health education activities.

The tuberculosis program runs a chest clinic for treatment of tuberculosis cases.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Through the National Health Information and Surveillance System, the Ministry of Health has built an integrated and decentralized heath information network, which includes the Central Medical Laboratory Information System and allows reports to be generated at the district level.

Potable Water, Excreta Disposal, and Sewerage Services

Substantial investment in the expansion of water services is being undertaken to expand and improve water systems, especially in rural areas. Access to safe drinking water in Belize has improved in recent years. The water supply in urban areas is safe for drinking. Problems relating to water quality are more concentrated in rural areas, especially in communities that take their water from shallow and unprotected hand-dug wells or open streams. Toledo and Cayo districts have been identified as high-risk areas for waterborne diseases for this reason.

In contrast, sanitation coverage remains low, especially in rural areas. According to 1995 data, 59% of the urban population had access to sanitation services, while only 22% in rural areas had access. In 1999, urban coverage increased to 71%, while rural coverage was 25.3%. There are three sewerage treatment systems in the country, one each in Belize City, Belmopan, and San Pedro.

Solid Waste Services

Based on results from a study conducted by the Belize Solid Waste Management Project, it is estimated that in 1997, about US$ 1.3 million was expended on municipal waste services, for an average per capita expenditure of US$ 11.25. Approximately 48% of that sum was spent in Belize City, since about 51% of the country's waste is generated there.

Food Safety

Due to the importance of the agriculture sector in Belize, pesticides are widely used to enhance productivity. Although the national pesticide use per capita fell from 5.7 to 3.9 kg/person/year, it is still high.

The 21 cases of pesticide poisoning (9 deaths) reported in 1999 only represent people who seek medical attention. It is believed that the majority of work-related cases are not being reported and therefore more active surveillance is needed.

By year end 2000, approximately 10,000 pesticide users had been trained through the National Pesticides Certification Program, and of those, over 6,000 have been certified.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

Public health care services are based on primary health care. There are eight hospitals, one in each district (six), except for Cayo District and Belize District, which have two each. Three of the hospitals are regional hospitals, which function as primary level facilities; secondary care is offered at some hospitals. One hospital, Karl Heusner Memorial Hospital, functions as both the national referral center and the general hospital for Belize District. The National Mental Health Hospital is also in Belize District. Both provide individual care. Hospitals provide emergency, surgery, X-ray, laboratory, pharmacy, internal medicine, obstetric, pediatric, and general surgery services, as well as some specialized services. Emergency services are available during regular working hours; physicians are on call for after-hours cases. There are no standard protocols for patient care or for referral to local services or to neighboring countries.

By 1999, there were 598 countable beds in the country, 93% (554) in the public sector and 7% in the private sector (44). The hospital bed occupancy rate was 23% in San Ignacio, 29% in Stann Creek, 30% in Belmopan, 35% in Punta Gorda, 40% in Orange Walk, 64% in Corozal, and 78% in Belize City. The national average of 55% indicates that services are underutilized. There were 16,949 hospital discharges in 1999; the average length of stay was 3.2 days.

There are 76 public facilities in Belize: 39 health centers and 37 rural health posts. Each health center serves 2,000–4,000 persons. These facilities provide health care, including maternal and child health care, immunizations, and vector control. Most centers also provide outreach services through mobile clinics, visiting smaller and more remote villages every six weeks. Mobile clinics account for approximately 40% of the centers' service delivery. The quality and scope of services provided through the mobile clinics vary from district to district.

There is a large gap in access to health services between rural and urban populations, and between the poor and non-poor.

Auxiliary Diagnostic Services and Blood Banks

The laboratory services provide diagnostic testing for institutions and outpatient facilities, surveillance, and patient management. The Central Medical Laboratory is in Belize City. It is responsible for the technical oversight for all Ministry of Health laboratories, for ensuring the availability of reagents, and for advising on equipment purchasing and maintenance. It also supervises the Blood Bank and the Karl Heusner Memorial Hospital Stat Laboratory. Services include bacteriology, serology, chemistry, cytology, histology, hematology, and blood transfusion. Outside Belize City, each of the district hospitals has a laboratory that performs basic diagnostic services as well as prenatal screening (including blood typing and hemoglobin, glucose, and sickle cell anemia tests, and screening for syphilis; routine screening of food handlers for parasitic infections; and referral to the Central Medical Laboratory for HIV, hepatitis B, and thyroid function tests and for bacteriological cultures, surgical biopsies, and Pap smears. Occasionally, food products are tested at the Central Medical Laboratory to rule out food poisoning.

There are 22 clinical laboratories, 32% (7) in the public sector and 68% (15) in the private sector.

Annual blood donations ranged from 2,445 units in 1996 to 3,275 units in 2000.

Specialized Services

The Maternal and Child Health Program provides the following health services: education on safe motherhood; promotion of maternal nutrition, micronutrient supplementation, and tetanus toxoid vaccination; and prenatal care and counseling, and detection and management of high-risk pregnancies, particularly of adolescents and primigravid, high parity, poor, and abused women. Information and counseling are provided on the prevention of STIs, including HIV/AIDS, and their implications for the child. Family planning counseling and services, support programs for domestic violence, and cervical and breast cancer screening are also offered.

The Maternal Morbidity and Mortality National Survey conducted in public hospitals reported 87% coverage for prenatal care (at least one visit). Of the total deliveries, 18% were attended by physicians, 66% by nurses, 1% by auxiliary nurses, and 11% by nursing students.

Health care for the elderly is primarily provided through government facilities and through the St. Joseph Mercy Clinic, located only in Belize City. The Government provides support to the elderly through the Ministry of Human Development and through Social Security.

There are five residential care institutions, two operated by Helpage Belize and two by the Salvation Army. The Government also operates a home in a semi-rural community. In addition, Helpage has active day care centers in all six districts of Belize. Approximately 100 older persons are supported through residential care countrywide, while approximately 200 are supported through non-residential care and day care services.

Inpatient psychiatric services are provided at the psychiatric hospital. Some 80% of patients are chronically disabled, and approximately 60% of these patients are over 50 years of age. Outpatient services at the psychiatric clinic saw 389 new cases and 1,476 old cases in 2000. Services offered include daily crisis interventions, follow-up, and clinical assessments. Some 350 clients were seen at various community institutions and during street visits. Ancillary services, which are growing, consist of visits to homes, streets, prison, shelters, infirmaries, and the Mercy Clinic. These services are mainly provided by social workers, who are occasionally accompanied by a psychiatrist, or by a psychiatric nurse practitioner.

The Mental Health Association was formed to serve as an advisory board to the Minister of Health to recommend the implementation of plans and programs and to improve mental health.

Health Supplies

No drugs are produced in country, nor is there quality control of imported drugs. The Belize Drug Formulary includes 241 drugs and must be used by all registered physicians. All Belizeans have access to the drugs on the list, when available, through the public sector health services. The major problems identified in the public sector's drug management are an insufficient annual budget, ineffective procurement, and a dysfunctional distribution system that causes frequent and prolonged stock shortages.

The amount of the Ministry of Health's budget allocated to drugs and medical supplies was 15.7% in 1966, 14% in 1998, and 19% in 1999, with an average annual per capita expenditure of US$ 21.60.

Human Resources

Health personnel are concentrated in the metropolitan area of Belize, where more than half of the health staff are employed (54% of physicians, 52% of practical nurses, and 57% of professional nurses). Through a bilateral agreement with Cuba, 67 doc-

tors were brought to Belize during 1996–2000 to provide primary care services in rural areas. Almost 75% of the health personnel work in the public sector, with the largest group being practical and professional nurses (84%). Approximately 14% of health personnel work in both the public and private sectors. Personnel in the public health system also includes community health personnel—202 community health workers, 135 traditional birth attendants, 117 midwives, 68 vector control staff, 19 public health inspectors, 7 health educators, and 4 nutritionists. There were 0.1 physicians and 1.8 nurses per 1,000 population in 1999.

There are 61 pharmacists and 73 pharmacies in the public and private sectors. Forty percent of the human resources and pharmacies are in Belize district, leaving some rural areas with inadequate access to essential drugs.

Saint Matthew's University, in San Pedro District, has a private medical faculty, but more than 90% of the students are from abroad. Only the first courses are taken at the University; high-level courses are taken in the United States. During the review period, the Nursing School, which offered diplomas, was incorporated in the University of Belize and is now a nursing faculty that offers a degree.

Health Sector Expenditure and Financing

Financing for public health services is provided by the central government. Cost recovery mechanisms exist in the form of direct payment for some services, particularly laboratory and curative services; nonetheless, the amount recovered is minimal. Fees collected go directly to the general fund and cannot be used by the collecting facility.

The Belize Social Security also provides US$ 500,000 per year to the Ministry of Health in return for the provision of services for job-related injuries for all covered employees. According to the information from the Planning Unit of the Ministry of Health, annual spending on health care services and related costs totaled US$ 39.1 million. Approximately US$ 15.8 million (40.5%) of this is spent by the Government, some US$ 23 million (58.8%) directly by consumers, and a small amount by donors (0.7%).

Government health spending per capita was approximately US$ 81 in 1991 and US$ 115.70 in 1998. Investments made during the 1996–2000 period have been for the expansion of the health facilities network, particularly for hospital facilities.

The Social Security medical care expenditure for 1999 was US$ 700,000, of which 22% was for surgery, 17.5% for travel related to tertiary care, and 8.3% for therapy.

External Technical Cooperation and Financing

The Health Sector Reform Project, with an estimated cost of US$ 18,126,000, is being financed by the Inter-American Development Bank (US$ 9,800,000 or 54.06%), the Caribbean Development Bank (US$ 4,716,000 or 26.02%), the European Union (US$ 1,600,000 or 8.83%), and the Government (US$ 2,010,000 or 11.09%).

Belize has developed many bilateral agreements for technical cooperation. A program for the interruption of mother-to-child transmission of HIV was developed with the Bahamas. Cuba and Nigeria have provided health professionals to work in Belize. Belize is working with Mexico on malaria control activities, and with Guatemala on rabies and communicable diseases.

FIGURE 1. Population structure, by age and sex, Belize, 2000.

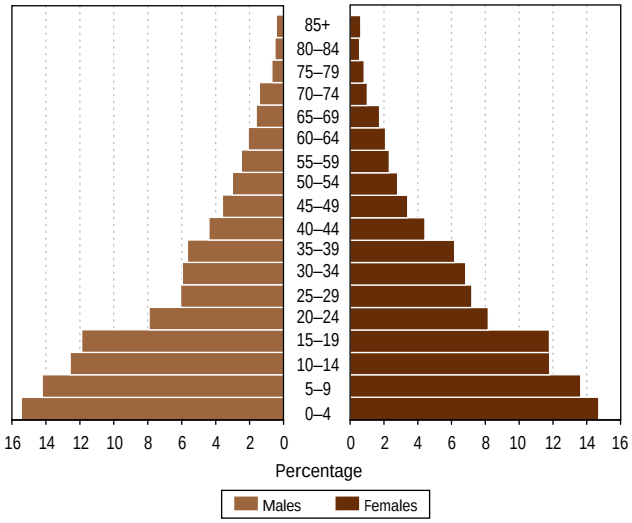


FIGURE 2. Vaccination coverage among the population under 1 year of age, by vaccine, Belize, 1999.

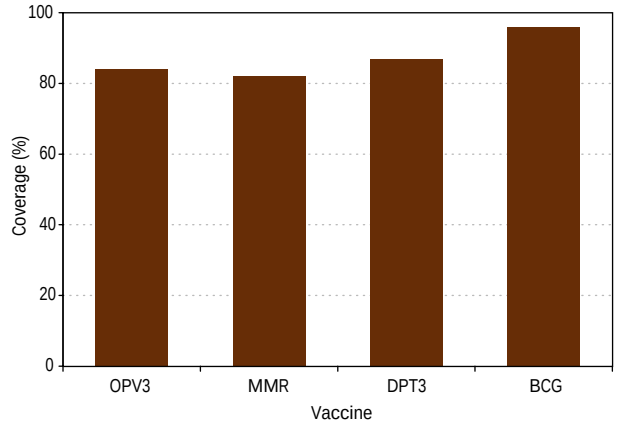
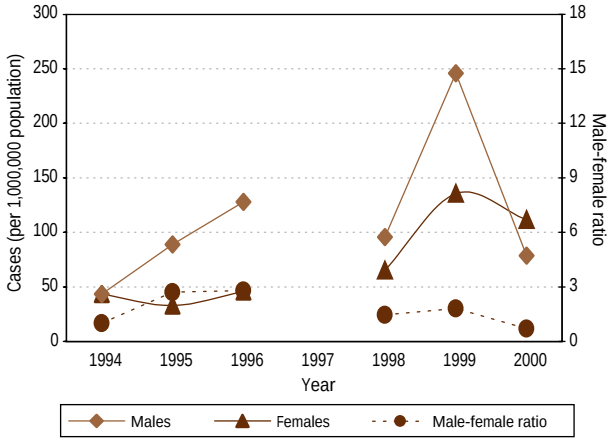


FIGURE 3. AIDS incidence, by sex, with male-female ratio, Belize, 1994–2000.[a]



[a]No data available for 1997.

BERMUDA

OVERVIEW

Bermuda, the oldest self-governing British Overseas Territory, is a group of small islands in the Atlantic Ocean, the largest seven being linked by bridges. It is located 586 mi east of North Carolina, U.S.A. The islands cover an area of approximately 20.5 mi^2 and have a maximum elevation of about 260 ft. The subtropical climate is mild, frost-free, and humid, with temperatures ranging from 65°F to 88°F and average annual rainfall of 55 in. Hurricanes are the only potential cause of natural disasters, with hurricane season lasting from May to November.

Hamilton is the capital of Bermuda. The Territory has nine parishes: Sandys, Southampton, Warwick, Paget, Pembroke, Devonshire, Hamilton, Saint Georges, and Smiths. Pembroke is the most populated parish.

Bermuda's constitution was established in 1968 and amended in 1989. It has a Westminster parliamentary system of government, and its legal system is based on English Common Law. External affairs is the responsibility of the United Kingdom. The Premier appoints a 12-member Cabinet. The Legislature consists of a 11-member Senate appointed by the Governor and a 40-member elected House of Assembly.

Bermuda has very few natural resources and must import almost all of its consumable goods. Its economy is based almost entirely on tourism and international company business. Approximately one-third of the workforce is employed in wholesale retail trade, one-third in restaurants and hotels, and one-third in community, social, and personal services.

In general, Bermudians enjoy good health as measured by standard indicators. The population was estimated at 61,688 in 2000. Nineteen percent of the population was under 15 years of age, and 10% was 65 years of age or older (Figure 1), which is consistent with an aging population. The estimated male population was 29,703 (48%) and the female population was 31,985 (52%). Population density was estimated at 3,009 per mi^2 in 2000. The dependency ratio was estimated at 0.42 in 2000. In 1999, the crude birth rate was 13.2 per 1,000 population and the annual population growth rate was 0.7%. The total fertility rate was estimated at 1.8 children per woman. The period 1997–2000 saw a total of 3,335 births, with the highest number of births (849) in 1997 and the lowest (824) in 1999. Although life expectancy at birth has continued to increase, the difference between the sexes has widened. Life expectancy at birth around 2000 was estimated at 75 years for males and 79 years for females.

There were 27,200 households in 1998; household size continued to decrease. In 2000, it was estimated that 36% of households were headed by females.

In the period 1997–2000, half of the population belonged to three religions: Anglican (28%), Catholic (15%), and African Methodist Episcopalian (12%). The racial composition of the population has not changed significantly over the past decade. In 1998, 61% of residents were Black and 39% were White and other races. Census data indicated that 75% of the Bermuda-born population was Black, while the foreign-born population was primarily White and other races (79%).

The country generally showed a small balance of payments surplus; the Bermuda dollar is pegged to the U.S. dollar on an equal basis. Inflation was estimated at 2.7% per annum in 2000. The tourist industry, which accounts for an estimated 28% of GDP, attracts 84% of its business from North America. The industrial and agricultural sectors are very small; some 80% of food is imported. International business contributes over 60% of Bermuda's economic output. GDP at factor cost increased from US$ 1.9 billion in 1996–1997 to US$ 2.1 billion in 1998–1999. Figure 2 shows Bermuda's annual GDP growth from 1991 to 1998.

Education is free in public schools and compulsory up to age 17 years. The literacy rate has been estimated as being as high as 97%. In 1998, a total of 10,163 students were enrolled in both public and private primary and secondary schools, and in Bermuda College, a two-year tertiary-level institution. In 1999, there were 230 males and 396 females enrolled in Bermuda College; many Bermudians study abroad at the tertiary level. The highest enrollment figures were in hotel and business administration (50% of students) and arts and science (35%). Since the 1980s, Bermuda College has developed an extended academic structure with links to academic institutions outside the country.

Living standards in Bermuda are high, with good housing and well-developed transportation and communication systems. Roads are of good quality and there is a well-developed public transportation system, including buses, taxis, and ferries. Private car ownership is high, though limited to one vehicle per household. All of the population has safe drinking water available in their homes, as well as hygienic waste disposal.

Economic expansion during 1997–2000 occurred primarily in the financial sector. In 2000, Bermuda had one of the highest per capita incomes in the world, with an estimated purchasing power parity of US$ 33,000 per capita. A survey of the major occupation groups in 2000 estimated the employed male population at 19,310 and the employed female population at 18,707. Women constitute 50% of the workforce, and 30% of the workforce was foreign born. A substantial number of contract personnel worked in the hotel industry and international business sector; by law they are all included in a health insurance scheme that assures equitable access to health care.

As a developed country, Bermuda faces problems associated with declining fertility rates and increasing longevity, such as a shrinking active labor force, increasing demand for housing, and a growing elderly population, with consequent health and social needs. Increasing health costs have required the Government to find cost-cutting measures while taking into consideration the needs of an increasingly aging population, particularly the elderly poor. It also addressed the environmental and general health risk factors related to patterns of employment.

Mortality and Morbidity

There were 446, 526, and 451 deaths from all causes for 1997, 1998, and 1999, respectively, with a male-female ratio of approximately 1.2 for each year. In 1999, the crude mortality rate was 7.1 per 1,000 population. Diseases of the circulatory system accounted for 39% (176) of total deaths in 1999, while malignant neoplasms accounted for 31% (138). There were 30 deaths due to communicable diseases (including 9 from HIV/AIDS), 24 due to external causes, and 2 due to certain conditions originating in the perinatal period. According to the Ministry of Health and Family Services, diseases of the circulatory system and malignant neoplasms were the first and second leading causes of death every year from 1990 to 1998. In 1997 and 1998, respiratory diseases replaced AIDS as the third leading cause of death (1993–1996). Accidents and violence and diabetes have also been among the five leading causes of death since 1997.

Between mid-1998 and mid-2000, data from the general hospital showed asthma to be the principal diagnosis (322), followed by pneumonia (273) and calculus of the gallbladder (174). The major health problems, as reflected in mortality data, included cancer, ischemic heart disease, fatal cerebrovascular disease (stroke), HIV/AIDS, and motor vehicle accidents. In 1999, the Adult Wellness Report indicated that 58% of respondents cited AIDS/sexual diseases as their greatest concern, followed by cancer (49%), drug/alcohol abuse (43%), diabetes (25%), heart disease (22%), and obesity/food-related diseases (20%).

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Almost all births in Bermuda take place in hospital. There were eight infant deaths and six stillbirths during 1997–2000; no infant deaths were reported in 2000. The prevalence of low birthweight infants was 4.1%, compared to 7% in 1992. There were no recorded infant deaths due to communicable diseases during 1995–1999. Around 1999, respiratory diseases were the leading cause of hospitalization among children under 1 year.

There were no deaths in the age group 1–4 years during 1997–2000. During that period, 453 cases of gastroenteritis were reported among children under 5 years.

Schoolchildren (5–9 years)

One female death was recorded in the age group 5–9 years between 1997 and 2000. There were 868 cases of gastroenteritis in this age group in the period 1998–2000.

Adolescents (10–14 and 15–19 years)

There was one female death in the age group 10–14 years (due to a motorcycle accident in 1998) during the 1997–1999 period. In this period, there were two male deaths among 15–19-year-olds, also due to motorcycle accidents. Accidents were the leading cause of death among youths 15–19 years of age, and one of the major causes of hospital admissions in this age group, along with pregnancy and respiratory diseases.

In 2000, the National Drug Commission conducted a survey of middle and secondary school students to assess their use of alcohol and drugs. Of those surveyed, 28% indicated that they drink, 10% use tobacco, and 14% use marijuana. This survey also showed that very few students (around 1%) were current users either of crack cocaine, cocaine, heroin, LSD, or ecstasy.

In a national survey of middle and high school students conducted in 2000, 276 (8%) students indicated that they had seriously considered suicide in the last year; of these, 171 (64%) were females. The survey found suicide to be the third leading cause of death among adolescents. Regarding safety in motor vehicles, 2,907 (83%) of students indicated that they do not use seat belts all of the time. In addition, 1,450 (42%) do not wear helmets all the time when riding bikes, all-terrain vehicles, or motorcycles, or when in-line skating.

Obesity is a public health concern in Bermuda. Approximately 10% of children and adolescents age 5–15 years have weight-for-age above the recommended level, and some are obese. Decreases

in the incidence of dental decay have been maintained over the past decade and oral health in children is generally excellent. This is largely attributed to a preventive dental care program for infants and children that provides free fluoride treatment. The voluntary school-based health program has maintained high participation levels.

During 1996–2000, there were 25 deliveries to females 15 years of age or younger, of which 18 were live births. There were 386 deliveries reported in the 16–19 years age group, and 411 live births to 16–20-year-olds. There were 48 therapeutic abortions among teenagers (12.4% of teenage deliveries).

Adults (20–59 years)

There were 303 deaths among adults age 20–59 years in the period 1997–1999. Of these, 189 (62%) were males; the male-female ratio was 1.17:1. Only 36 (12%) of these deaths occurred in the age group 20–34 years; most (267 or 88%) occurred in the age group 35–59 years. In 1999, 8 of 11 deaths among 20–34-year-olds were due to external causes, while 30 of the 86 deaths among 35–59-year-olds were due to neoplasms and 27 to circulatory diseases.

There were 58 deaths from diabetes during 1997–1999; in 1999, all were persons over 40 years of age. In addition, there were 860 admissions to the general hospital in 1997–2000 due to diabetes, with an average length of stay ranging from 28.6 days in 1998–1999 to 20.5 days in 2000.

Childbirth and accidents were major causes of hospital admission among adults age 25–44 years, and diseases of the circulatory and digestive systems and cancers were the leading causes of admission among persons age 50–64 years.

In 1997–1999, there were 887 cases of infection from sexually transmitted diseases, excluding HIV/AIDS.

The Adult Wellness Report (1999) suggested that 35% of adults were obese (BMI $\geq$ 30), and that 25% were overweight and/or obese (BMI $\geq$ 25).

In 1999, 90% of women who required mammograms received them, 95% of women 40 years of age and older had a Pap smear, and 60% of men over 40 years of age had a prostate exam. Most pregnant women continued to make their first prenatal visit during the first trimester either in Government facilities or to private practitioners; around 2000, 99% of births occurred in the hospital. In 2000, over 95% of pregnant women received prenatal care, and 99% were fully immunized against tetanus; all births took place in hospital. Of the 4,168 births in the period 1996–2000, 976 (23%) were to women 35 years of age and older, and were considered high-risk pregnancies. This reflects the aging of the population, and indicates that many women are choosing to have children at older ages.

Elderly (60 years and older)

The elderly represent the fastest growing segment of Bermuda's population. Heart disease and cancer are among the leading causes of death of persons 60 years and older. There were 1,107 deaths in this age group during 1997–1999, accounting for 78% of total deaths. There were 352 deaths among this age group in 1999, of which 149 (42%) were due to circulatory diseases and 108 (31%) were due to neoplasms.

The most common causes of hospitalization among persons age 65–74 years included diseases of the circulatory system, cancer, and diseases of the digestive system. Among persons 75 years and over, the major causes of hospitalization were diseases of the circulatory and respiratory systems. Data from the general hospital indicate that between mid-1998 and mid-2000, 85 persons age 65 years and older were hospitalized for pneumonia, 84 for intermediate coronary syndrome, 81 for congestive heart failure, and 75 for cataracts.

Workers' Health

The Office of Health and Safety oversees the enforcement of health regulations in the workplace. "No smoking" policies are in place in Government offices and virtually all other institutions. There were no industrial site fatalities during the 1995–2000 period.

The Disabled

Bermuda has two special education facilities for handicapped and impaired children. In addition, a specially equipped housing complex, Summerhaven, is available for physically impaired adolescents and adults. Disabled students are being mainstreamed from special schools into the regular school system, where paraprofessionals are assigned to facilitate the process; in the 1997–2000 period, a Government post was established to coordinate this activity. In 2000, an agency was established to oversee the implementation of universally recognized human rights for disabled persons.

By Type of Health Problem

In 1997–2000, there were no natural disasters or reports of zoonoses, including rabies. Cholera has not been reported for at least 40 years.

Diseases Preventable by Immunization

The incidence of diseases preventable by immunization is low. Immunization against diphtheria, measles, mumps, pertussis, polio, rubella, and tetanus has been maintained at consistently high levels. Hepatitis B and *Haemophilus influenzae* type b vaccine are also included in the national immunization plan.

Intestinal Infectious Diseases

There were 187 cases of *Salmonella* and 4 cases of shigellosis during 1997–2000; 55 cases of other foodborne illnesses were reported in the period 1998–2000.

Acute Respiratory Infections

There were 62 deaths due to acute respiratory infections during 1997–1999; of these, only 4 were among persons younger

than 60 years. There were 1,169 admissions to the general hospital due to asthma, with the average length of stay ranging from 6.0 days in 1998 to 4.2 days in 2000. The fact that respiratory diseases were the third leading cause of death in 1997 and 1998, and that asthma and pneumonia were leading causes of hospitalization during the period 1998–2000, is of concern.

HIV/AIDS

HIV and AIDS, first reported in 1982, are a major public health problem in Bermuda. Figure 3 shows the annual AIDS incidence in Bermuda from 1991 to 2000. By the end of 2000, a total of 453 cases had been recorded and 359 (79%) persons had died. Females accounted for 24% of all reported cases. Four pediatric cases were recorded during the period 1982–2000. Ninety percent of the total cases occurred among the Black population. Most cases (208 or 46%) occurred in the age group 30–39 years, followed by the 40–49 years age group (135 or 30%); there were only 45 cases (10%) among persons age 20–29 years. Thirty-nine percent of cases were reported in intravenous drug users and 30% in homosexual or bisexual men. The percentage of cases occurring among intravenous drug users has gradually declined, while cases among homosexual and bisexual men, and among heterosexual partners of persons infected with HIV, have increased.

Sexually Transmitted Infections

Incidence rates for sexually transmitted diseases did not change significantly in the period 1997–2000. Reported cases of gonococcal infections decreased, while the rates of reported cases of syphilis, chlamydia, and nonspecific urethritis have increased slightly. The rate for herpes has remained about the same. In the period 1997–1999, there were 252 cases (22%) of sexually transmitted infection, excluding HIV/AIDS.

Diseases of the Circulatory System

The number of deaths due to diseases of the circulatory system in 1998 (195) was 1.8 times greater than in 1990 (110). Death rates for heart disease remained unacceptably high during 1997–2000. Approximately one in five deaths were due to cardiovascular disease in 1999. That year, there were 176 deaths from cardiovascular disease, of which 38 were due to acute myocardial infarction, 25 to cerebrovascular disease, 20 to chronic ischemic heart disease, 15 to atherosclerotic heart disease, and 6 to atherosclerosis. There were 2,038 hospital admissions due to cardiovascular disease between 1997 and 2000, with an average length of stay ranging from 11.6 in 1997 to 7.3 in 2000.

Malignant Neoplasms

The number of deaths due to malignant neoplasms in 1998 (157) was 1.4 times greater than in 1990 (109). From 1996 to 1998, there were 79 deaths from malignant neoplasms of the digestive organs, 62 of the respiratory system, 54 of the female breast, 47 of the male genital organs, and 20 of the skin. In 1999, there were 138 deaths from malignant neoplasms; of these, 27 were malignant neoplasms of the trachea, bronchus, or lung, 17 of the prostate, 13 of the female breast, 10 of the pancreas, 4 of the stomach, and 2 of the uterus. Approximately one of every four deaths was attributed to cancer, which has increased in frequency as a cause of death.

Between 1997 and 2000, 225 cases of malignant neoplasm of the male genital organs were diagnosed, as well as 201 cases of the digestive organs, 196 of the female breast, 193 of the skin, and 115 of the respiratory system.

Accidents and Violence

There were 67 deaths from accidents and violence during the period 1997–1999. Accidents are a major public health problem that contribute significantly to morbidity and mortality. Although alcohol analyzers have been introduced, and road safety campaigns are ongoing, fatalities from motor vehicle accidents remained high. Accidents were the major cause of death among 15–34-year-olds; the majority of deaths were males.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

Bermuda's health policy emphasizes several areas, including maternal and child health, health of schoolchildren, community nursing for the elderly, dental health, control of communicable diseases, mental health, and alcohol and drug abuse. Population groups designated for special attention include mothers and infants, school-age children, and the elderly.

During 1997–2000, public health policy concerned itself with improving the public health infrastructure to facilitate the delivery of health services. Health education, public health core functions, and professional training were also emphasized.

Health Sector Reform Strategies and Programs

During 1997–2000, reviews were carried out to find strategies to contain escalating drug and health care costs, and at the same time meet the needs of the increasing number of elderly persons and of the poor. Solutions included a restructuring of insurance schemes for these groups to facilitate increased availability of pharmaceuticals, especially for diabetes, chronic heart failure, and asthma. In 2000, a "one-stop" service center for the elderly was proposed. The issue of hospital versus home health care for the elderly was also addressed.

Health sector reform activities focused on several areas, particularly quality assurance in hospitals, physician accountability, and program management. In addition, the hospital instituted a departmental structure, creating department chief positions for surgery, medicine, and pediatrics.

The Health System

Institutional Organization

The public and private health care systems collaborate closely in the provision of health care. Responsibility for public health care lies with the Ministry of Health and Family Services. The Ministry is mandated to promote and protect the health and well-being of Bermuda's residents, and is charged with assuring the provision of health care services, setting standards, and coordinating the health care system. The Minister of Health sets public policy and reports to the Cabinet. The Ministry is responsible for health planning and evaluation; there is no central planning agency.

The Ministry of Health and Family Services is composed of several departments and agencies, including the Department of Child and Family Services, the Department of Financial Assistance, the Housing Corporation, and the National Drug Commission. Each department is responsible for its own operation, under the authority of the Permanent Secretary, and the direction of the department head or director.

The Ministry is also responsible for Bermuda's two hospitals, King Edward VII Memorial Hospital (the general hospital) and Saint Brendan's Hospital (the psychiatric hospital). The general hospital has 226 beds, and private, semiprivate, and public wards. Services are organized into five multidisciplinary programs: continuous care, critical care, maternal/child care, medical care, and surgical care. The nursing and medical staff, recruited locally and worldwide, is diverse, and provides quality nursing and medical care within the community using up-to-date procedures and technological equipment.

Developments in Health Legislation

The Public Health Amendment Act of 1999 and the Public Health Mammography Regulations of 2000 introduced requirements for registration, accreditation, and management of mammography programs and facilities. The Children's Act of 1998 and the Day Care Center Regulations established new standards of day care services for providers. The Residential Care Homes and Nursing Homes Act of 1999 established standards for long-term care facilities for elderly persons. The Mental Health Amendment Act of 1997 comprehensively revised existing mental health laws. The Professions Supplementary to Medicine Amendment Act of 2000 expanded the categories of health personnel subject to regulation. This Act also updated definitions for existing categories and established requirements for re-registration and continuing education. The Nursing Act of 2000 established requirements for categories of nurses and continuing education requirements.

Private Participation in the Health System

There is a large private sector with fee-for-service practices, and an increasing number of informal groups or corporations of specialist physicians and allied health professions; part of their focus is on primary care.

Health Insurance

Bermuda has no universal, publicly funded health insurance. Health insurance schemes are provided through private companies, public agencies, and employers. Government employees are insured through the Government Employees Health Insurance Scheme, while several major employers operate approved schemes to cover their employees. The Hospital Insurance Commission operates a health insurance plan, the Hospital Insurance Plan. This plan has an annual open enrollment period designed to ensure access to health (hospitalization) insurance for all residents of Bermuda. Hospitalization insurance is mandatory for all employed and self-employed persons. Both employers and employees contribute to hospitalization insurance, with employers contributing 50% of the premium costs. Insurance coverage is nearly universal, and some individuals are overinsured. Insurance sold by private companies and public agencies is regulated through the Hospital Insurance Commission, and must provide mandated minimum benefits (the Standard Hospital Benefit).

A Mutual Reinsurance Fund, also administered by the Hospital Insurance Commission, has been developed to cover dialysis, anti-rejection drugs, and hospice care. Hospitalization is provided free-of-charge to children and the elderly; costs are covered through a Government subsidy to the Bermuda Hospitals Board.

Organization of Regulatory Actions

Health Care Delivery

Responsibility for providing public health services rests with the Ministry of Health and Family Services, which is mandated to provide disease prevention and control, as well as health promotion services. It also serves as a regulatory agency, and monitors food safety, and water and air quality. It also provides a variety of public health services, including personal health and dental health as well as environmental health services.

The Public Health Service is heavily involved in providing personal health services and administers a number of traditional public health programs, including maternal and child health; school health; immunization; communicable disease control; home health care, including health visiting, district nursing, and selected specialized care for such diseases as AIDS; rehabilitation; health education; and health promotion.

Bermuda is divided into three health regions to facilitate the delivery of public health services. In each region, the Ministry of Health and Family Services operates a health center that offers prenatal care, family planning, immunizations, child health, and other primary care services, as well as dental clinics for children.

Private voluntary agencies provide some specialized services with Government assistance, such as community-based oncol-ogy nursing, personal services for HIV-infected persons, and others.

King Edward VII Memorial Hospital and Saint Brendan's Hospital are administered by the Bermuda Hospitals Board, a

statutory body appointed by the Minister of Health and Family Services. The Board delegates day-to-day responsibilities for the running of the hospital to an Executive Director, who is assisted by several senior managers, including a Chief of Staff and a Director of Nursing and Patient Services. Medical staff committees representing the physicians are involved in the administration of the hospital. Both hospitals undergo periodic accreditation reviews by the Canadian Council on Hospital Accreditation. There are no private hospitals in Bermuda.

Certification and Professional Health Practice

Licensing is required for most health professions. Regulation of physicians is provided through the Bermuda Medical Council under the 1972 Medical Practitioners Act. Nurses are registered with the Bermuda Nursing Council on an annual basis, while pharmacists are regulated through the Bermuda Pharmacy Council. The Bermuda Dental Board licenses dentists, and the Opticians Board licenses opticians and optometrists. The Council on Professions Supplementary to Medicine registers and regulates nutritionists/dietitians, physiotherapists, audiologists, and other allied health workers. Professional associations also exist for these categories of health professionals.

There are no legal provisions for the registration of nurse practitioners or physicians' assistants. Legislation governing psychologists has been drafted. There are no regulations on counselors.

Basic Health Markets

The Ministry of Health and Family Services monitors the manufacture, importation, and distribution of drugs and medical supplies. The importation of drugs follows strict guidelines; for example, drugs not authorized for use in the country in which they are manufactured cannot be imported into Bermuda. The main suppliers of drugs are Canada, the United States, and Great Britain. The Ministry of Health and Family Services also monitors the importation and use of vaccines and biologicals, as well as the quality and applicability of medical equipment.

Organization of Public Health Care Services

Health Promotion

"Health for Success," a comprehensive school health program, was developed during the 1997–2000 period. The purpose of this project was to develop a network to expand health promotion activities in schools and communities.

Television and radio advertising of tobacco products is prohibited, and the Department of Child and Family Services controls the advertisement of tobacco products in newspapers.

Disease Prevention and Control Programs

Disease prevention and control activities and functions are the responsibility of the Ministry of Health and Family Services, which also provides health analysis and epidemiology services. Routine laboratory tests are conducted in country, and formal arrangements exist for some specialized laboratory testing with overseas laboratories.

Potable Water and Sanitary Excreta Disposal/Sewerage Services

Potable water and sanitary excreta disposal are handled on an individual household basis; hotels and other establishments have their own systems. As there are few natural water supplies in Bermuda, water is obtained mainly through a roof cistern collection system. Desalinization through a reverse osmosis process and water treatment at the Wellington Water Works supplement hotel and residential water needs. By law, well water is to be used only for non-drinking purposes. However, there are some private licensed wells that supplement the tank supply; these are monitored by the Environmental Health Division.

Sanitary excreta is handled through individual septic tanks, as the islands' limestone formation provides a natural filtering system. Beaches and harbors are monitored to control sewerage disposal or dumping into the ocean. Ships hook into a main sewerage line for disposal in the capital city and Dock Yard (a port). In the town of Saint George's, ship sewage is disposed of in a holding tank. In general, sewage is treated and only then channeled out to sea. Monitoring was conducted to assure that sewerage was treated prior to disposal into the sea, and although no serious health problems were reported, the process was of concern and under review in 1997–2000.

Food Protection and Control

Protection and control of food, including the monitoring of the quality of imported food, is carried out by the Ministry of Health and Family Services, which also monitors food handlers and itinerant food vendors.

Organization of Individual Health Care Services

Ambulatory, Emergency, and Inpatient Services

Primary health care services, which are generally available on demand, are delivered at private physicians' offices, Government health centers, and hospital outpatient clinics. Additional ambulatory care services are provided through specialty clinics and the emergency room at the hospital. A substantial proportion of primary health care is delivered through the private sector. The majority of physicians and dentists are independent, private practitioners. Most other health care providers are employed on a salaried basis by the hospitals, the Public Health Service, or by private physicians.

There are no health maintenance organizations, independent practice associations, or preferred provider organizations. There are no provisions for prepaid medical care. There are a small number of multispecialty group practices and a limited number

of partnerships involving specialists. Primary care physicians, including internists and pediatricians, account for half of all physicians in active practice. General practitioners (i.e., family physicians) and other primary care physicians coordinate care and control access to other specialists. Office visits are a major portion of physician–patient contact. Almost all physicians have admitting privileges at the hospitals.

In addition to its specialty, ambulatory care clinics, the general hospital operates a primary care clinic for indigent patients. The average length of stay at the general hospital was 8.1 days during 1996–1997 and 7.7 in 1998–1999. The occupancy rate dropped from 76% in 1996–1997 to 69% in 1998–1999.

Emergency and outpatient surgery services are only provided at the hospital. There were over 32,349 patient visits to the emergency room in 1999.

There are no secondary or tertiary care hospitals in Bermuda. However, tertiary care is provided through links with institutions in the U.S.A., U.K., and Canada.

Specialized Services

The general hospital provides diagnostic and treatment services for patients with a variety of medical conditions. Services include medicine, surgery, obstetrics and gynecology, rehabilitation, and geriatrics. The hospital also provides some specialized services, including oncology, renal dialysis, and medical and surgical intensive care.

Mental health services are provided by psychiatrists, psychologists, a psychiatric social worker, mental health welfare officers attached to Saint Brendan's Hospital, and the Employee Assistance Program. Saint Brendan's, Bermuda's only psychiatric hospital, provides care and treatment for both mentally ill and mentally handicapped individuals. Accredited by the Canadian Council on Health Services Administration, and recognized by the Royal College of Psychiatry as a training site for psychiatric resident doctors, Saint Brendan's provides a high standard of comprehensive mental health care and services. Embracing the Program Management structure, Saint Brendan's covers all areas of psychiatry, including acute general adult, child, and adolescent psychiatry, rehabilitation, community care, extended care, and the subspecialties of learning disability and substance misuse. Forensic psychiatric services are provided to the prisons and consulting services are provided to the general hospital and social service agencies. The 120-bed hospital, which serves approximately 600 outpatients per year, has undergone a process of deinstitutionalization over the past 20 years, and today has several community group homes. Services are provided by an interdisciplinary, multicultural team of professionals. Saint Brendan's operates a day hospital and an outpatient clinic, and provides community-based services. It also maintains a halfway house and supports additional facilities within the community. With the exception of one psychiatrist in private practice, the Hospitals Board employs all of the consultant psychiatrists in Bermuda on a salaried basis.

The Hospitals Board and the Government operate long-term care facilities. Skilled nursing care facilities include Lefroy House, with 57 beds, and the Extended Care Unit at the general hospital, with 90 beds. A hospice facility, Agape House, provides care for individuals with terminal illnesses, including AIDS. It is operated by the Hospitals Board and is partially subsidized by public funds. There are eleven residential care facilities for the elderly, including nursing homes that provide limited nursing care and personal services, as well as domiciliary care homes that provide room and board and limited assistance with personal services. Most of these facilities are partially funded through public monies.

Human Resources

Availability by Type of Resource

In general, Bermuda had sufficient human resources to meet its heath needs. Over the period 1997–2000, the number of physicians increased, as did the number of visiting specialist physicians. There were 16.7 physicians per 10,000 population in 1999. There were 105 physicians in active practice, and while this number is assumed to be in keeping with needs, there were shortages in some specialty areas. Physician specialties included general/family practice (33), internal medicine (9), anesthesiology (8), emergency medicine (7), public health/preventive medicine (6), pediatrics (5), psychiatry (5), general surgery (4), obstetrics/gynecology (4), orthopedics (4), sports medicine (4), otolaryngology (3), radiology (3), cardiology (2), dermatology (2), ophthalmology (2), pathology (2), geriatrics (1), and urology (1).

Nurses represent the largest group of health care providers in the country; there were over 800 licensed nurses, including registered nurses, and psychiatric nurses in 1999. Registered nurses accounted for 75% of nurses. Most nurses were hospital based, and a significant proportion of these were non-Bermudian. There is an ongoing shortage in some nursing specialties.

There were 4.6 dentists per 10,000 population. Twenty-seven dentists were in active practice; five were in the Public Health Service. Most private dentists have independent practices. Specialized dentistry, such as periodontics and orthodontics, is also available.

There were a variety of allied health personnel, including 40 medical lab technologists, 23 radiographers, 15 occupational therapists, 15 physiotherapists, 10 nutritionists/dietitians, and 7 speech-language pathologists. There were 38 pharmacists, who provided services ranging from retail pharmacy to clinical pharmacology. Most pharmacists were employed on a salaried basis. Nurse midwives are registered but do not provide independent care.

Training

Bermuda has no medical schools or graduate medical education programs, though continuing medical education is required for hospital-based physicians. Refresher courses and a degree

program for nurses have been developed at Bermuda College in conjunction with overseas institutions. Training programs for emergency medical technicians have been established by both the Bermuda Fire Service and the Bermuda Hospitals Board.

Health care providers received intensive training in the management of asthma. In addition, several diploma courses were offered.

Health Research and Technology

No formal scientific research projects were conducted during the period 1997–2000.

Health Sector Expenditure and Financing

The health care system is financed through a variety of mechanisms. Health services are paid either through an insurer, by a Government agency, or by consumers. The prevailing method of payment for doctors and dentists is fee-for-service. There are no Government controls on physicians' fees; however a fee schedule for hospital-based physician services is established annually by the Bermuda Medical Society and the Health Insurance Association of Bermuda. The Government determines overall increases in hospital fees, and regulates the acquisition of major equipment and services. Funding for the general hospital is provided through a variety of mechanisms, including insurance and Government subsidies. The Government provides an operating grant to the psychiatric hospital.

Though nongovernmental agencies provide such health services as diabetes education, home health care, and food aid programs, they do not provide direct funding. Government expenditure on health and social services amounted to US$ 105.3 million in 1996–1997 and US$ 112.3 million in 1998–1999.

External Technical Cooperation and Financing

During the period 1997–1999, the Pan American Health Organization and the Caribbean Epidemiology Centre provided technical cooperation in health to Bermuda.

FIGURE 1. Population structure, by age and sex, Bermuda, 2000.

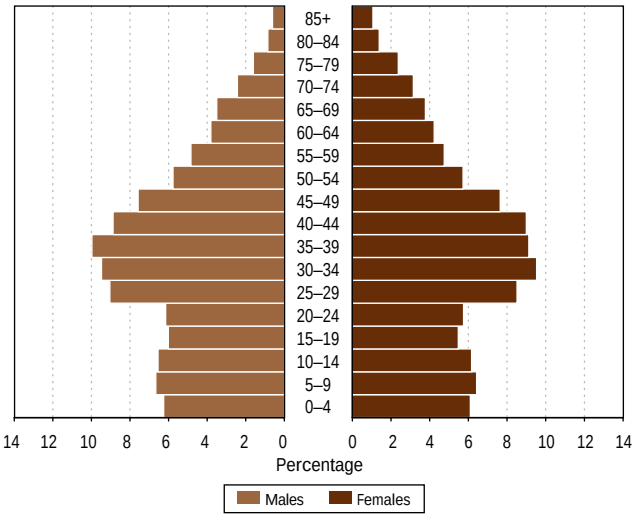


FIGURE 2. Gross domestic product, annual growth (%), Bermuda, 1991–1998.

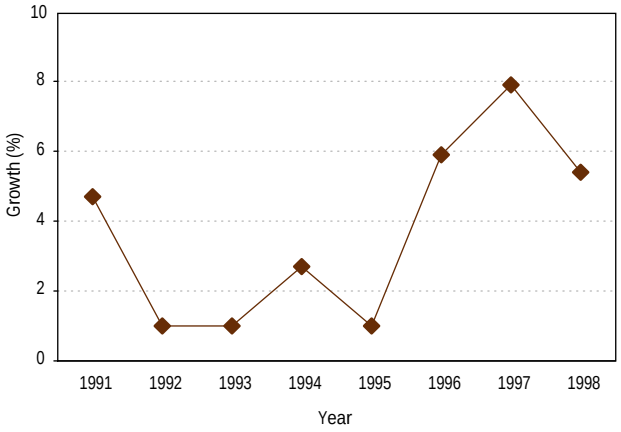
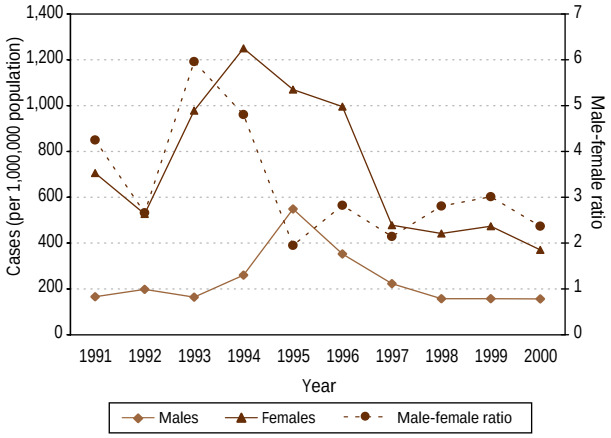


FIGURE 3. AIDS incidence, by sex, with male-female ratio, Bermuda, 1991–2000.



BOLIVIA

OVERVIEW

Bolivia is situated in central South America between parallels 9° 39' and 22° 53' south latitude. It covers an area of 1,098,581 km^2, approximately 60% eastern plains with a warm climate, and the remaining 40% Andean highland plateaus (altiplano), where the climate is cold. The population of Bolivia in 2000 was estimated at 8,328,700 inhabitants, on the basis of the 1992 census, with an overall population density of 7.6 inhabitants per km^2, ranging from as few as 0.9 inhabitant per km^2 in the department of Pando to as many as 27.4 per km^2 in Cochabamba.

Bolivia is a unitarian republic with representative democratic government headed by a president. Its sovereignty lies with the people; government authority is vested in three branches of power: executive, legislative, and judiciary. The country is divided administratively into 9 departments, subdivided into 112 provinces, which in turn are subdivided into 314 municipalities. As a result of the State promoting a decentralization process in recent years, local administration of the municipalities has become particularly important. After rule of law was restored in 1982, the judicial modernization and reform of the State led to the establishment of the Constitutional Tribunal, the Public Defender's Office, and the Judiciary Council. In the legislative area, the Political Parties Act was passed and single-member district representation was introduced. Modernization policies included passing the Community Involvement Act *(Ley de Participación Popular)* and reforming the Constitution in 1994, thereby increasing the degree of participatory democracy by delegating responsibility for municipal management to autonomous governments of equal hierarchy under a Council and a mayor elected by universal suffrage.

By 1998, GDP had risen to US$ 1,010 per capita (at current prices), posting 4.3% growth between 1990 and 1998, falling to 0.4% in 1999, and rising to 2.4% in 2000 (Figure 1). Over that period, mean annual inflation was 10%, declining from 18.0% in 1990 to 3.1% in 1999. The fiscal situation tended to be favorable over that period; however, in 1997, the deficit increased with the reform of the pension system, the cost of which is assimilated entirely by Bolivia's National Treasury. During the 1990s, the sectors with above-average growth were electricity, gas, and water; transportation, storage, and communications; construction and public works; and financial institutions and insurance companies. The following sectors grew at a below-average rate: manufacturing; community, social, and personal services; mining and quarrying; restaurants and hotels; trade; agriculture; public administration services; and domestic services.

The open unemployment rate was down by around 4% in 1999; however, only 48% of the working population in the department seats are salaried workers entitled to social protection benefits. The unemployment figure is low, basically because there is no unemployment insurance, so people use multiple strategies to survive, and 50% of the labor force is in fact underemployed. In 1999, women accounted for 45% of the working population in the department seats; only 34% of working women are in full employment, compared with 65% of men; moreover, data gathered by Bolivia's National Statistics Bureau show that women's salaries tended to be lower and their working conditions more precarious than men's. The State ceased to be the main source of employment over the last few years; its share fell from 26% in 1986 to 8% in 1999.

The incidence of poverty in the Bolivian population, measured in terms of income, fell from 80% in 1976 to 71% in 1990 and to 60% in 1997. The proportion of indigent poor dropped from 75% in 1976 to 67% in the 1990s. Poverty affects over 50% of the population (56% in 1996 and 50% in 1997): the poor would need 50% more income to bring them all above the poverty line. The Gini coefficient, an indicator of the inequality of income distribution, stood at 53.4 in 1996 and 56.2 in 1997. However, the mean poverty indicators disguise serious differences from the point of view of sociospatial distribution: the highest incidence of poverty is concentrated in rural areas and affected 80% of the population in 1990. Table 1 summarizes the breakdown of poverty, indigence, and the Gini coefficient in the country's nine departments and in La Paz and El Alto.

The 1997 National Survey of Employment estimated national illiteracy at 8% among men over 15 and at 22% among women in

the same age group; this means there are 2.8 times more illiterate women than men; the ratio is as much as 4.0 in Oruro, 3.5 in La Paz, and 2.5 in Cochabamba and Santa Cruz. Illiteracy among women aged 15 years and older in rural areas is even more critical, reaching 55% and 52% in the departments of Potosí and Chuquisaca, respectively. According to the results of the National Survey of Employment, the following rates of female illiteracy were recorded for the main cities: 15% in El Alto, 14% in Sucre, 13% in Tarija, 12% in Potosí, and 10% in La Paz.

In rural areas, 31% of women speak only their indigenous language and 42% also speak Spanish, although the latter communicate mostly in their autochthonous language; in other words, two of every three Bolivian peasant women habitually speak in their indigenous mother tongue. According to estimates from UNDP's *1998 Report on Human Development in Bolivia*, 60%–65% speak in Quechua, 25%–30% in Aymara, 5% in Guaraní, and 1%–2% in other autochthonous languages. In department seats where there is a high level of peasant migration, as well as in urban areas, the proportion of bilingual women who speak an indigenous language as well as Spanish is close to 30%.

In 1996, Bolivia's male population had an average of 6.5 years of schooling, and females 5.1 years. According to the aforementioned UNDP report, the need to work is the reason most frequently cited to explain why children aged 6–19 years do not attend school, followed by insufficient financial resources. Among women, the other reason often mentioned was "domestic obligations"; in effect, "if those obligations were officially considered work, [...] that would be the predominant reason for women failing to attend school and would be a weightier one among girls than boys."

In 1993–1995, the average supply of food energy was 1,835 kcal per person per day, 12% less than the estimated requirement (2,085 kcal); vegetables were the main source of calorie input (81%–84%). Rural and remote plains, valley, and altiplano regions have the lowest level of food energy supply in the country, and food in the plains and altiplano regions has the lowest protein content: 29 g per person per day, half the required amount (57.7 g). With regard to the national standard for protein and fat consumption, fat intake since 1995 has grown in relation to protein intake. Two-fifths of the population have below-average adequate energy consumption; adequate energy and protein intake are lower in homes where the mother is illiterate or has only a basic level of education.

TABLE 1. Poverty indicators by department, Bolivia, 1996.

Department (or city)	Poverty (%)	Indigence (%)	Gini coefficient
Santa Cruz	67.7	38.7	49.3
La Paz (department)	69.5	45.0	58.0
La Paz (city)	61.2	35.2	58.0
El Alto (city)	79.9	50.0	44.7
Cochabamba	69.8	43.4	50.0
Pando	74.4	44.0	48.4
Beni	74.8	46.0	51.7
Tarija	76.9	52.1	53.5
Chuquisaca	79.2	59.7	59.5
Potosí	81.4	55.8	50.8
Oruro	84.3	63.8	50.7
Total for the country	72.2	46.7	53.4

Source: R. Morales, based on the National Employment Survey.

In the last 50 years, the Bolivian population has tripled in size, at an overall average growth rate of 2.25%. The department with the lowest level of growth between 1950 and 2000 was Potosí (0.84%), and the one with the highest growth rate was Santa Cruz (4.01%). This increase was accompanied by an intense urbanization process. According to estimates of the Ministry of Sustainable Development, the rural population accounted for 65% of the country's entire population in 1950, but by 1992, it had dropped to 42.5% and in 2000 to 35%. Bolivia's population is young, and the underlying structure of the population is a broad-based pyramid (Figure 2). In 2000, according to the above-mentioned source, 15% of the population was under 5 years of age, 40% was under 15 years, 59% was under 25, and 31% was between 10 and 24 years; women of childbearing age accounted for 24% of the population and 4% of the population was over 65. The total fertility rate remains high; between 1995 and 2000, women had 4.4 children on average, with as many as 5.0 children per woman in the departments of Beni, Chuquisaca, Pando, and Potosí, and 4.0 in La Paz.

Migratory flows registered in the 1992 census are the only recent indications of internal migration available for the country. According to the Ministry of Sustainable Development, the departments of Santa Cruz and Tarija continue to be the main destination of migrants; the departments of Beni and Cochabamba no longer appear to be sources of emigration and instead have become migrant destinations. From around 1992 on, the departments of Potosí, Oruro, Chuquisaca, and La Paz registered negative net migration rates.

Mortality

The annual crude death rate was estimated at 9 deaths per 1,000 population between 1995 and 2000, and life expectancy at birth at 61.4 years. The lowest life expectancy was recorded in Potosí (57.3 years for men and 60.5 years for women) and the highest in Santa Cruz (66.0 years and 69.6 years for men and women, respectively).

It is not yet possible to determine the structure of mortality accurately, because Bolivia has not yet managed to develop a system to record vital statistics. Underregistration of mortality is believed to be as high as 63%. According to the National Civil Registry Office, the main reason is that burials in rural cemeteries are rarely registered. A study on general mortality conducted in 2000, based on information from 21 cemeteries, was used to

identify the causes of death classified by broad groups according to PAHO list 6/67 (ICD-10). It found that 30.3% of deaths resulted from diseases of the circulatory system, 12.0% from communicable diseases, 10.7% from external causes, 8.7% from neoplasms, 5.4% from conditions originating in the perinatal period, 22.2% from other causes, and 10.8% from signs, symptoms, and ill-defined conditions. Figure 3 shows proportional mortality by broad groups of causes during 2000.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

The infant mortality rate declined steadily in the 1990s: it fell from 89 deaths per 1,000 live births in 1988 to 75 in 1993 and 67 in 1998; by the year 2000, it was estimated at 55 per 1,000. However, between 1992 and 1994, the rise in the Gini coefficient from 0.13 to 0.16 reflected the increased inequality of infant mortality.

In rural parts of the country, the infant mortality rate exceeded 80 deaths per 1,000 live births, except in the departments of Tarija, Beni, and Pando; in the rural areas of the department of Potosí, there were 126 deaths per 1,000 live births in 1998. Infant mortality is appreciably lower in urban areas, especially in department seats like Cochabamba (35 per 1,000 live births). The exception is La Paz (110 per 1,000), which includes the city of El Alto, where the level of migration from rural areas is high.

The neonatal mortality rate averages 34 per 1,000 live births nationwide and varies significantly from one department to another: 47 per 1,000 in La Paz–El Alto; 44 in Potosí; 38 in Cochabamba; 35 in Chuquisaca; 25 in Oruro; 20 in Santa Cruz, Beni, and Pando; and 15 in Tarija. Early neonatal mortality (in the first week of life) represents 57% of neonatal deaths; the remaining 43% correspond to late neonatal mortality (7–28 days after birth).

The mortality rate among children under 5 years, which was 131 per 1,000 live births in 1989, dropped to 116 in 1993 and to 92 in 1998, and the estimate for 2000 was 79 per 1,000 live births. Approximately 40% of deaths in children under 5 occur in those under 1 month old, 37% in infants 1–11 months, and 23% in children 1–4 years of age. Nationwide, 36% of deaths in children under 5 years are attributed to diarrhea, 20% to pneumonia, 16% to perinatal causes, 3% to diseases preventable by immunization, and 25% to other causes.

In 1998, data on the level of education of mothers, geographical region, place of residence, and degree of marginalization in different municipalities showed that the mortality rate in the population under 5 years of age is conditioned by these factors. The risk of death for a child in this age group is three times higher if the mother is uneducated (mortality rate, 132 per 1,000 live births) than if she has intermediate or higher education (33 per 1,000 live births); and it is two to three times higher (146 per 1,000 live births) if she lives in a municipality with a high level of marginalization, measured by indicators of income level and access to basic services, than if she lives in a department seat (55 per 1,000 live births). It is also twice as high if she lives in a rural area (125 per 1,000 live births) compared with an urban one (65 per 1,000 live births).

Adolescents (10–14 and 15–19 years)

In 1994, 37% of adolescent girls were mothers by the time they were 19; by 1998, this proportion had dropped to 27%, although it was 51% among unschooled adolescent girls. Beni, Pando, Tarija, Santa Cruz, and Cochabamba have the highest rates of adolescent fertility. In the 25–49-years age group, the average age at which males initiated sexual activity was 17, and 19 for females. Adolescents have little education or information about sex, and they lack access to reproductive health services. Estimates show that 14–19-year-old girls account for 69% of all abortions. Forty-three percent of rural youths aged 12–17 years had begun to drink and 46% had begun to smoke, while nationally, 53% of youths started to drink and 48% started to smoke between 18 and 24 years of age. The age group that runs the highest risk of consuming stupefacients is 12–18-year-olds; however, 4.2% of consumers of other drugs began between ages 5 and 11 years.

Adults (20–59 years)

In Bolivia, a woman with intermediate or higher education has, on average, 2.7 children during her childbearing years, whereas the average for an uneducated woman is 7.1 children. The average age at which an uneducated woman gives birth to her first child is 19; for an educated woman, it is 23. Among women with intermediate or higher education, 99% say they are aware of modern contraceptive methods, compared with 54% in the case of uneducated women. Despite this, only 7.6% use such methods. Educational messages on family planning reach 66% of women with intermediate or higher education and 4% of women without education. In the case of educated women, 98% of them know about AIDS compared with only 29% of uneducated women. The infant mortality rate among children of uneducated women is 88 per 1,000 live births, three times the rate observed in children of women with intermediate or higher education (29 per 1,000 live births). In 1994, the maternal mortality rate was estimated at 390 per 100,000 live births (274 in urban zones and 524 in rural areas). The rural altiplano had the highest maternal mortality rate, with 602 maternal deaths per 100,000 live births.

Family Health

Child abuse is frequent and in 90% of cases is attributed to parents resorting to such treatment "to bring them up properly": one of every three children is regularly the object of physical aggression. Cases of rape and sexual abuse of children have also

been reported. It is estimated that 5 to 6 of every 10 women are victims of some form of violence in the home, and 2 of every 10 men are psychologically abused by their wives or partners.

Workers' Health

Over the last few years, workers' health has deteriorated because, due to political and socioeconomic conditions, the workforce affords higher priority to means of subsistence than to protection from occupational hazards. Hence, informal production methods, carried out under more hazardous working conditions, are on the rise. As a result of the economic crisis, the increasingly precarious labor conditions, combined with a lack of explicit policies in this area, have undermined the existing institutions' capacity to resolve workers' health issues. In 1997, Law 1,732 on Compulsory Insurance was passed and two pension fund administrators were created. These entities will handle labor risk management until the professional risk insurance companies envisaged in the law are created. Despite the establishment of the Superintendency of Pension Funds responsible for supervising and assessing the activities of the insurance companies, to date no information is available on workers' health for the country as a whole.

Indigenous and Other Special Groups

By and large, the Aymara and Quechua communities in the altiplano and the Andean valleys, and those living in rural areas, have the most critical health indicators in the country; these populations are below the poverty line and over half of them live in indigent conditions. The health situation of the ethnic minority groups inhabiting the Amazon region and the Bolivian Chaco is no less critical; the only reports available are not up to date but show 1990 infant mortality rates at close to 200 for every 1,000 live births among the Pacahura ethnic groups (Madera and Abuná Rivers), Reyesanos (Maniqui River), Guarasugwe (Chaco), Cayubaba (Yata River), and Araona (Manuripi River).

By Type of Health Problem

Natural Disasters

The main threats are flood, landslide and mudslide, drought, and forest fire, all of which occur on a cyclical basis with varying degrees of severity. In the last few years, the most serious consequences have been linked to the effects of the El Niño phenomenon and its economic impact: 40 deaths and losses totaling US$ 837 million in 1997, and 75 deaths and losses amounting to US$ 527 million in 1998, according to ECLAC.

Although earthquakes are not frequent in Bolivia, the threat does exist, mainly in Cochabamba. In 1998, the toll of the Aiquile-Totora earthquake was 75 dead and 74 injured in a population of 7,000 inhabitants. The country has a disaster and emergency response system but is unprepared for medium- and large-scale catastrophes.

Vector-borne Diseases

In three quarters of the Bolivian territory, malaria is actively transmitted through the circulation of *Plasmodium vivax* and *P. falciparum* and the presence of the vectors, *Anopheles darlingi* and *A. pseudopunctipennis*. Half the country's population—3.5 million people—live in areas where malaria is prevalent. In 2000, 31,468 cases of malaria caused by the *P. vivax* parasite were reported [annual parasite index (API) 8.8 per 1,000], 37% below the figure for 1999 (50,037 cases; API 14.3 per 1,000) and 58% less than in 1998 (74,350 cases; API 24.8 per 1,000). This situation contrasts with 1991 when 19,031 cases were reported (API 7.0 per 1,000). In 2000, 2,536 cases of malaria from *P. falciparum* were detected, which was 78% lower than the figure for 1998 (11,414 cases).

Chagas' disease is endemic in 60% of the Bolivian territory, owing to the presence of the *Triatoma infestans* vector. This vast endemic area encompasses 6 departments, 65 provinces, 169 municipalities, and 13,776 communities, with 700,000 infested dwellings in rural and periurban areas alike, jeopardizing the health of 4 million inhabitants. The prevalence of infection by *Trypanosoma cruzi* is estimated at 40% of persons living in endemic areas, 24% of whom show some degree of electrocardiographic change consistent with the disease. Serological screening for Chagas' disease conducted by three blood banks in 1998 and 1999 showed a 17.5% incidence of *Trypanosoma* infection.

The increase in the number of cases of jungle yellow fever during the 1980s was followed by a downward trend in 1990. However, between 1996 and 1999, the incidence of the disease rose significantly (30 cases in 1996, 63 in 1997, 57 in 1998, and 68 in 1999), and then dropped sharply in 2000 (8 cases). Over the last five years, 88 (39%) of these 226 cases occurred in the department of Cochabamba and 65 (29%) in Santa Cruz, the majority in 1999; in effect, 5 of every 8 cases confirmed in 2000 were detected in Santa Cruz. In the last decade, the death rate from yellow fever exceeded 60%. Since 1999, the Expanded Program on Immunization has dealt with the control of yellow fever. In 2000, a mass vaccination program was conducted in the areas at risk. It was then extended to the rest of the country to include the entire population of Bolivia. During 1996–2000, a total of 2,189,340 doses were administered.

Circulation of dengue virus serotype 1 and occurrence of cases of classic dengue in the departments of Santa Cruz, Tarija, and Beni have been documented since 1987. In 1998 and 1999, serological studies of 760 samples revealed an IgM positivity rate of 12.4% and 10 viral isolations: 9 corresponded to serotype 1 and 1 to serotype 2. The latest entomological evaluations reflect high rates of vector infestation in Camiri (74%), Yacuiba (24%), tropical Chapare (19%), Boyuibe (8%), Cuevo (8%), and the city of Santa Cruz (17%). In 1999, 27 cases of classic dengue were identified in the department of Santa Cruz, all in the first 25 weeks of the year. In 2000, 80 cases, 62 of them in Santa Cruz, 12 in Beni, 4 in Tarija, 1 in La Paz, and 1 in Pando, were detected. In 2000, 80% of the cases were recorded between the third week in March and the

second in May, after the rainy season. No cases of hemorrhagic dengue with clinical or laboratory confirmation were reported.

Leishmaniasis is found in the tropical and subtropical rural areas of the departments of La Paz, Beni, Pando, Santa Cruz, Cochabamba, Tarija, and Chuquisaca. In 2000, the highest rates of incidence were in Pando (380 cases per 100,000 population), Beni (59 cases per 100,000), La Paz (40 cases per 100,000), and Santa Cruz (13 cases per 100,000). More than half of the 1,735 cases of leishmaniasis reported in 2000 were concentrated in the department of La Paz.

Endemic foci of plague were detected in 2000 in the departments of La Paz, Chuquisaca, Santa Cruz, and Tarija. In 1996 and 1997, there was an outbreak of human plague in San Pedro Apolo (Franz Tamayo province, department of La Paz, the same enzootic-endemic area as the 1981 outbreak) and 17 cases were confirmed with isolation of *Yersinia pestis*, resulting in 4 deaths (24% mortality). The *Pulex irritans* flea was identified as the vector and rodents of the *Orizomys* genus were the reservoir. Since then, no new cases have been reported in humans.

Diseases Preventable by Immunization

In 2000, the DPT3 vaccine and the poliovirus vaccine (OPV3) provided national immunization coverage of 88.5%, and BCG coverage was 94% among infants under 1 year of age; 100% of the population aged 12–23 months was vaccinated against measles (Figure 4). During 1996–2000, annual coverage with DPT3 and OPV3 was above 80%, except in 1997 (79%); coverage with the measles vaccine was higher than 95%, except in 1998 (85%). The desertion rate nationwide fell to 11% in 2000, thanks to the increase in vaccinations administered.

Between the 20th week of 1998 and the 40th week of 2000, a huge measles outbreak spread across the country, accounting for 51% of all the reported cases in North and South America in 1999. A total of 4,751 suspected cases were reported, of which 2,567 were confirmed. The under-5 years age group was the most affected and the highest rates of incidence were recorded in Tarija (60.3 cases per 100,000) and Beni (57.4 cases per 100,000). The last confirmed case was reported in Cochabamba.

Wild poliovirus was last isolated in Bolivia in 1986. The lowest OPV coverage by department in 2000 was recorded in Beni (76.1%) and La Paz (77.3%); the latter is the only department in the country where coverage with this vaccine has not exceeded 80% since 1996. There has been a decrease in the number of cases of acute flaccid paralysis (AFP) reported in children under 15 years: 11.9 cases per million population in 1998, 9.4 in 1999, and 7.6 in 2000. The adequate stool specimen collection indicator for AFP surveillance went up from 58% in 1998 to 68% in 1999 and to 72% in 2000. In the period 1996–2000, the departments that met the AFP detection target were Santa Cruz (5 years); La Paz, Chuquisaca, and Tarija (3 years); Oruro and Potosí (2 years); and Cochabamba (1 year).

In the 1990s, the incidence of neonatal tetanus fell significantly, with two cases reported and investigated in 2000. The national strategy is to vaccinate women of childbearing age in areas at risk, administering the diphtheria toxoid vaccine introduced in 1990 to replace the tetanus toxoid vaccine.

With diphtheria's low levels of transmission and focalized geographic location, the seasonal trend of the disease is dropping. In 1999, four cases were reported among the school-age population, and only two cases were reported in 2000. The incidence of pertussis has also dropped, in line with the increase in DPT3 vaccine coverage: in 1996, 115 cases were reported, whereas just 10 cases were reported in 2000.

Rubella outbreaks in 2000 behaved in a similar manner to the measles outbreak in the preschool and school-age population in the majority of the country's departments and 427 cases were confirmed, 60% of them in Santa Cruz. In July 2000, application of the MMR vaccine against measles, mumps, and rubella was included in the regular EPI scheme for the population aged 12–23 months. Although mumps is not yet included in the national epidemiological surveillance system, in the 1996–2000 period, the National Health Information Subsystem recorded 5,500 cases, of which 2,157 occurred in 1999 and 680 in 2000. The hepatitis B virus has not been included in the national epidemiological surveillance system either, nor is there any up-to-date information on the incidence of this disease.

Intestinal Infectious Diseases

Bolivia saw 40,212 cases of cholera between 1991 and 1995, resulting in 814 deaths (2.0% mortality), including 23,862 cases in 1992. Since then there has been a downturn in incidence: 2,068 cases in 1996, 1,609 in 1997, 467 in 1998 (mortality rate 2.3%, 0.7%, and 0.0%, respectively), and no cases in 1999 or 2000. Since 1998, surveillance of *Vibrio cholerae* O1 and O139 circulation in individuals with suspicious diarrheal symptoms and in water for human consumption and sewage has increased: 365 of 2,118 samples (17.2%) processed in 1998 tested positive for *V. cholerae* O1; in 1999 and in 2000, all the samples processed (143 and 684, respectively) tested negative.

Zoonoses

Teniasis and cysticercosis are found nationwide. Based on studies conducted on urban and rural specimens between 1994 and 1996, the highest seroprevalence of teniasis and cysticercosis was detected in Chuquisaca (12% and 16%, respectively), Cochabamba (7% and 7%), Potosí (7% and 5%), Tarija (8% and 4%), and La Paz (8% and 3%, respectively).

The endemic zone of fascioliasis encompasses the provinces of Los Andes, Ingavi, and Murillo in the northern altiplano of the department of La Paz, where the prevalence can reach 75% in the population aged 9–19 years and 45% in the adult population, according to studies conducted in 1997. The prevalence of fasciola-

sis in livestock is also high: 72%, 32%, and 27% in sheep, cattle, and pigs, respectively.

During the last decade, cases of human rabies followed an interannual cyclical pattern. The most severely affected department was Cochabamba, followed by Chuquisaca, Potosí, and Santa Cruz. The human-animal ratio of rabies was 1:51, and the human-canine rabies ratio was 1:40. The number of people treated each year for animal bites is estimated at 6,000 to 7,000; 70% require vaccination and 3% heterological antirabies serum; the highest demands were recorded in Santa Cruz (35%), La Paz (32%), and Cochabamba (16%).

The incidence of canine rabies fell from 18 per 10,000 dogs in 1992 to 1.8 in 2000. This drop was linked to the increase in canine rabies vaccinations. In 2000, the highest incidences were recorded in the departments of Santa Cruz (3.5) and Cochabamba (2.7).

Chronic Communicable Diseases

In 1999, the National Tuberculosis Program reported 9,272 cases of tuberculosis in all its forms, 12.6% less than those recorded in 1996 (10,614 cases). Confirmed cases of tuberculosis (sputum-smear positive for acid-alcohol–fast bacilli) dropped by 6.4%; there were 6,506 cases in 1999 and 6,949 in 1996. This change was reflected in the drop in the incidence rate from 132 to 114 per 100,000 population between 1996 and 1999. However, this reduction must be interpreted with care, as it might be linked to changes in the reporting and recording system: the number of respiratory symptoms detected fell by 13.3% between 1996 (71,959) and 1999 (62,371) and the number of diagnostic sputum smears by 14.1% (from 133,316 to 114,564), despite the natural population increase. Tuberculosis occurs in densely populated areas, especially where there is overcrowding and malnutrition; 76% of cases are located in La Paz, Santa Cruz, and Cochabamba, and over 80% correspond to individuals of economically productive age. Ever since the directly observed treatment, short course (DOTS) strategy was applied in 1994 in demonstration areas in Oruro, Cochabamba, Caranavi, and Santa Cruz, coverage by the National Tuberculosis Program has not exceeded 60% in terms of case localization or 70% in terms of cured cases in people who began treatment, with treatment incompletion rates ranging from 10% to 12% nationwide.

In 2000, the prevalence of leprosy was 5.3 cases per 100,000 population, ranging from 0.1 per 100,000 population in La Paz to 16.2 in Santa Cruz. Of the 82 new cases detected in 2000 (52 of them in Santa Cruz), 64 were in men (78%). As for the clinical form, lepromatous leprosy accounts for 48% of cases, tuberculoid leprosy for 36%, dimorphous leprosy for 11%, and undetermined leprosy for 5%. The number of prevalent cases of leprosy reveals the declining trend in the disease: 1,179 cases in 1993, 607 in 1997, and 379 in 2000.

Acute Respiratory Infections

In 2000, 1,502,221 acute respiratory infections were treated in the country's health services, an increase over the 1,351,293 treated in 1999 and 1,140,861 in 1998. By the year 2000, a mean concentration of 1.4 episodes of acute respiratory infection per child under 1 year of age (0.5 per child 1–4 years of age) was registered. This evidence, combined with the epidemiological and environmental characteristics prevalent in Bolivia, shows that for a significant proportion of the infant population there is neither the demand for, nor access to, health services to treat acute respiratory infections, because four to six annual episodes of these diseases are expected per child annually. No qualified information is available to discriminate between acute respiratory infections with and without pneumonia.

HIV/AIDS

Between 1985 and 2000, 605 cases of AIDS were registered in Bolivia (52% asymptomatic carriers of HIV). The average annual incidence remained around 3.0 cases per million population between 1990 and 1997; nevertheless, the male-female ratio decreased from 12:1 to 3:1 during that period (Figure 5). The 99 new cases reported in 1999 correspond to an annual rate of incidence of 12.3 per million population. Approximately 70% of cases registered were among men. The most seriously affected age groups are 25–34 years (40%) and 35–44 years (25%); 18% of cases occur in individuals between 15 and 24 years of age. Sexual transmission is the predominant form of transmission (83% of cases); 4% correspond to vertical transmission, 3% to blood transmission, and there is no information on the probable mode of transmission for the remaining 10%. Of all sexually transmitted cases, 62% of individuals declare heterosexual preference, 16% homosexual, and 12% bisexual (there is no information for the remaining 10%). Surveillance studies have established the prevalence at below 1% in pregnant women and 5% in populations with high-risk behavior, which is why the status of this epidemic in Bolivia is typified as incipient.

Sexually Transmitted Infections

In 1999, incidence rates of gonorrhea, syphilis, and hepatitis B in the general population were estimated at 74, 55, and 5 per 100,000 population, respectively. Among sex workers, in 1999 the incidence of chlamydiosis was 9%, syphilis 8%, gonorrhea 5%, and trichomoniasis 5%. About 3,000 sex workers regularly attend prevention and control programs at health establishments.

Nutritional and Metabolic Diseases

According to the 1998 National Health Survey, the prevalence of chronic undernutrition in children under 3 years was 26%, but it was 44.3% among children with uneducated mothers and 35.6% in rural areas, twice the figure for urban areas (18.3%). In the same age group, the national incidence of anemia was 67%, reaching 77% in Potosí and 76% in Cochabamba. Iron deficiency is the main cause of anemia: one of every three women of childbearing age is anemic. Among infants 0–3 months old, 61% are exclusively breast-fed. The salt iodization program re-

duced the prevalence of iodine deficiency disorders from 61% in 1981 to 21% in 1988 and to 5% in 1995. In the country's main cities (La Paz, El Alto, Santa Cruz, and Cochabamba), the prevalence of diabetes among the population is 7.2% (7.6% in women; 6.8% in men). In Santa Cruz, it is 12%, with a higher percentage among older adults—20% in individuals aged 60–64 years. Seventy-three percent of diabetics are overweight and 36% have arterial hypertension. In the main cities, the incidence of arterial hypertension is 18.6% in the general population (16% in women; 21% in men) and as high as 22% in the city of Santa Cruz.

Accidents and Violence

The police recorded 792 deaths from traffic accidents in 1998 and 681 in 2000, 1,007 suicides in 1998 and 391 in 2000, and 504 homicides in 1998 and 306 in 2000. Child abuse and domestic violence are frequent but underreported.

Oral Health

In 1998, the DMFT index at 12 years of age was 4.7, with a caries component of 93%. The prevalence of untreated caries at this age is 84.6%. This situation is worse in areas of extreme poverty. Lack of oral hygiene explains the prevalence of periodontal disease and the need for community treatment.

Emerging and Re-emerging Diseases

The first confirmed case of hantavirus pulmonary syndrome was reported in June 1998 (week 24) in Tarija (Puesto García), and the second, in October 1999 (week 40) in Santa Cruz (Montero); neither of the two was fatal. In May 2000, there was an outbreak of five cases in men 15–54 years of age (four deaths) in Bermejo, in the department of Tarija. The epidemiological investigation detected 8% seroprevalence (3 IgG-positive samples of 38 analyzed) in inhabitants of Bermejo and cross-reactivity to the Sin Nombre virus in 3 of 127 rodents caught.

The provinces of Mamoré and Iténez in the department of Beni comprise the endemic-epidemic zone of Bolivian hemorrhagic fever since the first case was reported in 1959 in San Joaquín. No cases were reported from 1997 to 1999; the only case reported in 2000 was in Huacaraje, Beni, and was fatal.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The 1997–2002 National Government Plan known as the "To Live Better" plan rests on four pillars: equity, dignity, institutionality, and opportunity. The 1997–2002 Strategic Health Plan establishes the national policy for the sector and is designed to develop the Bolivian health system and ensure universal access through individual, family, and community primary health; an "epidemiological shield"; short-term basic and social insurance; and promotion of healthy municipalities, subject to participation of and control by society. It is aimed at the reform by the health sector of its State policies for the struggle against poverty and in favor of universal access to health care. The Health Plan adopts the sectoral decentralization guidelines provided for in the 1994 Community Involvement Act, which provides for transfer of management of the physical infrastructure of the health establishments to the municipalities and those responsible for its implementation, the municipal councils.

The Health Plan pinpoints four technical and strategic lines of action: (1) the technical line, aimed at developing economic and financial models, administrative and jurisdictional management, and health care; (2) the intersectoral technical line, aimed at promoting healthy municipalities, intercultural and gender approaches, and health education and promotion; (3) the strategic social management line, which addresses the mobilization, participation, control, and social information components; and (4) the legal and strategic and media line, aimed at drafting and passing a new Health Act (*Ley de Salud*).

Health Sector Reform Strategies and Programs

The main strategy behind the sectoral reform process is Basic Health Insurance, an instrument aimed at achieving equity, quality, efficiency, financial sustainability, and social participation in the health system's response to the population's health needs. The Basic Health Insurance scheme is designed to guarantee all inhabitants permanent access to a series of promotional, preventive, and curative health benefits, which are essential to mitigate the consequences of the main causes of disease and death in the country, at a sustainable cost. This system provides health care and nutrition for children under 5 years; immunization and promotion of nutrition; and attention to priority problems in the mortality profile. The latter include infectious respiratory diseases and acute intestinal diseases; women's health (addressed through regular prenatal check-ups and delivery and postpartum care), and complications and care during pregnancy; and sexual and reproductive health (addressed by the provision of guidance, including family planning).

Basic Health Insurance covers diagnosis and treatment of the country's principal endemics: tuberculosis, sexually transmitted infections, malaria, and cholera. The insurance strategies cover home visits, regular visits to the community, transfer of patients in the event of emergency, care by accredited community agents, and mother and child hospitalization services.

The debt relief program for heavily indebted poor countries in which Bolivia participates proposes monitoring four performance indicator goals: delivery care coverage (69%), coverage for treatment of acute respiratory infections in children under 5 (70%), coverage for treatment of acute diarrheal disease in chil-

dren under 5 (56%), and DPT3 immunization coverage in infants under 1 year of age (85%). By the year 2000, these coverages were 50%, 87%, 36%, and 86%, respectively.

The financial sustainability strategy for Basic Health Insurance depends on the investment of per capita tax resources assigned to the municipalities exclusively for insurance purposes. The amount required to operate the Basic Health Insurance scheme nationwide was estimated at US$ 31.14 million in 1999. The sources of financing are the municipal governments (57%), the national government (33%), and international cooperation (10%).

The Health System

Institutional Organization

Bolivia's health system comprises public and private for-profit and not-for-profit sectors and the social security system. The Ministry of Health and Social Welfare is responsible for sectoral regulation and for issuing and applying policies and national standards. The central administration of the Ministry of Health, the decentralized entities, social security, and the entities engaged in health activities that operate at the local government level (prefecturas) in the departments and municipalities are all part of the public health sector administration. The social security system provides insurance coverage for sickness, maternity, and short-term occupational illness and injury. Its beneficiaries are mainly workers and their families, who contribute to the National Health Fund, which provides public coverage, and private funds. Private sector coverage is provided through insurance companies, prepaid medical schemes, and nonprofit nongovernmental organizations. Because of its pluricultural and multiethnic condition, the country has an ancestral system of ethnic medicine, which is gaining recognition and being coordinated with the formal system to meet the population's general health needs.

Developments in Health Legislation

The Bolivian Constitution states that it is compulsory to defend human resources by protecting the population's health. The 1978 Health Code sets forth the legal regulation of activities aimed at preserving, improving, and restoring the health of the population. This has gradually been modified through legal provisions such as the 1994 Community Involvement Act, which transferred administration of the health infrastructure and operating expenditure to the municipal governments, leaving staff management to the Ministry's central administration; and the 1995 Administrative Decentralization Act and Supreme Decree 24,303 of 1996, which created the National Insurance Scheme for Mothers and Children, and was amended in 1998 by Supreme Decree 25,265, which created the Basic Health Insurance service.

Institutional Separation of Functions

In the public sector, the Ministry of Health is the sole entity in charge of regulation, policy and standards issuance, and implementation and oversight functions. Administrative responsibility for the ambulatory and hospital network that provides services lies with the municipal governments. Because health care is provided as a public service, the national government and the municipalities are responsible for insurance and financing. Likewise, each health fund is responsible for managing the implementation, provision, and funding of social security services. The Vice Ministry of Social Security and the National Health Insurance Institute, a decentralized entity of the Ministry, are in charge of management and health insurance auditing functions.

Segmentation of the Population Served

Approximately 43% to 48% of the population uses the public services of the Ministry. Social security funds, including health insurance funds, account for 22% of health insurance coverage. An estimated 10% of the population has access to private health care, and between 20% and 25% of the population—mainly the scattered rural population—lacks access to either public or private sector services. An estimated 70% of Bolivians use ethnic medicine.

Decentralization of Health Services

The Community Involvement Act, which stipulated that management of the health infrastructure—with the exception of personnel management—should be transferred to the municipalities, has benefited the decentralization of the health services. During a series of national dialogue sessions promoted by the Government in 2000 to guide social and economic development, government and civil society alike agreed on the need to decentralize all health management functions and bring them under the responsibility of the municipalities. This would involve transferring the management of health services personnel to the municipalities as well, leaving the Ministry responsible solely for oversight and policy setting functions.

Private Participation in the Health System

The private health sector is composed of insurance companies that act as funding intermediaries for the health services. Toward the end of 1998, an estimated 40,000 people were insured under this system and the annual premium per policyholder cost between US$ 120 and US$ 450. In turn, the private prepaid medicine system acts as a funding intermediary and service provider. Around 30,000 persons are insured under the private system, for an annual quota ranging from US$ 240 to US$ 650. Nonprofit nongovernmental organizations, and in particular the health services run by the Catholic Church, complement the private sector, as do other institutions, which are funded by bilateral coop-

eration and operate through cooperation agreements with the Ministry of Health.

Organization of Regulatory Actions

Health Care Delivery

The system has three levels: the first level is outpatient care and the development of health promotion programs and disease prevention; the second level is hospital care, which covers the basic specialties (internal medicine, pediatrics, gynecology and obstetrics, and surgery); and the third level corresponds to specialized institutes. The Ministry of Health is responsible for organizing services and setting standards for ambulatory care, health promotion, and disease prevention.

Certification and Professional Health Practice

The Bolivian university system trains health professionals. The system includes state universities and, more recently, private ones currently undergoing a government accreditation process. Supreme Decrees 16,181 of 1979 and 17,203 of 1980 and the 1980 Agreement between the Ministry and the Executive Committee of Bolivian University, renewed in 1992, establish the coordination between training entities and State health services agencies through a research and training-health care integration process. Under the certification and professional practice system, upon completion of their undergraduate studies, doctors and nursing staff are required to work in the Compulsory Rural Health Social Service at a secondary-level rural hospital (in keeping with Supreme Decree 25,695 of March 2000).

Environmental Quality

The low level of access to potable water, sewerage, and solid waste disposal services constitutes a serious environmental problem and contributes to the medium- and long-term depletion of natural resources. Despite Bolivia's rich agricultural, forestry, and hydrologic potential, deforestation is estimated to have increased from 80,000 ha in 1985–1990 to 168,000 ha in 1990–1995 because of the expansion of the agricultural frontier, along with unquantified agrotoxic contamination. What is typified as "strong" erosion already affects 61% of the soil in the semiarid and subhumid Andean region, and "very serious" erosion affects 24%. Institutional efforts led to approval of the Forestry Law by the National Congress and approval of the creation of the National Institute for Agrarian Reform; approval of forestry management plans and land ownership is pending.

The housing deficit has resulted in only 34% of dwellings having acceptable living conditions and 79% of the population living in crowded conditions (five people to a room). In the agriculture sector there are two main methods of food production: traditional and entrepreneurial. The former is a peasant-farming economy, and the latter an industrial economy. The participation of very small landholdings in the food supply amounts to 70%, aimed mainly at agro-export products (soy, chestnut, palm). Food security coverage nationwide is 20%.

Organization of Public Health Care Services

Health Promotion

The first-level health care service network is in charge of different health information, education, and communication programs, in coordination with the respective municipal governments of its jurisdiction, depending on the epidemiological profile, and geared to the school and labor populations in general. Development of healthy municipalities is promoted through these activities.

Disease Prevention and Control Programs

The "epidemiological shield" strategy for the surveillance and control of Chagas' disease, malaria, tuberculosis, yellow fever, leishmaniasis, and diseases preventable by immunization was set up by the Ministry of Health to vertically integrate the activities of priority programs. Control of outbreaks is complemented by the regular system for the provision of diagnostic services and treatment of prevailing pathologies not subject to compulsory notification under Basic Health Insurance service coverage. Health care for priority population groups (women, mothers, children, and adolescents) is part of the national health care program, with emphasis on prevention and control of acute diarrheal disease, acute respiratory infections, sexual and reproductive health, sexually transmitted infections, nutritional disorders, cervical cancer, other chronic and degenerative disorders, and domestic violence.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

The National Epidemiological Surveillance and Health Situation Analysis System was set up in 2000. This public health surveillance model includes mortality, morbidity, nosocomial infections, risk factors, environment, and basic indicator components. The surveillance system includes a network of 248 clinical analysis laboratories in rural endemic areas in the process of consolidation—70% with an installed capacity for the microscopic diagnosis of tuberculosis and malaria and 10% with a capacity for bacteriological or serological confirmation of reportable diseases. The National Institute of Health Laboratories in La Paz and the Center for Tropical Diseases in Santa Cruz are national referral laboratories that, in turn, contribute to the standardization and accreditation of establishments belonging to the network. The National Health Information Subsystem, consolidated since 1990 as a component of the National Statistical

Information System, prepares information on the production and productivity of health services in the country.

Potable Water, Excreta Disposal, and Sewerage Services

In 1999, 72% of the population had access to potable water services (93% urban; 37% rural); the departments of Pando (31%), Chuquisaca and Potosí (52%), and Beni (57%) had a lower level of coverage. Only 61% had access to sanitation and excreta disposal services (79% urban; 33% rural); the lowest levels of coverage were in Potosí (24%), Oruro (34%), and Chuquisaca (37%).

Solid Waste Services

At the national level, only 70% of the population benefits from an urban solid waste disposal service, but no data are available for rural areas. In the cities, the waste collection companies have initiated special hospital waste collection, but it is not fully treated. The National Health Laboratories Institute has set up an appropriate technology system to facilitate the disposal of hospital waste in the city of La Paz.

Food Safety

In March 2000, Law 2,061 created the National Animal Health Service, a decentralized agency of the Ministry of Agriculture. This service is in charge of the National Food Safety Program, which is in the process of being organized.

Food Aid Programs

The Ministry of Presidential Affairs has implemented a food security program for 1997–2002 that includes integrated rural development, health, and education. The Ministry of Agriculture runs a food-for-work program for extremely poor families, rotating funds for small loans and training. In conjunction with the Ministry of Urbanism and Housing, the Ministry of Health promotes home improvement programs to eliminate Chagas' disease. The Ministry of Health also supplies iron tablets and vitamin A-enriched flour. The WFP participates in all these programs.

The Child Care Program, implemented with credits granted by the IDB and with community involvement, organizes children's centers for early stimulation and food complementation. This is an important program for the marginal zones of the main cities in the country.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

The country has 3,165 health care establishments of varying complexity (2,613 belong to the public health sector, 197 to the social security system, and 355 to the private sector). These have a total of 12,554 beds (9,203 in the public health sector, 2,823 in the social security system, and 528 in the private sector). A national health care service network for children under age 5 and women of childbearing age was set up under the Basic Health Insurance policy. Through this network, these groups can access the Basic Health Insurance benefits package through the public sector, social security system, or NGOs, through an agreement with the public sector. The system also seeks to improve emergency obstetric care.

The health establishments are organized locally in health care service networks, according to criteria such as accessibility, adequate response to health problems, political and administrative division of the country, sociospatial distribution of the population, and epidemiological criteria. The networks include a series of first-level ambulatory care establishments, which in turn are linked to a general hospital that covers the four basic specialties. Emergency health care is better structured in the general and regional hospitals of each department seat. The compulsory rural health service guarantees the provision of basic emergency services, though it is not always possible to refer emergencies that require a higher level of technology, particularly for the scattered rural population.

Auxiliary Diagnostic Services and Blood Banks

Most of Bolivia's hospitals have auxiliary diagnostic services, which include a clinical laboratory and imaging. The public outpatient services in urban centers use the regional services. In the rural areas, clinical analyses and X-ray services are available only in rural referral hospitals, known as district hospitals. The supply of safe blood is still fraught with difficulties: 90% of the donations from the 60 registered blood banks that existed in 1999 were replacement donations by family members and 5% came from paid donors. Of the 23,415 units donated in 1999, 18,831 (80.4%) were screened; in these units, positive markers of *Trypanosoma cruzi* (17.5%), syphilis (1.7%), hepatitis C (1.2%), and hepatitis B (0.5%) were detected.

Specialized Services

The dental clinics operating under the ambulatory health service network conduct oral health promotion programs, especially fluoridation, as well as morbidity care, though in many cases this is limited to exodontic treatment. There are three national referral centers (in La Paz, Sucre, and Cochabamba) specializing in care for mental conditions that require admission to an institution. Reproductive health care now includes the network of ambulatory care services and, in many cases, intermediate education and youth centers too. Santa Cruz has the first center that specializes in pregnancy care for adolescents. In 1998, Free Medical Insurance for Senior Citizens was introduced through Law 1,886. It guarantees adults over 60 access to public health services and social security. Gerontological centers operate in the private sector as well.

Health Supplies

Drugs

The pharmaceutical subsector is an important segment of the country's economy, accounting for 1.15% of GDP. In 1999, US$ 98.5 million was spent on drugs. This is equivalent to US$ 12.1 per capita per annum. In that year, 77.5% of drug expenditure came from out-of-pocket expenditure, 15.5% from social security funds, and 5.0% from the public sector. In the Bolivian pharmaceutical market there are 8,293 legally registered drugs, 5,518 (66.5%) of which are marketed. Of these, 27% are essential drugs and 21% are marketed under their generic name—that is, for every generic product, four commercial varieties are distributed in the market. In that same year, 70% of the national pharmaceutical market consisted of imported drugs; 20% were smuggled into the country. A total of 210 firms were involved in producing, importing, distributing, or marketing drugs, but only 99 of these actually sell essential drugs. Of the 20 most sold drugs, 7 are essential drugs.

Although most of the money spent on drugs comes out of the consumer's pocket, this situation is likely to change gradually with the insurance schemes now in force. Drug prices are not controlled and are generally beyond the reach of the poorer strata. To deal with this situation, the country operates the National Supply Center, a scheme through which medicine is purchased on the world market at low prices and distributed and marketed in the public sector under a rotating fund modality; it also purchases drugs with its own funds. The Center provides drugs to the municipal Basic Health Insurance service, for supply free of charge. The nongovernmental organization Essential Medical Inputs distributes drugs to the poorest sectors. Essential drug registrations are issued in 40 days and the tariffs are US$ 78 for national products and US$ 85 for imported ones. In 2000, a health inspection program was introduced prior to the application of the "Good Drug Manufacturing Practices."

Equipment

Mobilization of medical technology resources to the public sector in recent years is related to the implementation of two investment projects to develop basic health services, funded with World Bank and IDB loans. The National Health Fund manages a medical equipment renewal program on a regular basis. There is no national policy to introduce planned technological development in the health field, which hampers the implementation of preventive and corrective maintenance with economy-of-scale criteria. As regards explicit policies and standards on local production, imports, marketing, and public supply, as well as on good quality medical equipment manufacture and control policies, the only administrative regulations provided for in the Law on Financial Administration and Government Control System are to guarantee adequate goods and services procurement procedures.

Human Resources

In 1999, the Ministry of Health and Social Welfare had a staff of 13,850, 27% of whom were nursing auxiliaries, 26% administrative and service personnel, 18% physicians, 14% technicians, 9% professional nurses, and 6% other professionals. This is similar to the breakdown of the 12,056 workers recorded in the 1992 census, when the Ministry employed 48.5% of the economically active population involved in the health sector (a total of 24,872 people); the social security fund, 37.5%; and the private sector, 14%. The staff structure illustrates the imbalance between the human resources available and the tasks required to deal with the population's welfare, due to the "irrational" ratio between administrative personnel and medical and nursing staff. This is compounded by the fact that the capacity of the professionals in the system charged with solving these problems is low, as are the salaries of medical and paramedical staff.

The training of health staff, and particularly undergraduate medical training, tends to be almost entirely hospital oriented and unconnected with health programs; training processes too are disconnected from the way the sector is evolving. The fact that staff do not receive proper clinical and management training on matters related to Bolivia's epidemiological profile and national health system; the inadequate distribution of medical and auxiliary staff; and the lack of ongoing education programs and of an incentive system indexed to professional performance are all characteristics that in turn affect the performance of Bolivian health workers.

Health Research and Technology

Strengthening the Bolivian Network of Health Sciences Information (REBICS) has facilitated access to scientific and technical information. REBICS has 30 libraries, a web page, and a nursing subnetwork. In 2000, there were 150 medical libraries in the country, many of which lacked infrastructure, equipment, and human resources. The main ones are in universities, medical associations, and private institutions.

The Bolivian Association of Publishers of Biomedical Journals was created under the aegis of the Bolivian Academy of Medicine to raise the scientific level of specialized journals and participate in the selection of journals published since 1987, to include them in the LILACS database, as well as to educate health staff in medical and scientific report writing.

Health Sector Expenditure and Financing

National health expenditure amounted to US$ 421,655,000 in 1998. In accordance with the methodology used in the national health financing and expenditure reports, that amount represented 5% of GDP and was equivalent to US$ 46 per capita per annum. Public health expenditure accounted for 65% of national spending on health (42% to social security; 23% to the public

sector) and private out-of-pocket spending for 27%. Of the total national expenditure, 37% was earmarked for the payment of outpatient services, 18% for hospital services, and 4% for health promotion and prevention services; these almost exclusively (97%) under the public sector. Expenditure incurred to replace equipment and improve the health infrastructure consumed 9% of the national expenditure, and 11% went to materials and supplies. The majority of expenditures were for personnel services (salaries and professional fees) and non-personnel services (payment for utilities such as water, electricity, and communications).

The main sources of sectoral financing are from the country's companies and institutions. In the 1995–1998 period, companies financed 45%, consumers 31%, the government (at its three levels—national, departmental, and local) 17%, and international cooperation agencies and nongovernmental organizations 7% of the sector's total expenditure. The public sector is financed by the Ministry, local governments, municipalities, social investment funds, and other public system resources; the health insurance funds are financed by private, military, and university entities. Insurance companies and prepaid insurance schemes are the main sources of private sector financing.

External Technical Cooperation and Financing

Through a loan agreement signed with the IDB, the Government of Bolivia is developing the Bolivian Epidemiological Shield project and the 1999–2004 Support for the Reform of the Health Sector Project, equivalent to US$ 53.7 million (US$ 45.0 million in credit and US$ 8.7 million national counterpart allocation). The project aims to strengthen the program for the prevention, control, and treatment of Chagas' disease; the epidemiological surveillance and blood banks system; studies on health sector reform; and a pilot experiment on health reform.

The country also signed a US$ 28 million loan agreement with the World Bank for the first phase of the 1999–2001 Program to Reform the Health Sector, the purpose of which is to reduce national maternal and infant mortality rates. The global cooperation program with the World Bank will be implemented in three-year phases and foresees the additional disbursement of US$ 25 million in each of the successive phases. The two main health reform strategies are (1) to increase coverage by the health care service network and strengthen the social organizations to improve the standard of health, and (2) to boost local capacity to meet health care needs.

The British Government's Department for International Development and the Bolivian Government are working together on the 2000–2002 communicable diseases project. Its goal is to reduce the incidence of tuberculosis and sexually transmitted diseases through a US$ 3 million investment. The country is also involved in bilateral technical and financial health cooperation programs, the most outstanding ones being those in which the countries and governments of Belgium, Canada, Cuba, Germany, Holland, Italy, Japan, Spain, Sweden, and the United States of America are participating.

FIGURE 1. Gross domestic product, annual growth (%), Bolivia, 1990–2000.

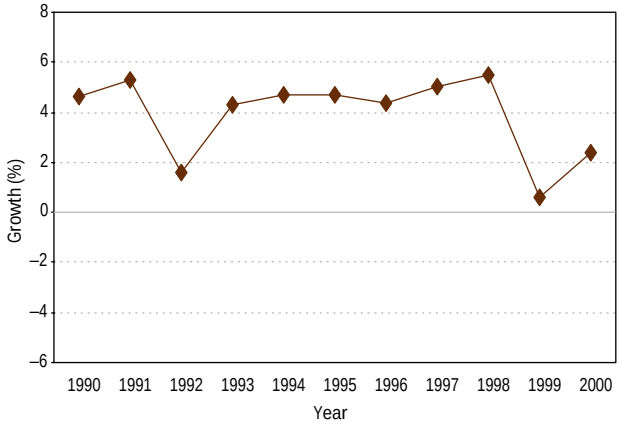


FIGURE 2. Population structure, by age and sex, Bolivia, 2000.

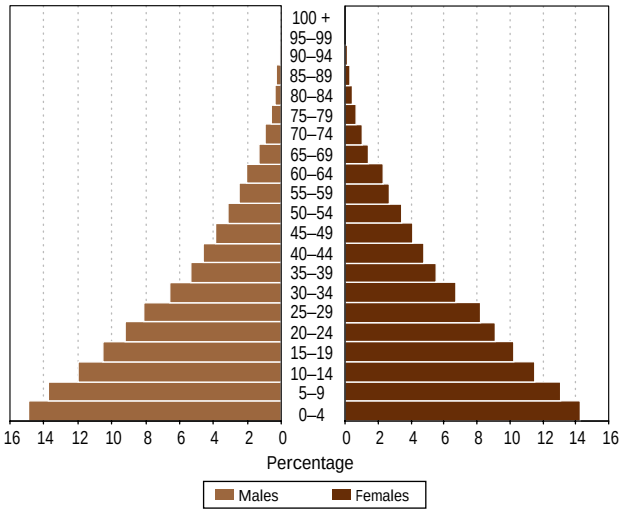


FIGURE 3. Proportional mortality, by broad groups of causes, Bolivia, 2000.

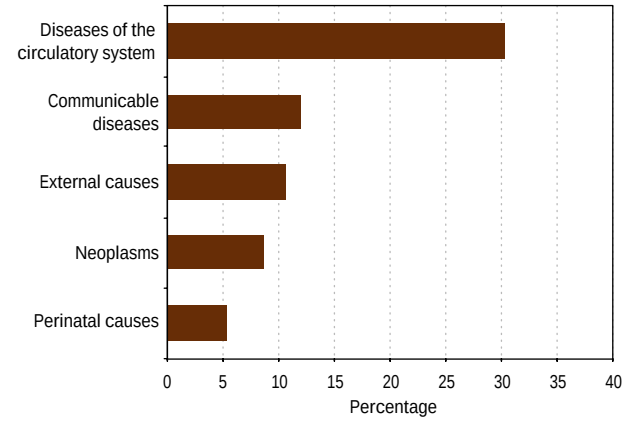


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage among women of childbearing age, Bolivia, 2000.

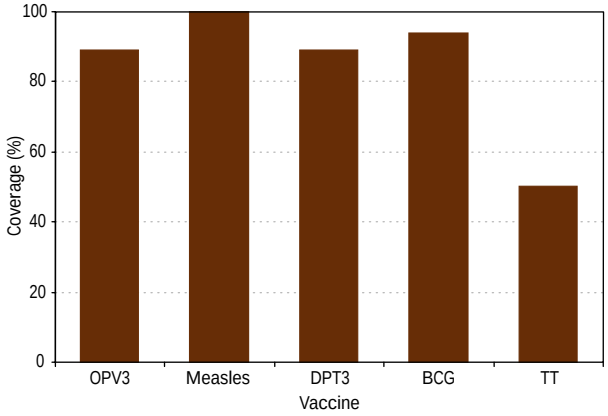
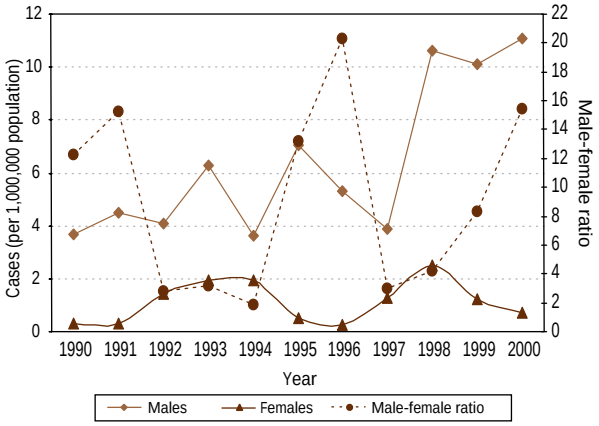


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Bolivia, 1990–2000.



BRAZIL

OVERVIEW

The Federative Republic of Brazil, with a surface area of 8.5 million km^2 and a population of 169.6 million in 2000, shares borders with all the countries of South America except Ecuador and Chile. It has a constitutional system of government, with a president as head of state. The country's political-administrative organization comprises 26 states, 5,561 municipalities, and the Federal District, seat of the federal government. The country is governed jointly by the legislative branch, the executive branch, and the judicial branch, which function independently but in harmony with one another. The Federal Constitution of 1988 consolidated the return of democratic government after two decades of military regimes.

Brazil is divided politically and geographically into five regions (North, Northeast, Southeast, South, and Center-West), which have some common physical, human, economic, and cultural features. The North region accounts for 45% of the country's total area and includes the Amazon River basin and seven states. The Northeast region, which is the most diverse, encompasses nine states and is poorer than the other regions. The Southeast, Brazil's economic engine, comprises four states and is home to 43% of the population. The South region has a temperate climate and is the smallest region in area, consisting of only three states. Finally, the Center-West region, on the central plateau, includes three states and the Federal District.

The average population density for the country as a whole is 19.8 inhabitants per km^2, but the values range from 77.9 in the Southeast to 3.3 per km^2 in the North. In 2000, 81.2% of the total population lived in urban areas and the sex ratio was 96.8 men per 100 women, with a larger proportion of men (102.4) only in the North region. The annual geometric population growth rate dropped from 1.93% in the 1980s to 1.63% in the period 1991–2000, with the lowest rates in the Northeast (1.3%), which has lost population as a result of migration to other regions. The total fertility rate decreased to 2.3 children per woman in 2000. The rate in the Southeast region (2.10) has fallen to very near the population replacement level. Life expectancy at birth in 2000 was 68.6 years (64.8 years for men and 72.6 for women). The proportion of children under 5 years of age declined from 11.3% of the total population in 1991 to 9.3% in 1999; during the same period, the proportion of people aged 60 and over grew from 6.8% to 8.0% for men and from 7.8% to 9.7% for women (Figure 1). In 2000, the economically dependent population (under 15 and over 65 years of age) composed about 35% of the total population and, of every 20 dependents, 3.5 were elderly.

The recent evolution of the Brazilian economy is the result of the country adopting a monetary plan in 1994 that kept inflation quite low and stable. However, this stability was accompanied by rapid growth in public indebtedness, which resulted in the net debt of the public sector increasing from 29% of GDP in 1994 to 51% at the end of 2000. At the same time, Brazil's dependence on external resources increased, as evidenced by the current account deficit, which showed a clear upward trend between 1994 and 1997 (from 0.31% to 4.16% of GDP) and remained at around 4.35% of GDP during the period 1998–2000. Starting in 1996, average economic growth rates fell to historic lows: 2.7% in 1996, 3.6% in 1997, 0.12% in 1998, and 0.8% in 1999. But in 2000, GDP grew 4.2%, which raised expectations for an economic recovery (Figure 2).

Estimated per capita income in 1999 was US$ 4,271, although the level of poverty—estimated at 28% of the population—is comparable to that of countries with a per capita income of only US$ 1,000. Moreover, the national average conceals marked inequalities with regard to social development. Whereas in the South and Southeast regions the human development index (HDI) calculated by UNDP is close to the levels in developed countries, in the North and Northeast it is on a par with that of the poorest countries.

Between 1992 and 1999, the percentage of income in the hands of the wealthiest 10% of the population increased from 45.4% to 47.2%; at the other extreme, the share of the poorest 10% remained unchanged at 0.7% of the total. Average earned income showed an upward trend in 1994 and 1995, especially among the poorest 10%. However, this growth began to slow in 1996 owing to several phenomena, among them changes in rela-

tive prices, a decline in wages, and economic stagnation. Some social groups were able to offset the losses in earned income with gains in retirement pensions, since they benefited from a rise in social security coverage during the period 1993–1999. There are no recent indications of any reduction in the levels of concentration of farmland.

As of the late 1990s, the economically active population numbered around 80 million. Women's participation in the workforce, which has been growing since the 1970s, reached 38.5% in 1999, while the proportion of workers between 10 and 14 years of age fell from 16.9% to 13.2% between 1995 and 1999. This decrease was due in part to the Government's efforts to expand access to opportunities for formal education among the school-age population. At the same time, labor market conditions deteriorated, partly as a result of the rise in unemployment—from 7.3% in 1992 to 9.8% in 1998—which affected mainly workers in the agricultural and industrial sectors. Although the percentage of workers employed in the service and civil construction sectors increased, these sectors could not absorb the entire workforce surplus. The lack of job security has been reflected in a reduction in employment in the formal sector and growth in the number of employees without official working papers (from 29.4% to 30.6% between 1992 and 1999) and self-employed workers (from 22.5% to 24.4% during the same period). The growth in informal-sector employment has had a negative impact on the social insurance system, the State's regulatory capacity to enforce labor legislation, and, for large segments of the labor force, access to government programs designed to serve workers in the formal sector.

The Brazilian labor market exhibits significant inequalities in regional and ethnic terms. In 1999, the Northeast region had the highest proportion of child labor: 24% of the population aged 10–14 versus 9.4% in the Southeast region. Only 17% of workers in the Northeast were employed in the formal sector and had working papers, but this proportion was 40% in the Southeast. Unemployment in Brazil affects more blacks and mestizos (11% in 1999) than whites (9%); there are also significant differences in average income between these two segments of the population, who earned, on average, two and five times the minimum wage, respectively, in 1997.

By the end of the 1990s, there were some clear signs of progress on the educational front, although certain historical problems persisted. The literacy rate among adults increased from 83% in 1992 to 87% in 1999, with the lowest values in the Northeast (73%) and the highest in the South and Southeast (92%). In the Northeast, there were also large disparities between rural and urban areas, which registered adult literacy rates of 59% and 81%, respectively, in 1999. The progress was more notable with regard to child literacy rates, which in 1999 rose to an average of 95% in the group aged 10–14, while the school enrollment rate among children aged 7–14 reached 97%. However, the average number of years of schooling for the population aged 10 and over was still only 5.7 years—insufficient to meet the growing demands of the production system.

Access to schooling is assured by the public education system, which in 1999 covered 93% of demand in the first four years of primary school and 87% in secondary school. The participation of municipal public education systems in the supply of primary education grew from 45% to 67% between 1994 and 2000. In the late 1990s, only 19% of the adult population held a secondary school diploma (20.4% of adult women and 17.5% of adult men). The highest female enrollment rates are found at the post-secondary level and in the last four years of primary school. The productivity of the Brazilian educational system remains a cause for concern, given the high rates of repetition found in the 1998–1999 biennium (40% of students repeat the first year and 21% repeat at least one year during the eight years of primary education).

The urban population served by the general water supply system increased modestly during the last decade, from 88% in 1992 to 92% in 1999. In the same period, the coverage of sanitation systems with house connections to sewerage systems or septic tanks rose from 66% to 74%, while the coverage of refuse collection systems increased from 80% to 90%. In 1999, the North region had the lowest coverage levels of urban water supply (71%) and refuse collection (80%), while the Center-West had the lowest levels of sanitation coverage (48%). The Northeast region had intermediate levels. At the same time, more than 95% of the urban population in the Southeast and the South were served by water supply and refuse collection systems. Ninety-five percent of Brazilian households have electricity.

During the period 1996–2000, State reform initiatives in the social realm sought to increase the efficiency of public expenditure and the flexibility of managerial mechanisms, decentralize administration, and increase the regulatory capacity of public authorities. In contrast to what has occurred in other areas formerly characterized by strong State participation—such as telecommunications and mining—there has been no significant move toward privatization in the overall social sphere or in the health system in particular.

State reform efforts have aimed to strengthen the regulatory functions of the government, which, in the case of the Ministry of Public Health, means enhancing oversight and control of public and private agents responsible for providing health-related goods and services. To better exercise this regulatory role, two financially and administratively autonomous institutions were created at the federal level—the National Health Surveillance Agency and the National Supplementary Health Agency—whose functions also have an economic dimension, because they include control and regulation of prices.

Mortality and Morbidity

The mortality information system registers almost a million deaths annually in the country as a whole. The system's mean

coverage—i.e., the ratio between the number of deaths reported and estimates based on demographic projections (expressed as a percentage)—was estimated at 81.8% in 1998, with the lowest values in the Northeast region (60%). This proportion tends to increase with the incorporation of data from complementary sources, such as notification of deaths by community health agents. The proportion of deaths attributed to ill-defined causes—which includes unattended deaths—fell 25% in the last 10 years. In 1998, it was around 15% overall, but the percentage varied widely among regions, ranging from 7.7% in the South to 29.8% in the Northeast. Analysis by sex reveals a larger proportion of male deaths in virtually all age groups, and males accounted for around 59% of total deaths. The age distribution of mortality shows that deaths in children under 1 year of age as a proportion of total deaths decreased from 24% in 1980 to 8% in 1998. In the latter year, 54% of all deaths reported occurred in the group aged 60 and over, with the proportions ranging from 42% in the North to 60% in the South.

Excluding deaths from ill-defined causes, the proportional distribution of deaths from defined causes showed some discrete variations between 1995 and 1998. An exception is malignant neoplasms, which accounted for 14% of the total deaths in 1998. Moreover, according to data for 1999, this cause showed signs of replacing external causes as the second leading cause of death in the country. Diseases of the circulatory system continued to be the foremost cause in all regions and accounted for one-third of all yearly deaths, although a downward trend was noted in the Southeast. Since 1997, the upward trend of external causes, which were responsible for 15% of deaths in 1998, seems to have reversed. In that year, external causes were the second leading cause of death in proportional terms in the North (20.1%), Northeast (16.3%), and Center-West (18.6%). In the South, malignant neoplasms ranked second as a cause of death (17.4%). The rates per 100,000 population were 158.4 for diseases of the circulatory system, 72.7 for external causes, 68.5 for malignant neoplasms, and 51.9 for communicable diseases. Figure 3 shows male and female mortality rates per 100,000 population by broad groups of causes.

Data on hospital morbidity come from a national information system that collects information from health care establishments in the public system. The system indicates that close to 12 million patients are hospitalized annually, 25% for causes related to pregnancy, childbirth, and the puerperium. If hospitalizations for those causes are excluded, the largest proportion of hospitalizations occurred among the elderly, with no significant sex differences. In 1999, communicable diseases were the leading cause of hospitalization (accounting for 17% of the total), followed by diseases of the circulatory system (9%), digestive system (8%), respiratory system (7.5%), and genitourinary system (6%). The proportions of hospitalizations due to communicable diseases in the North (21.9%) and Northeast (21.1%) were higher than in the Southeast (12.6%) and South (15.1%); diseases of the circulatory system, malignant neoplasms, and mental disorders were the predominant causes in the Southeast and the South.

The national information system on live births, introduced during the 1990s, achieved a mean national coverage of 90% of the live births in 1998 estimated by demographic methods. The system is already operating in the Southeast and South regions and its installation is almost complete in the Center-West. In 14 states of these regions, the data from the system are used to directly calculate rates, and they also generate information on various national indicators relating to prenatal care and attendance at childbirth.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Data on live births during the period 1996–1998 indicate that around 8% of babies suffered from low birthweight, with no significant variations among regions. Three national surveys on breast-feeding carried out in 1975, 1989, and 1999 revealed a gradual increase in the proportion of children receiving breast milk at the age of 6 months. In 1999, the percentage was 69%. Half the children studied in 1999 were no longer receiving breast milk exclusively as of the 30th day of life.

In 1998, the infant mortality rate was 33 deaths per 1,000 live births—30% below the 1990 rate of 48 per 1,000. Substantial inequalities in infant mortality exist among regions and states. The highest rates are found in the state of Alagoas (68 per 1,000 live births) and the lowest in Santa Catarina (17 per 1,000). The Northeast registered high rates throughout the period, while the opposite occurred in the South. This inequality is evident in Figure 4, which indicates that 60% of infant deaths in Brazil occurred in 40% of the population of live-born children (Gini coefficient = 0.2419).

As the proportion of avoidable deaths has declined, thanks to basic health care and sanitation activities, infant mortality has tended to be concentrated in the neonatal period. In 1998, 60% of all infant deaths occurred in the first month of life and 47% in the first week. In 1990, these percentages were 49% and 38%, respectively. In the Northeast, however, half the infant deaths reported in 1998 were still postneonatal deaths. Among children aged 1–4 years, the leading causes of death in 1998 were communicable diseases (43.0%), external causes (22.5%), and diseases of the respiratory system (8.2%). Acute diarrheal diseases and acute respiratory infections were each responsible for about 7% of the deaths of children under 5 years of age in 1998. Diarrheal diseases accounted for a larger share of child deaths in the Northeast (12%), while acute respiratory infections were a more frequent cause of death in the South (8%). To reduce morbidity and mortality among children under 5 years of age, a national network of

breast milk banks was created. The milk is pasteurized and quality controlled before being distributed to newborn and premature infants. In 1999, the network comprised 132 units in 22 states, which collected 100,000 L of breast milk.

Schoolchildren (5–9 years)

Fewer than 0.6% of all deaths occur in this age group. In the period 1996–1998, 46% of the deaths among school-age children were caused by accidents and violence, mainly transport accidents, drowning, assaults, and falls. The next most frequent causes were communicable diseases (18%) and malignant neoplasms (13%). Among the communicable diseases, the principal causes were septicemia, meningococcal meningitis, and intestinal infectious diseases. In 1999, around 450,000 children in this age group were hospitalized in public hospitals. That figure represents 3.5% of the total number of hospitalizations. Diseases of the respiratory system, especially pneumonia and asthma, and diseases of the digestive system, especially hernias and diseases of the appendix, were important causes of hospitalization.

Adolescents (10–14 and 15–19 years)

Adolescents make up around 20% of the country's population and account for 3% of overall mortality, with a marked predominance of male deaths, mainly from accidents and violence. In 1998, 47% of the deaths in the group aged 10–14 and 68% of those in the group aged 15–19 were due to external causes; the proportion of male deaths in those two groups was 69% and 85%, respectively. Homicide accounted for the largest proportion of deaths, with the share due to this cause rising from 22% during 1979–1981 to 53% in 1998. Four percent of the deaths resulted from suicide, and 69% of those deaths were of males. Falls accounted for the largest proportion of hospitalizations for injuries (34% in 1998), followed by transport accidents (15%). Noteworthy in relation to the latter is the rise in accidents involving motorcycles, which are being used with increasing frequency as a means of transportation to work and for recreation.

In 1998, 729,000 births were reported among adolescent girls aged 10–19 (24% of the total), a higher proportion than was registered in 1994 (21%). Close to 27,200 of the live births in 1998 (0.9% of the total) were to mothers between 10 and 14 years of age; the frequency of low birthweight among these babies (9%) was higher than the average (8%). The health program for adolescents and young people seeks to promote favorable conditions for their physical and mental development, emphasizing aspects related to sexuality, reproductive health, and family life as well as prevention of accidents, violence, and communicable diseases, including AIDS.

Adults (20–59 years)

Around 35% of the deaths reported in 1998 occurred in this age group. A larger proportion of males died (41%) than females (26%), and the mortality rate in the adult male population (471 per 100,000) was double that in the female population (209 per 100,000).

In 1998, external causes accounted for 32% of all adult deaths, with major sex differences (41% of the male deaths and 13% of the female deaths). Men's risk of dying from an external cause (rate of 162 per 100,000) is more than seven times higher than women's risk (21 per 100,000). Diseases of the circulatory system ranked second as a cause of death in 1998 (23% of the total), with rates of 80 per 100,000 men and 51 per 100,000 women. Malignant neoplasms were third (14% of the total), with equal rates for the two sexes (around 40 per 100,000). Male mortality from infectious diseases and diseases of the digestive system was two and three times higher, respectively, than female mortality.

Maternal mortality, calculated for 10 states that had consistent data in 1998, ranged from 44 to 87 deaths per 100,000 live births. Taking into account the recognized deficiencies in reporting of the causes of maternal death, it is estimated that the average national rate could be around 127 deaths per 100,000, based on a correction factor obtained in localized studies. Close to 69% of maternal deaths in 1998 were due to direct obstetric causes, in particular eclampsia, prepartum hemorrhage, premature separation of placenta, and placenta previa. The most important indirect causes—preexisting conditions exacerbated by pregnancy—were infectious diseases, diabetes, anemia, and cardiovascular disorders.

The public health care system recorded 7.3 million adult hospitalizations in 1999; 72% of the patients were women and 58% of those hospitalizations were related to pregnancy, childbirth, and the puerperium (41% of all hospitalizations). Excluding that group of causes, the main reasons for hospitalization were diseases of the digestive system (13.9%), genitourinary system (13.7%), and circulatory system (11.0%). Injury, poisoning, and other external causes were the second leading cause of hospitalization among men (14%), whereas among women—after causes related to pregnancy, childbirth, and puerperium—diseases of the genitourinary system were the most frequent cause (21%).

Data on 2.7 million births in 1998 indicate that close to 50% of the mothers had six or more prenatal visits, with the percentages ranging from 29% in Amapá to 70% in Mato Grosso do Sul. Between 1995 and 2000, the proportion of births by Caesarean section in public institutions decreased from 32% to 22%, owing to restrictions on payment for this procedure. Brazil has systems at the state level for hospital referral of women with high-risk pregnancies. In the public health care system, family planning activities include educational campaigns, supplying condoms, and performing tubal ligations and vasectomies.

The Elderly (60 years and older)

The proportion of the population aged 60 and over, especially the female population, is increasing steadily in all regions. In 1999, 9.7% of women and 8.0% of men fell into this group, while in 1991 these percentages had been 7.8% and 6.8%, respectively. The mortality profile reflects demographic changes, with a pro-

gressive increase in the proportion of deaths observed in the group over 60 years of age, which rose from 38% in the period 1979–1981 to 54% in 1998. This proportion ranged from 42% in the North to 60% in the South. In 1998, diseases of the circulatory system (46%), malignant neoplasms (17%), and respiratory diseases (11%) were the leading defined causes of death. A high percentage of the deaths were attributed to ill-defined causes (18%), and this percentage tended to rise in the oldest subgroups of the elderly population.

Older persons accounted for 18% of all hospitalizations in the public health care system in 2000. The main causes were diseases of the circulatory system (28%), respiratory system (20%), and digestive system (10%). Activities aimed at this segment of the population are guided by the National Policy on Health of Older Persons, approved in 1999, which includes guidelines, general strategies, and priorities for action designed to promote healthy aging, maintain and improve the functional capacity of older adults, prevent specific diseases, treat the sick, and rehabilitate those who have limited functional capacity. One of the most important preventive measures is vaccination against influenza and pneumococcal infections through annual campaigns, which, since 1999, have helped reduce hospitalization for respiratory infections. In a campaign conducted in April and May 2001, more than 10 million older adults were vaccinated.

Workers' Health

The information available on occupational diseases and accidents concerns only workers covered under the government social insurance system. This constraint limits the population analyzed to 18.8 million workers, the majority of whom are concentrated in the Southeast (58%) and South (19%) regions, according to data from 1998. In this group, the occupational disease rate was 16 cases per 10,000 insured workers. In the same year, 384,000 occupational accidents occurred (20 per 1,000 insured workers), with 3,800 deaths (20 per 100,000 insured workers). The male death rate (23.3) was markedly higher than the female rate (13.1) in all regions of the country. Of the total number of accidents reported in 1998, 91% were considered typical—i.e., the result of factors associated with the worker's job—while the rest took place during the commute between home and the workplace. Close to 85% of the accidents led to temporary or permanent disability (96% and 4%, respectively).

Responsibility for workers' health in Brazil is shared by the health, labor, social insurance, and environmental sectors, each of which has its own functions and sphere of authority. In the health sector, various recent federal regulatory instruments guide activities aimed at improving the coverage and quality of assistance for workers.

The Disabled

The only available data of national scope, which are from 1991, put the disability prevalence rate at 1.1% of the general population. Since 1989, legal protections for this segment of the population have been expanded, and an increasing number of communities are offering special facilities to improve mobility for the disabled. In 2000, the National Health Council approved a national policy on the health of disabled persons. There are several centers of excellence that serve as national technical reference institutions on the care of people with specific disabilities.

Indigenous and Other Special Groups

The indigenous population in Brazil is estimated at 350,000 people, who belong to some 210 groups and speak more than 170 languages. Although they make up only 0.2% of the total population, indigenous peoples are found in 24 of the 26 states. Each group has its own forms of social, political, and economic organization and ways of relating to the environment and utilizing the land. Around 60% of the indigenous population and 98.7% of the indigenous lands are concentrated in the North and Center-West regions. The health situation of this population is characterized by high mortality rates from malaria, tuberculosis, and other respiratory diseases; diarrheal diseases; and vaccine preventable diseases.

Since 1999, the Ministry of Public Health has exercised direct responsibility for indigenous health through 34 special indigenous health districts linked to the National Health Foundation (FUNASA). Each district has a health team that provides basic care under the supervision of the local and district indigenous health councils. Villages and communities are served by indigenous health agents, trained in basic health care. Linkages with the formal services at the secondary and tertiary levels are supported by "Indian health units," located in municipal referral centers.

The black population of Brazil is larger than that of any other country outside of Africa. This population has some distinctive genetic features, resulting from the interbreeding of individuals of various ethnic groups from different regions of sub-Saharan Africa. In 1999, it was estimated to number 8.6 million blacks and 64 million *pardos*, who together made up 45% of the national population. Around 85% of the blacks reside in the Northeast and Southeast. Additionally, there are some 1,000 remnants of fugitive slave communities scattered around the country. The most frequent health problems in the black population—which include malnutrition, drug use, septic abortions, and violence—are associated with long-standing social inequalities that lead to poverty and reduced access to health services. These inequalities are aggravating factors in diseases such as arterial hypertension, diabetes mellitus, and glucose-6-phosphate dehydrogenase deficiency, which seems to affect the black population predominantly.

Among the genetically determined diseases that occur in this population, the principal one is sickle-cell anemia, the most common monogenic hereditary disease in Brazil. It is estimated that 8,000 persons have the disease and 2 million carry the sickle-cell gene, which implies a high degree of underreporting of cases, since only around 4,000 cases have been identified. An estimated

80% of those with sickle-cell anemia die by the age of 30, but 85% of these deaths are not reported as such. In 1995, a government initiative aimed at heightening appreciation of black culture helped mobilize civil society, the scientific community, and health professionals, which resulted in the formulation of a program for control of sickle-cell anemia and measures to protect the interests of this population group.

By Type of Health Problem

Natural Disasters

The most common natural disasters in Brazil are floods, landslides, cave-ins, forest fires, droughts, and low water levels, which have the heaviest impact on the low-income population in rural and periurban areas. In 1998, 75% of the Northeast suffered a drought that affected 1,429 municipalities. Serious floods also occurred in 1998 in the states of São Paulo, Rio Grande do Norte, and Rio de Janeiro; in 1999 in the states of São Paulo and Acre; and in 2000 in Rio de Janeiro, Alagoas, and Pernambuco. Floods are generally accompanied by a rise in cases of leptospirosis. The National Civil Defense System, established in 1993, coordinates the activities of government institutions and civil society to prevent and assist in natural disasters. The system's operations are guided by a manual, published in 1999, and by the National Civil Defense Policy, instituted in 2000.

Vector-borne Diseases

Malaria is endemic throughout the Brazilian Amazon region, which encompasses the whole of the North and parts of the states of Maranhão and Mato Grosso. More than 99% of the cases reported in the last 10 years occurred in this area, where the annual average number of positive exams was 530,000. The incidence of malaria surged in this area in 1999, returning to the levels seen in the 1970s. Some 632,600 new cases were reported—34% more than in 1998—resulting in 21,100 hospitalizations, mainly of adults and youths of the male sex. The high endemicity of malaria in Amazonia is related to the presence of extractive industries, which generate internal migration and the establishment of makeshift rural establishments. Lack of local capacity for planning, control, evaluation, and efficient provision of services enables the disease to spread over large distances. Despite these difficulties, however, malaria mortality decreased from 0.7 to 0.1 death per 100,000 population between 1986 and 1998. The proportion of cases due to *Plasmodium falciparum* also fell (from 29% in 1996 to 18.6% in 1999). The Plan for Intensification of Malaria Control Activities in Amazonia, launched in 2000, has brought a new perspective to intervention based on intersectoral action.

No cases of yellow fever have been reported in Brazil since 1942, although since the 1970s, there has been a progressive reinfestation of the national territory by the *Aedes aegypti* mosquito, the urban vector of the disease. Jungle yellow fever is endemic mainly in the North and Center-West regions, where a high proportion of deaths are reported (45% to 50%), owing to low levels of case detection in patients who exhibit few symptoms. The disease has spread cyclically to other regions of the country through the years; the most recent upsurges occurred in 1993–1994 and 1998–2001. The last outbreak began with epizootics among simians in the Amazon region and spread to the center of the country, where tourists visiting a nature preserve in the state of Goiás were infected in 1999. The virus continued to spread in a southeasterly direction, where epizootics were detected in 54 municipalities in six states. Since 1998, 48 million people have been vaccinated against yellow fever in the areas affected by the outbreak. The last case reports from the North and Center-West regions were in June 2000.

The country has experienced three dengue epidemics since the detection of the initial cases in Roraima in 1982. The first two (1986–1987 and 1990–1991) were concentrated in Rio de Janeiro and several states of the Northeast region. A total of 104,000 cases occurred in 1991. The third epidemic began in 1995 and peaked in 1998, with 570,000 reported cases. In 1999 and 2000, 207,000 and 238,000 cases, respectively, were reported, more than half of them in the Northeast and around 30% in the Southeast, although all states had dengue cases. In 2000, 40 cases of dengue hemorrhagic fever were reported (33 in the state of Pernambuco). Serotypes 1 and 2 of the dengue virus circulate simultaneously in about 20 Brazilian states, and one case caused by serotype 3 was confirmed in December 2000. The latter case occurred in the environs of Rio de Janeiro. In 2000, 3,592 municipalities were infested with the mosquito *Aedes aegypti*, the disease vector, and transmission of the virus was occurring in 2,137 of them. An *A. aegypti* eradication plan was launched in 1996 and is being carried out, but on a limited basis, owing to weaknesses in epidemiological surveillance and social mobilization activities.

Chagas' disease is currently under control, thanks to specific entomological surveillance activities and improvement of dwellings in the endemic areas. Serologic screening among schoolchildren in 1989 and 1999 found only 329 positive samples among 245,000 specimens, with an overall mean prevalence of 0.13%. In 2000, the international commission on Chagas' disease control of the Southern Cone countries determined that transmission of *Triatoma infestans* had been interrupted in six states (Goiás, Mato Grosso, Mato Grosso do Sul, Paraíba, Rio de Janeiro, and São Paulo), and another four were in the certification phase (Pernambuco, Piauí, Minas Gerais, and Rio Grande do Sul).

Schistosomiasis remains endemic in virtually the entire Northeast region and in the states of Minas Gerais and Espírito Santo in the Southeast. Schistosomiasis continues to spread despite amplification and decentralization of diagnostic testing of stool samples and treatment of cases. In recent years, foci have been identified in the Federal District and in the states of Pará, Paraná, and Santa Catarina, and indigenous transmission has been confirmed in one municipality in Goiás and one in Rio Grande do Sul.

Visceral leishmaniasis has been occurring in urban areas since the 1970s. It is associated with the precarious living conditions of the populations in which it occurs. The disease is cyclical and has shown an upward trend, with reports of epidemics during the 1980s and 1990s. Around 4,000 cases a year occurred in 1999 and 2000, 85% of them in the Northeast, especially the states of Maranhão and Bahía. In the Southeast, the disease was reported in some urban centers. Cutaneous leishmaniasis is spreading rapidly, even in rural areas that have been virtually cleared of trees and in urban peripheral areas. In 1999, indigenous cases were detected in 2,036 municipalities. The only state not affected was Rio Grande do Sul. During the period 1997–1999, the incidence per 100,000 ranged from 13.5 to 19.8 cases. In 2000, a total of 34,513 cases were reported, 68% of which occurred in the North and Northeast.

The main focus of lymphatic filariasis is in the metropolitan area of Recife, a city in the state of Pernambuco, where 2,119 cases were reported in 1999. There is a small focus in the state of Alagoas, with 21 reported cases in 1999 and 10 in 2000. A national plan for elimination of the disease, utilizing new chemotherapeutic substances, is currently under way.

The last epidemic of human plague in Brazil occurred in 1974–1975 and was concentrated in the Northeast region, where there continue to be enzootic foci in rural areas of mountain and plateau regions. During the period 1998–2000, 11 human cases were reported from the state of Bahía.

Onchocerciasis occurs only among the indigenous population of Yanomami Park, along the border with Venezuela. A study conducted during the period 1993–1997 found 1,266 indigenous persons infected out of a total of 4,283 examined (29.6%).

Diseases Preventable by Immunization

Control of vaccine-preventable diseases is carried out routinely within the system of health services. Special intervention strategies are adopted for different vaccines and specific areas, in keeping with programming established at the national, state, and municipal levels. Data on vaccination coverage in all the municipalities of the country have been available since 1995. In 1998–2000, annual vaccination coverage levels in children under 1 year of age were over 95% for the poliomyelitis vaccine (three doses), tuberculosis, and measles and between 93% and 94% for the vaccines against diphtheria, tetanus, and pertussis (three doses). Nevertheless, in 1999 close to half the municipalities in Brazil had vaccination coverage levels under 90% for three doses of the DPT and the poliomyelitis vaccines. In 57% of the municipalities, measles immunization coverage was under 95%. In addition to routine vaccination during childhood, periodic campaigns are conducted, targeting specific diseases and population groups. Figure 5 shows immunization coverage in children under 1 year of age in 2000.

The national initiative to eliminate measles began in 1992 with a national vaccination campaign aimed at the population aged 9 months to 14 years. In the following years, there was a drastic reduction in measles incidence, but in 1997 the country was struck by an epidemic that caused 53,664 cases and 61 deaths, affecting the population that was not part of the vaccination target group, such as young adults. The strategies for eradication of measles have included two national vaccination campaigns (conducted in 1997 and 2000) and the organization of a task force to enhance surveillance and control of foci. The number of confirmed cases fell 95% between 1999 and 2000 (from 890 to 36), and since March 2000, when an outbreak occurred in the state of Acre, no indigenous cases of the disease have been reported. There is reason to believe that transmission of measles has been interrupted in Brazil.

In 1996, surveillance of rubella was incorporated into measles surveillance activities; in 2001, surveillance of congenital rubella syndrome began. The number of rubella cases reported in 1999 and 2000 remained at about 14,000 annually, and more than 60% of these cases occurred in the North and Northeast, where vaccination was introduced in 2000. The incidence among adults aged 20–29 increased from 5.7 per 100,000 population in 1999 to 11.9 in 2000, while the number of cases of congenital rubella syndrome increased from 34 to 57 in the same period.

The last cases of poliomyelitis in Brazil occurred in 1989; in 1994, the interruption of transmission of the disease was certified. Annual vaccination campaigns and surveillance to detect acute flaccid paralysis have continued.

Neonatal tetanus persists in association with poverty, but the incidence has been falling for more than a decade. Sixty-six cases were reported in 1999 and 41 in 2000. The incidence of other types of tetanus decreased from 646 cases in 1999 to 439 in 2000.

The number of diphtheria cases showed little variation from 1999 to 2000, with 56 and 54 cases reported, respectively. The number of cases of pertussis declined from 1,369 in 1999 to 1,177 in 2000. The disease was most serious among children under 1 year of age, who accounted for the vast majority of the 24 deaths registered in 1999.

In 1999, 1,358 cases of meningitis due to *Haemophilus influenzae* type b were reported. Of those, 617 (45%) occurred in children under 1 year of age, the group at highest risk for the disease. In 2000, 530 cases were reported, 226 (43%) of them in children under 1.

The available data on hepatitis B as of 1999 are difficult to interpret because cases due to types B, C, and D of the virus did not begin to be recorded separately until 2000. In that year, 4,263 cases of hepatitis B were reported, including both new and old cases. Their geographic distribution is heterogeneous, with a higher prevalence in the North, especially among the indigenous population.

Intestinal Infectious Diseases

Cholera remains concentrated in the Northeast region, where 98% of the cases reported in the period 1996–1998 occurred. In

1999, 4,620 cases were reported, more than 50% of them in the state of Pernambuco. There was also an outbreak in the port of Paranaguá, in the South region, during 1999, which caused 469 cases. In 2000, only 753 cases were reported, the lowest number since 1991, when the disease was reintroduced into Brazil. Mortality from acute gastroenteritis decreased from 9,391 deaths in 1996 to 7,214 in 1999. In addition, between 1995 and 1999, the number of children under 1 year of age hospitalized for acute diarrheal disease in the public health care system dropped 32%, and the number of deaths associated with those same hospitalizations decreased 54%.

Chronic Communicable Diseases

The clear downward trend of tuberculosis noted in the 1980s has slowed in recent years, although mortality from the disease has remained constant at around 6,000 deaths a year. In 1999, 78,870 cases of all forms of tuberculosis were reported, with an incidence rate of 48.1 cases per 100,000 population. Tuberculosis has also occurred as an opportunistic infection in 22.6% of AIDS cases since the 1980s. Of all new cases in 1999, 53% were the pulmonary form of the disease (25.4 per 100,000). In 1998, of 204,000 specimens from individuals with respiratory symptoms examined by sputum smear microscopy, 9.3% were positive. The North region had the highest incidence of sputum-positive pulmonary tuberculosis cases in 1999 (34.7 per 100,000), followed by the Northeast (27.0), Southeast (26.0), South (19.8), and Center-West (17.3). In 1999, the state of Amazonas recorded the highest rates for all forms of tuberculosis (82.7 per 100,000) and for the pulmonary form (49.9 per 100,000). A national study carried out in 1997 on multidrug resistance showed resistance to isoniazid (5.9% of cases), rifampicin (1.1%), streptomycin (3.6%), and ethambutol (0.1%). The rate of primary resistance to one or more drugs—not including the combination of rifampicin and isoniazid—was 8.6%, and the rate of resistance to isoniazid and rifampicin was 0.9%.

Leprosy remains an important problem, with a prevalence rate of 4.9 cases per 10,000 population in 1998 and 78,000 leprosy patients on record. In the same year, 42,055 new cases were diagnosed (detection rate of 2.6 cases per 10,000 population). In the North and Center-West, the disease remains hyperendemic (more than 4 new cases per 10,000 population), but the Northeast had the highest absolute numbers of existing leprosy cases (25,267) and new cases detected (14,015). Intensification of the control program since the early 1990s, with decentralization of diagnostic and treatment activities to local health services, has yielded good results: between 1991 and 1998, the number of cases decreased by almost 200,000, and the prevalence rate fell from 18.2 to 4.9 cases per 10,000 population.

Acute Respiratory Infections

Acute respiratory infections (ARI) are among the leading causes of morbidity and mortality in children under 5 years of age, and they account for 30% to 60% of outpatient care visits in this age group. In 1999, pneumonia and other ARIs accounted for 35% of all hospitalizations of children under 5 years of age in the public health care system and 31% of hospital expenditures. Pneumonia was responsible for around 90% of the hospitalizations due to ARIs in children younger than 5. Between 1995 and 1999, hospitalizations for ARIs decreased 8.6% among children under 1 year and 3.4% among all children under 5 years of age, while the number of hospital deaths in these same age groups dropped 35% and 32%, respectively.

Zoonoses

The incidence of human and canine rabies has fallen sharply since the 1970s, when the national control program was instituted. The program has prioritized annual dog vaccination campaigns in urban areas. Still, 26 human cases and 1,227 canine cases were reported in 1999 and 26 human cases were reported in 2000. In 1999, canine vaccination coverage reached 88.3%. Since the 1980s, there have been no reports of human cases transmitted by dogs in the states of the South region. Together, the North and Northeast accounted for 69.2% of the human cases in 1999 and 84.6% in 2000. During the period 1980–2000, 83 cases of human rabies transmitted by bats were detected (6.3% of the total), most in rural areas of the Amazon region. Human prophylactic treatment is standardized and is administered free of charge.

Leptospirosis is endemic in the principal urban centers, with seasonal peaks associated with flooding. In the period 1995–2000, 22,651 cases and 1,951 deaths from the disease were reported.

The first cases of hantavirus disease were identified in 1993 in São Paulo, and since then the disease has been reported mainly in the South, Southeast, and Center-West regions. Of the approximately 100 cases registered, 81 occurred in the period 1999–2000.

Foodborne Diseases

In 1999, 353 outbreaks of foodborne disease were reported (4,564 cases) and in 2000, 380 outbreaks (7,556 cases). In those two years, 87.5% of the cases were detected by means of studies carried out in the Southeast and South, where foodborne disease surveillance activities are better organized.

HIV/AIDS

The AIDS epidemic showed an upward trend until 1997, when 23,172 new cases and 7,545 deaths were confirmed. Since then, the incidence seems to have stabilized, with 23,117 cases in 1998. The male-female ratio of new cases decreased from 6:1 in 1989 to 2:1 in 1999 (Figure 6). Sexual transmission of the disease decreased from 87% of the male cases with known exposure in 1989 to 78% in 1999; however, this decline was offset by an increase (from 13% to 19%) in the proportion of male cases due to

transmission via contaminated blood or blood products in the same period. The opposite occurred with the female cases: the proportion of cases due to sexual transmission rose from 44% in 1990 to 84% in 1999. Among males, the proportion of cases in homosexuals decreased, while the proportion in intravenous drug users increased (24% and 30%, respectively, in 1999).

The policy of free universal distribution of antiretroviral drugs seems to have been very effective in reducing case fatality and mortality from AIDS. To prevent transmission of HIV in women and newborns, educational campaigns were conducted, the availability of HIV testing during the prenatal period was expanded, and systematic treatment of seropositive women was introduced.

Sexually Transmitted Infections

Syphilis, the leading sexually transmitted infection in the country, occurs in both the acquired and congenital forms. A total of 154 deaths from syphilis were reported in 1996, 150 in 1997, 154 in 1998, and 166 in 1999. Almost all these deaths occurred among children under 1 year of age, which indicates the presence of congenital syphilis, a highly prevalent disease in Brazil. The average rate for 1998 was 1.2 cases per 10,000 live births, with higher rates in the Federal District (3.7) and in the states of Pernambuco (3.8), Rio de Janeiro (3.7), and Goiás (1.7). There are indications that the incidence of other sexually transmitted infections—such as gonorrhea, venereal warts, chancroid, and granuloma inguinale—is also higher.

Nutritional and Metabolic Diseases

The prevalence of malnutrition among children under 5 was assessed by determining the percentage of children with weight two standard deviations or more below the median weight for age. Data from a national study conducted in 1996 show a mean prevalence of 5.7%, with values ranging from 2.0% in the South to 8.3% in the Northeast. These figures indicate low prevalence of malnutrition, with a reduction of 20% over the period 1989–1996 and a decrease in the difference between the South and Northeast regions, in comparison to the period 1975–1979. In 1996, the mean prevalence of acute malnutrition (as measured by weight for height) in children under 5 was 2.3% (2.8% in the Northeast). The prevalence of stunting (height for age), which reflects nutritional status over time and child morbidity, was around 10.5%, with much higher rates in the North (16%) and Northeast (18%) and marked differences between urban areas (8%) and rural areas (19%). These values reflect a one-third decrease since 1989. The prevalence of obesity has increased among children and adults of both sexes in all regions and income brackets. From 1975 to 1996, among women of childbearing age with children under the age of 5, the proportion with a body mass index of more than 30 kg/m^2 almost doubled, rising from 5.3% to 10.1%. The most important nutritional deficiency is iron deficiency, which is found in all regions, principally among children and pregnant women with low family incomes. The prevalence rates among preschool-age children range from 48% to 51%. Data from 1996 on food intake in seven metropolitan areas indicated low iron content in the diet.

Since the 1980s, vitamin A deficiency has been recognized among children in the North and in impoverished areas in the Southeast. In the states of Paraíba (1992) and Pernambuco (1997), serum retinol levels below 20 mg/dl were detected in 19% and 16% of preschool children, respectively. The prevalence of endemic goiter has diminished considerably with the iodization of salt, but iodine deficiency persists in some areas of the North and Center-West regions and in some states of the South, Southeast, and Northeast. A survey of schoolchildren aged 6–14 revealed low mean levels of urinary excretion of iodine in three states. In six states, the levels of salt iodization were under 10 mg/g.

The National Food and Nutrition Policy, approved in 1999, seeks to guarantee the quality of foods and promote healthy eating habits as well as to prevent and control nutritional disorders. To supplement the caloric intake of pregnant and lactating women and children under 6 years of age, in July 2001 a financial support program was established to assist the poorest families. Benefits under the program are subject to beneficiary compliance with a basic care scheme that includes vaccination and prenatal care.

Although deaths from diabetes are underreported, their absolute number is known to have increased in recent years. In 1999, the disease caused 31,000 deaths and accounted for 3.4% of total mortality. The age distribution of diabetes deaths reflects the higher frequency of the disease at more advanced ages, irrespective of sex. In 1998, 88% of the deaths from diabetes occurred after 40 years of age (58% of those who died were women). A study conducted in São Paulo showed an association between diabetes and stroke (42.8% of the deaths for which diabetes was mentioned as a cause), hypertensive disease (33.8%), and ischemic heart disease (31.2%). There were 104,000 hospitalizations for diabetes in 1998, of which 45% were of people aged 50–69. Although the majority were women (61%), up to age 39 a larger proportion of those hospitalized were men.

In 2001, guidelines were established for restructuring and expanding basic care for groups with or at risk of diabetes and arterial hypertension. These standards emphasize the importance of primary prevention, early diagnosis, and incorporating persons with these conditions into the primary health care system. Preliminary data from a national diabetes screening campaign that targeted the population over 40 years of age show that, of 20 million people who took the finger-stick test, 2.9 million (14.7%) were presumed to have diabetes mellitus.

Diseases of the Circulatory System

Diseases of the circulatory system were responsible for about 32% of all deaths, excluding those from ill-defined causes, in all

regions and in 23 of the 26 state capitals during the period 1995–1999. Only in the Southeast region was a decline in mortality from this cause observed in all age groups, owing mainly to the reduction in deaths due to ischemic heart disease in the state of São Paulo. The leading causes of death are ischemic heart disease and cerebrovascular disease, which accounted, respectively, for 25% and 34% of all deaths during the period. In the North, Northeast, and Center-West regions, cerebrovascular diseases were the leading cause of death; in the Southeast, ischemic heart disease prevailed. In the South, the two causes accounted for similar percentages of deaths.

In 1999, this group of diseases was the third leading cause of hospitalization in the public health care system, accounting for more than a million admissions (around 10% of the total number). Hypertensive disease accounted for 14.3% of hospitalizations for diseases of the circulatory system in 1999, substantially higher than the percentage of deaths due to this cause, owing to differences in the rules for coding mortality and morbidity. Data from 1997 indicate that the average hospital stay for diseases of the circulatory system was 7.2 days, while for other causes of hospitalization it was 6.4 days. The highest average expenditures for hospitalization were associated with ischemic heart disease, which accounted for an amount double that spent on the group of diseases of the circulatory system as a whole.

Malignant Neoplasms

Cancer mortality increased by close to 10% during the 1990s, rising to 75.5 deaths per 100,000 males and 62.5 per 100,000 females in 1999. Among males, lung cancer is the leading cause of death, with a rate of approximately 12 per 100,000. Next are stomach and prostate cancer, with rates of around 8.9 per 100,000 in 1998; in 1999, prostate cancer tended toward second place. The ranking of other cancer sites has changed little since 1996. Among women, breast cancer remained the principal cause of death, with rates of 8.9 to 9.6 per 100,000 women. Lung cancer became the second leading cause of death in 1997, and in 1999 the death rate from this cause was 5.1 per 100,000. Cervical cancer ranked third in 1999 (4.6 per 100,000), but the rates for the group of uterine cancers as a whole (cervix, corpus uteri, and unspecified parts of the uterus) have been close to 7.9 per 100,000 since 1996.

In 1999, some 356,000 hospital discharge diagnoses of malignant neoplasms were registered in the public health care system (65% were female patients). Excluding in situ and benign neoplasms and those of uncertain behavior, the six primary cancers among males were the mouth and pharynx (7%); leukemia (5.6%); stomach (4.6%); colon, rectum, and anus (4.6%); prostate (4.4%); and lung (4.3%). Among females, the predominant types were malignant neoplasms of the uterine cervix (10.2%), breast (9.1%), corpus uteri and unspecified parts of the uterus (8.9%), ovary (5.1%), and colon, rectum, and anus (2.7%). During the national cervical cancer control campaign, which was carried out in 1998 and reached 98% of the municipalities in Brazil, 3.2 million samples were examined. Close to 11,900 were found to be precancerous and, as of April 2000, 9,052 people had been treated or were in treatment.

Accidents and Violence

Injuries, deaths, and disabilities due to accidents and violence are most frequent in the young population and cause high expenditures for emergency care and rehabilitation. Around 15% of deaths from defined causes are due to external causes, which accounted for the highest mortality rate in 1996 (76 per 100,000 population). While the overall rates are declining, significant inequalities exist in their distribution by cause, age, and sex. In general, male mortality is close to three times greater than female mortality. Between 1996 and 1999, the proportion of deaths from transport accidents fell from 30% to 25% of the total due to external causes. At the same time, the proportion of homicides rose from 30% to 37%, with rising death rates, especially among young men. The large number of homicides by firearms prompted legislative proposals to control the sale, use, and possession of such weapons. External causes accounted for only about 6% of hospitalizations in the public system and their daily cost is 60% higher than that of other causes of hospitalization.

The number of drug poisoning emergencies has risen continuously, with 79,000 cases and 450 deaths reported in 1998. The main victims of drug intoxication and poisoning are children aged 1–5 (25% of the cases), and the most frequent agents are drugs, various household substances, and poisonous plants; in adults, drugs and agrochemicals are the most frequent causes of poisoning. Drug intoxication was responsible for 28% of the cases reported in 1994, and 35% of the cases involved children under the age of 5. Accidental intoxications and suicide attempts made up 79% of the cases in 1998. The deaths were caused mainly by agrochemicals (40% of the total), venomous animals (16%), and drugs (12%).

The National Policy on Reduction of Mortality and Morbidity from Accidents and Violence, adopted in 2001, establishes guidelines for promoting safe and healthy behaviors and environments, monitoring information, providing pre-hospital care, training human resources, and supporting correlative research and studies.

Mental Health

Mental disorders are an important cause of hospitalization and absenteeism from work, especially among males in the economically active population. In 1999, these causes accounted for 3.5% of all hospitalizations in the public system nationwide, with a higher percentage in the Southeast region (5.2%). Mental disorders were responsible for 12% of all hospitalizations—excluding those for causes related to pregnancy, childbirth, and the puerperium—in the 30–39 age group and 10% of those in the 40–49 age group. Schizophrenia and abuse of alcohol and other

psychoactive substances were the most frequent disorders, accounting for 72% of the cases in the group aged 20–49 years. More than 15% of the mental disorders were cases of alcoholism, which affects more males than females. Use and abuse of alcohol and other psychoactive substances is also associated with increases in traffic accidents, assaults, and homicides.

Oral Health

The prevalence of dental caries in the Brazilian population decreased markedly between 1986 and 1996. Studies conducted by the Ministry of Public Health among the school population of the state capitals showed that the DMFT index at 12 years of age had fallen from 6.7 to 3.1, thanks to a set of educational and preventive activities carried out with the participation of the public sector and entities in the area of dentistry. In addition, 42% of the population had access to fluoridated drinking water in 1996. Although no more recent information is available yet, a new study currently under way will provide more complete data on the oral health situation in Brazil.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The national health policy is based on the Federal Constitution of 1988, which set out the principles and guidelines for the delivery of health care in the country through the Unified Health System (SUS). This system, whose operating regulations were established in 1990, is guided by the principles of universal and equitable access to services for the promotion, protection, and recovery of health, integrated in a regionalized, multilevel network under the responsibility of the three levels of government (federal, state, and municipal). The private sector plays a complementary role. The SUS operational guidelines call for decentralized management, integrated care, and community participation.

Under the Constitution, the activities of the federal government are to be based on multiyear plans approved by the national congress for four-year periods. In the 1996–1999 quadrennium, the essential objectives for the health sector were improvement of the overall health situation, with emphasis on reduction of child mortality, and political-institutional reorganization of the sector, with a view to enhancing the operative capacity of the SUS. The plan for the next period (2000–2003) reinforces the previous objectives and prioritizes measures to ensure access at activities and services, humanize care, and consolidate the decentralization of SUS management.

Health Sector Reform Strategies and Plans

The current legal provisions governing the operation of the health system, instituted in 1996, seek to shift responsibility for administration of the SUS to municipal governments, with technical and financial cooperation from the federal government and the states. To that end, they strengthen the mechanisms for negotiation among agents in the various government spheres; support concerted and integrated programming and processes for evaluation, control, and auditing of the system; and establish criteria for financial management of the federal resources transferred to the municipal level. To harmonize SUS activities in the three levels of government administration, two negotiation and consensus-building bodies meet regularly: at the state level, the Bipartite Interagency Commission, on which the states and municipalities are represented; at the federal level, the Tripartite Interagency Commission, with equal representation of the Ministry of Public Health, the National Council of State Secretaries of Health, and the National Council of Municipal Secretaries of Health.

The municipalities that meet the criteria established for assuming full responsibility for administration of the municipal health system or for administration of primary health care receive federal resources, which are transferred directly, regularly, and automatically to the municipal health fund. The same process applies to administration of the SUS in the states. Since 1998, a certain amount of resources have been allocated exclusively for primary care activities. The *Piso de Atenção Básica* provides a fixed amount of resources, apportioned on a per capita basis, for basic care and an additional variable amount, utilized to support strategic activities (epidemiological surveillance and disease control, activities to address nutritional deficiencies, health surveillance, supply of basic drugs, family health, and community health agents), depending on specific needs. As of late 2000, 523 municipalities, which account for around 40% of the total national population, had been entrusted with full responsibility for administering the municipal health system, and virtually all the others had assumed full responsibility for administration of primary care.

Social participation in the SUS takes place mainly through two formal bodies: health councils and health conferences. These councils are standing bodies, which formulate strategies and monitor the execution of health policy, including the economic and financial aspects. The conferences are convened every four years, with broad stakeholder participation, to analyze progress with regard to the health situation and propose guidelines for the public policies in the sector.

Councils exist at the federal and state levels and in 98% of the municipalities. Confirmation of the existence of functioning state and municipal councils is a requirement for the transfer of administrative responsibility to the municipalities and, consequently, for the regular and automatic transfer of federal funds. Another regionalization initiative is the creation of health consortia, which pool the resources of several neighboring municipalities. In 1999, there were 143 of these consortia, involving a total of 1,740 municipalities, mainly in the South and the Southeast. An important instrument of support for regionalization is REFORSUS, a project to reorganize and strengthen the

SUS, launched in 1996 under a US$ 650 million lending agreement signed by the Government of Brazil, the IDB, and the World Bank. The investment is being used to upgrade the system's physical facilities and introduce improvements in the areas of infrastructure, information, service management, and operational mechanisms, among others.

The Health System

Institutional Organization

The health sector in Brazil comprises a complex network of services that encompasses public and private suppliers and financers. The SUS, which is national in scope and supported by the public sector, is responsible for around 75% of the services provided to the population. Private commercial enterprises and community and philanthropic institutions provide the remaining 25%. The SUS network includes government-run units and private establishments that provide public services under contract; 80% of the hospitals that supply services to the SUS are private. An estimated 25% of the population is covered by at least one form of health insurance; 75% of the insurance plans are offered by commercial operators and companies with self-managed plans.

The SUS includes subsystems at the level of each state (state SUS) and each municipality (municipal SUS). Under the Federal Constitution, the municipalities are responsible for providing health care to their respective populations, with technical and financial assistance from the federal government and the states. At the state level, the SUS is administered by the state secretariats of health. Nationally, the SUS is managed by the Ministry of Public Health, which has primary responsibility for regulatory functions and plays a major role in financing the system. The Ministry maintains some of its own operational structures in the areas of education, research, tertiary care, and delivery of special services, such as indigenous health care. Other parts of the federal government also provide health services directly, notably the system of university hospitals operated by the Ministry of Education and the armed forces health services. The SUS carries out ongoing functions of coordination, articulation, negotiation, planning, monitoring, control, evaluation, and auditing, which are incumbent on the three levels of government. The health councils, at their respective levels, undertake periodic monitoring of activities.

The private health services sector, which includes both for-profit entities and philanthropic and community organizations, has organizational and financial characteristics that are increasingly dependent on the dynamics of the private health insurance market. In 1999, the 5,193 private hospitals existing in the country indicated that their main sources of private financing were direct payments by users (90% of cases), third-party insurance plans (84%), and insurance offered by hospitals themselves or by their managing companies (17%).

Organization of Regulatory Actions

Oversight of professional practice in the various health careers is exercised by professional boards, which maintain regional bodies whose jurisdiction corresponds to the geographic area of each state. The boards are autonomous public entities, created by law, which supervise ethical and legal aspects of professional practice in the various health occupations throughout the country. In addition to these boards, there are union organizations and professional associations that are concerned with the cultural, labor, and scientific interests of various professional groups.

In 1995, Brazil implemented a program for hospital accreditation, which is granted pursuant to an evaluation of hospital services based on standards established in a specific federal regulatory instrument. Since 1998, the services of private insurers have also been subject to regulation, standards, monitoring, and oversight, as provided in specific legislation. The production and marketing of health-related goods and services are regulated by the federal, state, and municipal bodies that make up the National System of Health Surveillance. The Ministry of Public Health coordinates the system through the National Health Surveillance Agency, which is also responsible for health regulation at ports, airports, and borders. The Agency also has regulatory authority over a large segment of the national productive sector, for which purpose it employs an efficient set of mechanisms and procedures. In addition, it receives scientific and technical support from the National Institute for Quality Control in Health.

Procedures for the registration, control, and labeling of foods and identification and quality standards for food products are established under federal legislation, which assigns specific responsibilities to the health and agriculture sectors. In the health sector, health inspection activities have been decentralized to the state and municipal governments. The health and agriculture sectors each have their own laboratory networks for food quality control.

Brazilian environmental policy derives from specific legislation and from the Constitution of 1998, which established the National Environmental System. The advisory and deliberative body of the system is the National Environmental Council; its executive body is the Brazilian Institute for the Environment and Renewable Natural Resources.

Organization of Public Health Care Services

The main strategy for strengthening primary health care is the Family Health Program (PSF), which was introduced in 1994 and is overseen by the municipal health secretariats in collaboration with the states and the Ministry of Public Health. The Program is organized into local teams consisting of a doctor, nurse, nursing auxiliary, and five or six community health agents. Each health team is responsible for some 1,000 families. The professionals on the teams are trained at special training and continuing educa-

tion centers. As of December 2000, 31 such centers existed in the country.

To facilitate the work of the program, the Federal Government supplies technical support and transfers funding through the *Piso de Atenção Básica*, which provides specific financial incentives to encourage municipal governments to expand the coverage of the Family Health Program and form new teams. In December 2000, there were 10,473 family health teams working in 3,090 municipalities and serving 27 million people. By the end of 2002, the number of people being served is expected to rise to 70 million. There are also some 145,000 community health agents, not necessarily linked to the PSF teams, who regularly visit 73 million people in 4,610 municipalities. To strengthen the PSF and encourage medical and nursing professionals to go and work in underserved areas, a program of professional incentives was launched in February 2001. Initially, the program is focusing on 500 municipalities.

Disease prevention and control activities follow guidelines established by technical experts in the Ministry of Public Health and laid out in plans and programs executed by the municipal and state SUS entities. The National Epidemiology Center (CENEPI), an agency of the National Health Foundation (FUNASA), coordinates the national epidemiological surveillance system, which provides information about and analysis of the national health situation. CENEPI also coordinates the national system of public health laboratories, which is currently being restructured.

Since 1999, the executive structure of FUNASA has been decentralized to the state and municipal levels. As of April 2001, 27 state health secretariats and 3,553 municipal health secretariats had assumed administrative responsibility. In addition to strengthening decentralized management and fostering better coordination with primary care programs, this process has led to an increase of close to 85% in financing for high-priority disease prevention and control activities. Under a lending agreement with the World Bank for US$ 600 million, since 1999 FUNASA has been carrying out a health surveillance project (Vigisus) in Amazonia that includes epidemiological surveillance, environmental health surveillance, indigenous health, and disease control components. The funds are being used to improve the operational infrastructure (information, laboratory support, communications, and transportation), training of human resources, and research studies.

Basic sanitation is the responsibility of the municipal governments, but in most cases services are provided by sanitation companies administered at the state level. To help mitigate the harm caused by environmental conditions, FUNASA carries out activities through decentralization of resources to the state and municipal levels. Between 1995 and 1999, around US$ 400 million were allocated to 3,500 Brazilian municipalities, 80% of which have fewer than 30,000 inhabitants. A total of 11 million people benefited from this funding.

Organization of Individual Health Care Services

In Brazil, the private sector supplies a large portion of hospital, diagnostic support, and therapy services, while the public sector is responsible for most outpatient services. In 1999, 66% of the country's 7,806 hospitals, 70% of its 485,000 hospital beds, and 87% of its 723 specialized hospitals belonged to the private sector. In the area of diagnostic support and therapy, 95% of the 7,318 establishments were also private. In contrast, 73% of the 41,000 ambulatory care facilities were operated by the public sector.

In 1999, hospital beds in the public sector were distributed as follows: surgical specialties, 21%; clinical medicine, 30%; pediatrics, 17%; obstetrics, 14%; psychiatry, 11%; other areas, 7%. In the same year, 43% of the public hospital beds and half the hospital admissions were in municipal establishments. The SUS ambulatory care facilities offer primary care, which includes preventive measures such as immunization; specialized care, provided by medical specialists; and complex care, utilizing more sophisticated equipment and technology. In 1999, the ambulatory care system logged about two visits per person. As of December 1999, this system included 55,700 health care establishments of various types.

One of the instruments for improving the administration and quality of care in the SUS is the National Health Card. Through this system, computerized records are kept of the identity and relationship of users, care history, appointments, authorization for highly complex procedures, and health care financing. A survey among users of public health services in 2000 revealed high overall rates of satisfaction with the SUS (64%), particularly in relation to guaranteed access (50%) and promptness of care (20%).

Health Supplies

Drugs

Brazil is one of the 10 largest consumer markets for drugs, accounting for a 3.5% share of the world market. In 1999, gross receipts on the domestic market totaled US$ 8,500 million. The pharmaceutical sector comprises 471 companies, 50 of which control 80% of the market. There are some 50,000 pharmacies in the country—including hospital and homeopathic pharmacies—that sell 5,200 products in 9,200 different forms.

The National Drug Policy, approved in 1998, seeks to ensure the safety, efficacy, and quality of drugs, as well as rational use and access for the population to essential products. Its implementation presupposes decentralized management of resources, based on a national list of essential drugs and a set of essential products whose supply is obligatory. Financing for basic drugs is shared by the three spheres of government on a per capita basis. To expand the population's access to drugs, incentives have been offered for marketing generic products, which cost an average of 40% less

than brand-name products. In February 2000, there were 14 industries authorized to produce generic drugs and about 200 registered generic drugs were being produced in 601 different forms.

Immunobiologicals

Responsibility for national production of immunobiologicals is entrusted to public laboratories, which have a long-standing tradition of producing vaccines and sera for use in official programs. Between 1995 and 2000, the Ministry of Public Health invested some US$ 120 million in developing the capacity of these laboratories; in 2000, the supply of products was sufficient to meet the need for heterologous sera, such as those used in the vaccines against tuberculosis, measles, diphtheria, tetanus, pertussis, yellow fever, and human and canine rabies. In addition, 60% of the products obtained for the National Immunization Program in 2000—including vaccines, immunoglobulins, and sera—were manufactured in the country. Each lot of products procured for the Program, including imported products, is subject to quality control before use by the national reference laboratory. To enhance quality control activities, the registration process has been standardized and a program for inspection of producers and importers of biological products has been implemented as part of the health surveillance system.

Blood and Blood Products

Quality control of blood used for transfusions began in 1980, with the offering of incentives for voluntary donation and the establishment of a network of public blood donation centers. In 1999, the network consisted of 26 coordinating centers, located in the state capitals, and 44 regional centers. Working in collaboration with universities, the blood donation centers also help train specialized personnel and contribute to scientific and technological development in this area. Some 2 million people donated blood in 1999; 90% of them were males between 16 and 30 years of age. The Blood Quality Control Program, created in 1998, is currently carrying out 13 projects to strengthen the infrastructure and operations of the network. One of these projects is aimed at achieving self-sufficiency in blood products.

Reagents and Equipment

Purchases of medical and hospital goods and equipment amounted to around US$ 3,500 million in 1999. National industries supplied close to 45% of domestic demand, with equal participation by the public and private sectors. The bulk of these industries are located in the South and Southeast regions, where around 60% of high-technology equipment is concentrated. The manufacturing sector estimates that in 1997 there were 11,000 groups of products, made by 515 manufacturers, on the market. No basic policy on the assessment and incorporation of new technology has yet been instituted. A surveillance system was introduced in 2000 to certify good manufacturing practices and to train inspectors, mainly in the field of equipment and in vitro testing kits. Brazil is participating in efforts to harmonize international standards in the framework of MERCOSUR and the Global Harmonization Task Force.

Human Resources

In 1999, the country had some 237,000 physicians, 145,000 dentists, 77,000 nurses, 26,000 dietitians, and 56,000 veterinarians. The national average ratio of physicians to population was 14 per 10,000, with a strong concentration of physicians in the Southeast (21 per 10,000) and lower numbers in the North (6 per 10,000) and Northeast (8 per 10,000). The distribution was similar for dentists and nurses. Generally speaking, the number of positions available in health care establishments exceeds the number of registered professionals in each category, and the same individual may hold two or more positions. In 1999, of the 665,000 professional positions, 65% were occupied by physicians, 11% by nurses, 8% by dentists, 3.2% by pharmacists and biochemists, 2.8% by physical therapists, and 10% by other professionals. The disproportion between doctors and nurses is due in part to the employment of large numbers of auxiliary personnel, who perform most nursing work. In 1999, the public sector employed a larger proportion of health personnel in the North (54% of the health workforce) and Northeast (62%) versus only 38% in the South.

In 1998, 7,616 professionals were trained in medicine, 5,447 in nursing and obstetrics, and 7,710 in dentistry. In 1999, 54% of the 97 medical training programs, 38% of the 130 dentistry programs, and around half of the 153 nursing and midwifery programs were offered in the public sector. An estimated 1.4 million health sector jobs are occupied by technical and auxiliary personnel. In 1999, 703 courses for such personnel were offered and 29,000 students were trained. A large-scale project currently under way is providing technical and financial cooperation for training workers in the nursing field.

Health Research and Technology

Over the last decade, the amount invested by the federal government in science and technology dropped from approximately US$ 1,900 million in 1990 to US$ 1,300 million in 1999. Direct investment in the health sector also declined, falling from US$ 63.1 million in 1990 to US$ 41 million in 1999, a percentage difference of 35% during the period. An estimated 30% of the resources allocated for science and technology are used for research and development of technology in the health sciences.

In the period 1995–2000, 38,235 articles by Brazilian authors were published in indexed international journals, and, in 2000, Brazil was the leader among Latin American countries in scientific production and number of research groups in the health field. In 1998, the country had 503 recognized graduate programs in the health sciences (295 at the master's level and 208 at the

doctoral level). Consolidation of the strategy for creation of sectoral funds to support scientific and technological development is expected to lead to the creation of a national fund for health research that will boost the country's scientific and technological production in the health field through a system of induced demand, based on a national agenda of priorities.

Health Sector Expenditure and Financing

The official information available indicates that in 1998 national health spending amounted to US$ 62,000 million, which was around 7.9% of GDP. Of that total, public spending accounted for 41.2% (US$ 25,500 million, or 3.25% of GDP) and private spending accounted for 58.8% (around US$ 36,500 million, or 4.63% of GDP). In per capita terms, public expenditure is estimated at US$ 158 and private expenditure at US$ 225, for a total of US$ 383 per capita. Of the total of public expenditure on health, US$ 14,500 million (56.7%) came from the federal government, approximately US$ 4,800 million (18.7%) came from the states, and US$ 6,300 million (24.6%) came from the municipalities. Fifty percent of total public spending on health was concentrated in the Southeast, while the shares of the Northeast and the North were 18% and 4.5%, respectively. As for private expenditure, families spent US$ 32,600 million and businesses spent around US$ 3,900 million. The largest categories of spending by families were drugs used on a regular basis (37.2%), monthly premiums for health plans and insurance (33.1%), dental treatments and prostheses (11.8%), and hospitalizations (4.4%). Of the total private expenditure, 40% occurred through prepaid insurance systems.

A large proportion of public expenditure is federal government spending to finance the SUS, which takes the form of investments for the maintenance of the system's own entities and programs of national scope, transfers to states and municipal administrative agencies, and direct payments to public and private providers of services in the states and municipalities not yet authorized to take over full administration of their systems. In 1999, excluding personnel and administrative expenditures, the largest items in the breakdown of federal spending were medical and health care (65%), prophylactic and therapeutic measures (6%), and communicable disease control (3%). Transfers for municipal administration of the SUS rose from 7% of total federal spending in 1993 to around 30% in 1999, which reflects the policy on decentralization of health care. In addition, municipal governments are now contributing more of their own resources.

A constitutional amendment approved in 2000 provides for progressive increases, until the year 2004, of the resources contributed by the three spheres of government to finance public health activities and services. In the case of the federal government, the minimum amount allocated for health will be pegged to increases in the nominal value of the GDP. The share of the states and municipalities will rise to levels of 12% and 15%, respectively, of the value of the taxes collected at each level.

External Technical Cooperation and Financing

A study in 2000 identified 129 external cooperation projects scheduled to be carried out in the health field in Brazil between 1998 and 2004. The countries and agencies participating in these projects include Canada, France, Germany, Italy, Japan, Spain, the United Kingdom, the United States, the IDB, the World Bank, PAHO, UNFPA, UNDP, the European Union, and UNESCO. These projects have mobilized a total of US$ 675.6 million, including funds from the agencies, national counterpart funding, and bank loans. Data collected after completion of the study showed that UNICEF mobilized some 4.2 million reales for health projects and activities during the period 1997–2000.

International cooperation projects are emphasizing the areas of collective services and training, especially in the subareas of management and disease prevention and control. They are either national in scope or are targeted to states where the health situation is particularly unfavorable, especially in the Northeast region. In general, the thematic areas for international cooperation correspond to the federal government's multiyear plans and include reducing infant and maternal mortality through promotion of women's and children's health and expansion of the Family Health Program; improving the quality of health services through physical restructuring, strengthening of management, and training of human resources; and extending access to health activities and services.

Several international foundations are also active in Brazil and provide direct financing for projects or individuals in fields related to the Program of Action of the 1994 International Conference on Population and Development. In 1998, these entities contributed more than US$ 3.2 million in technical and financial cooperation for activities relating to family planning, reproductive health, and AIDS. The resources mobilized by the IDB and the World Bank under lending agreements with the Government of Brazil account for a substantial and strategically important share of financing for the health sector.

Brazil's participation and influence in cooperation initiatives have increased, and the volume of financial resources involved has grown. Some neighboring countries, including Bolivia, Colombia, Guyana, Paraguay, Peru, and Venezuela, benefit from programs for the control of endemic diseases (malaria, schistosomiasis, leishmaniasis, tuberculosis, leprosy) and prevention of AIDS. Brazil is also engaged in an intense exchange with the MERCOSUR countries, aimed at establishing common health regulations. In addition, the country maintains traditional lines of cooperation with East Timor and the Portuguese-speaking countries of Africa.

FIGURE 1. Population structure, by age and sex, Brazil, 1999.

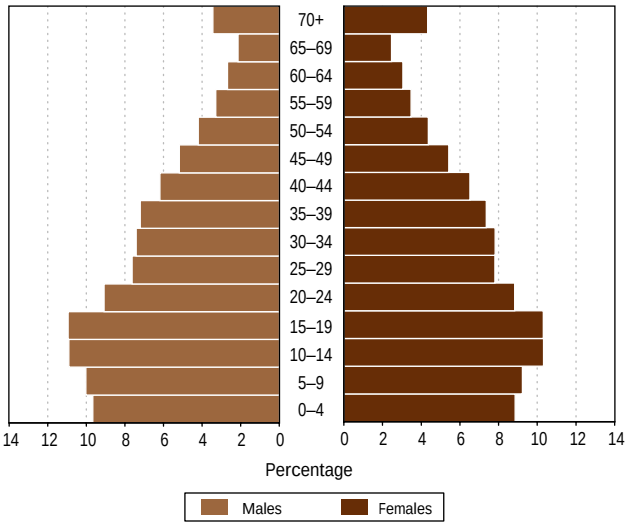


FIGURE 2. Gross domestic product, annual growth (%), Brazil, 1990–1999.

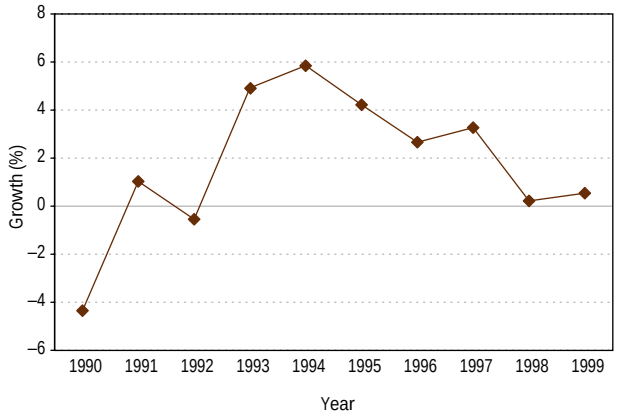


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Brazil, 1995–2000.

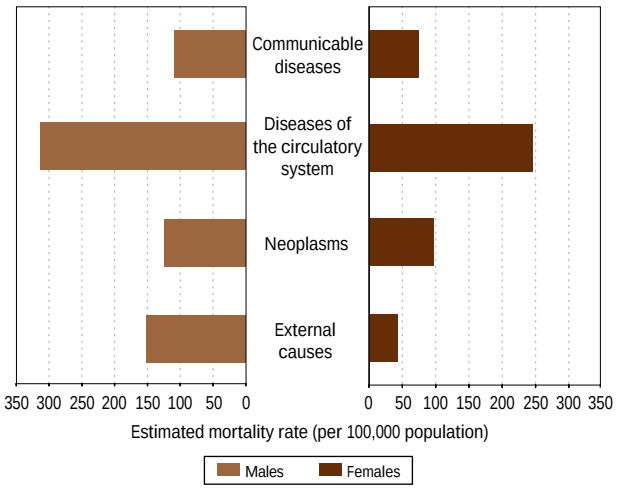


FIGURE 4. Distribution of infant mortality, Brazil, 1998.

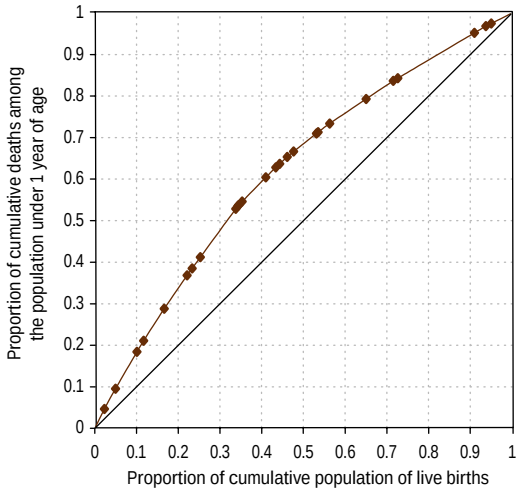


FIGURE 5. Vaccination coverage among the population under 1 year of age, by vaccine, Brazil, 2000.

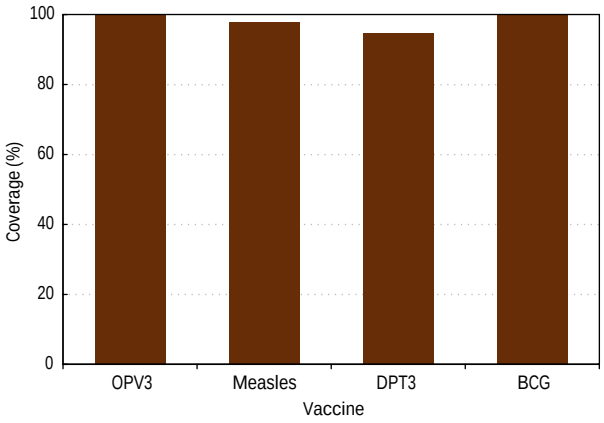
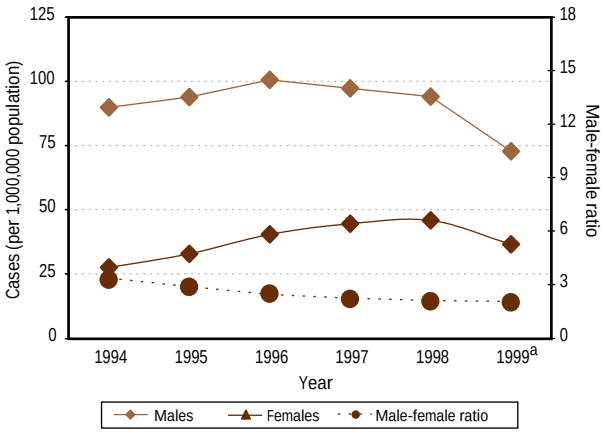


FIGURE 6. AIDS incidence, by sex, with male-female ratio, Brazil, 1994–1999.



[a]Partial data.

BRITISH VIRGIN ISLANDS

OVERVIEW

The British Virgin Islands (BVI) is an overseas territory of the United Kingdom. The BVI includes over 50 islands and cays, 15 of which are inhabited. The total land mass of 59.3 mi^2 is spread over 1,330 mi^2 in the northeastern Caribbean Sea. The four largest islands—Tortola (21.5 mi^2), Anegada (15.2 mi^2), Virgin Gorda (8.5 mi^2), and Jost Van Dyke (3.2 mi^2)—account for 48.4 mi^2 of the Territory's total area. The capital, Road Town, is located on Tortola. Transportation to Tortola from Virgin Gorda and Jost Van Dyke is mostly by ferry, with the trip averaging 30 minutes; transportation from Anegada is by boat or air taxi. Tortola has good roads and telecommunications services; there is no public transportation system, but private vehicle ownership is high and private transport services are readily available.

The BVI is self-governed by a democratically elected Legislative Council. The Government is composed of an Executive Council consisting of a Chief Minister, the Attorney General, and four other ministers. The Governor exercises reserve powers on behalf of the Crown and normally acts on the advice of the Executive Council, over which he presides. There are no local government structures; however, there are three District Officers with administrative functions for Virgin Gorda, Jost Van Dyke, and Anegada.

The Government relies on locally generated revenue and loans for most of its recurrent and capital spending. It also receives small grants-in-aid from the British Government, mainly for internal security and foreign affairs, the areas covered by the Governor's reserve powers, and to support good governance.

The Territory's economy is driven by tourism, which contributed 21.1% of GDP in 1999, and financial services, which contributed some 50.2% of total Government revenue in 1999. Since 1996, several pieces of legislation have been passed to reduce money laundering, regulate the mutual funds sector, and govern general and limited partnerships. GDP at current prices was US$ 511 million in 1996 and US$ 682.8 million in 2000; the annual growth rate decreased from 10.4% to 4.4% over those years (Figure 1).

The expansion of the Beef Island airport and the construction of a new bridge between Beef Island and Tortola, as well as housing construction, fueled activity in the construction industry. Such activity has led to the importation of labor, mainly from other Eastern Caribbean countries. The unemployment rate averaged 3.6% from 1998 to 1999; unemployment was 3.8% among males and 3.4% among females.

Between 1980 and 1990, the BVI's population increased by approximately 45%, from 11,000 to 16,000; in the 1990s, the rate of growth decreased to an average of about 2%. Approximately 65% of the population growth since 1980 is due to immigration. During the review period, immigrants accounted for approximately half the population.

The population of the BVI increased from 18,737 in 1996 to 20,254 in 2000. In 2000, there were 10,429 males and 9,825 females, yielding a sex ratio of 1.06:1 (Figure 2). Most of the population lived on Tortola (16,630), Virgin Gorda (3,063), Anegada (204), and Jost Van Dyke (176).

The large influx of immigrants has increased the working-age population. In 2000, persons under 15 years of age accounted for 27% of the population, persons age 15–64 years for 67%, and persons 65 years of age and older for 5%. The dependency ratio in 2000 was 0.46.

School attendance is compulsory up to age 15. The average length of school attendance is 9.4 years, though most students complete a total of 12 years (primary and secondary). There are 20 primary schools (12 public and 8 private) in the Territory, and 5 secondary schools (4 public and 1 private). Adult literacy rates in 1998–2000 were 98.3% for females and 97.8% for males.

The H. Lavity Stoutt Community College, which is located on Tortola and is part of the University of the West Indies, offers tertiary education. The College has articulation agreements with several academic institutions in the U.S., such as Wright State University (Ohio), for business studies; the State University of New York (SUNY) at Buffalo (New York), for nursing studies; and St. Augustine College (North Carolina).

During 1996–2000, the crude birth rate averaged 16 births per 1,000 population, and the total fertility rate averaged 1.9 children

per woman. Life expectancy at birth over the period 1996–1999 averaged 74.5 years (72.2 years for males and 77.8 for females).

Mortality

Many people access health care through the private sector; however, the health information system does not capture routine data from the private sector. A medical practitioner certifies all deaths. Those that occur in hospital are reported directly to the National Registration Office, while deaths that occur at home are reported to the Office by district registrars.

The crude death rate was 4.7 deaths per 1,000 population in 1996, 5.1 in 1997, 4.5 in 1998, and 4.8 in 1999. There were no maternal deaths during the review period. From 1996 to 2000, there were approximately 92 deaths per year.

Figure 3 shows estimated mortality by broad groups of causes and sex for the period 1995–2000. According to hospital data, in 2000, diseases of the circulatory system accounted for 31 (33.3%) of total deaths with defined cause (93), malignant neoplasms for 22 (23.7%), and external causes for 7 (7.5%). The age group most affected was persons age 65 years and older (59 deaths), followed by persons age 20–59 years (23 deaths), and infants (6 deaths).

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

There were a total of 13 deaths among children under 1 year of age from 1996 to 1999. There were 16 deaths among children age 1–4 years over the same period. The mortality rate for children under 5 years of age was 14.9 deaths per 1,000 live births. There were 47 premature births from 1996 to 2000. The average incidence of low birthweight was 6.8% for 1996–2000.

Infant mortality rates were generally over 10 per 1,000 live births during the 1997–2000 period, but there were only 13 recorded infant deaths between 1996 and 1999, with 1 in 1997 and 3 in 1998. Data from Peebles Hospital indicate that in 2000, there were three deaths among children under 1 year of age and one death among children age 1–5 years.

Asthma, gastroenteritis, and acute respiratory infections are important causes of morbidity and hospital admissions among children age 1–4 years. Eight infants and 64 children age 1–4 years were treated for asthma as outpatients in 2000; there were 10 hospital admissions for this cause among the latter age group that year.

From 1996 to 2000, 11 children under 1 year of age and 38 children between 1 and 4 years of age were admitted to Peebles Hospital for gastroenteritis. Overall, there were 134 reported cases of gastroenteritis among children under age 5 years in the BVI in 2000.

There were 197 cases of acute respiratory infection among children under 5 years of age in 2000. There were no hospital admissions for pneumonia among infants in 1999, and two in 2000. There were 23 hospital admissions for pneumonia among children age 1–4 years in 1999 and 25 in 2000.

Schoolchildren (5–9 years) and Adolescents (10–14 and 15–19 years)

Eighteen children and adolescents age 5–14 years were admitted to hospital for asthma; 112 were treated on an outpatient basis in 2000.

Adolescents accounted for 167 (11%) of the 1,560 births during the period 1996–2000, for an average of 33.4 births per year. During that period, there were approximately three births to girls under 15 years of age.

A 1999 adolescent health survey among 400 students age 11–20 years found that approximately 18% had used marijuana or hallucinogens in the previous year, 17% had used inhalants, 16% had smoked cigarettes, 11% had used amphetamines or steroids, and 10% or less had used chewing tobacco, cocaine, heroin, intravenous drugs, or sedatives. As many as 60% had consumed alcohol, including 25% of 10–12-year-olds; 35% of respondents had never drank. Among those who had consumed alcohol, 44% reported having one drink, 10% two to three drinks, and 9% four drinks or more at one time.

One quarter of students who had had sex reported using contraception always, 19% sometimes, and 39% never. Eleven percent of students surveyed reported having suffered physical abuse or mistreatment, and of these, 60% reported being abused by an adult living in their home. Six percent of students reported having been sexually abused. Thirteen percent had attempted or contemplated suicide, with more than half attempting suicide in the previous year.

Secondary schools have no formal health or sexual education curricula. However, high school nurses offer some substance abuse counseling, and guidance counselors and some NGOs offer seminars on this and other health subjects throughout the year. The family planning nurse also visits schools to offer seminars on sexual health upon request from teachers or counselors. A mandatory school health screening program is in place. Family life education is incorporated into the curricula of all primary schools.

Adults (20–64 years)

Breast cancer accounted for five deaths among women age 25–64 years in 1999–2000. Prostate cancer accounted for one male death in the 45–64 years age group.

The 25–44 years age group had the most admissions (23 of 51) due to motor vehicle accidents from 1997 to 1999; the next most affected group was young persons age 15–24 years, with 16 admissions over that period.

The 25–44 years age group accounted for 27 of 192 hospital admissions for heart conditions from 1998 to 2000; the 45–64

years age group accounted for 56 admissions, with congestive heart disease (29 admissions) and angina pectoris (11 admissions) predominating.

The age groups 25–44 years and 45–64 years accounted for 11 and 25 hospital admissions for diabetes, respectively, in 1999–2000.

There were 10 hospital admissions due to asthma among the age group 25–44 years in 2000; in addition, 48 patients in this age group were treated for asthma on an outpatient basis that year. The 45–64 years age group accounted for six admissions due to asthma and nine outpatients seen the same year.

Women age 20 years and over accounted for 1,393 (89%) of the 1,560 births from 1996 to 2000, yielding an average of 279 births per year. There were no maternal deaths over this period.

Elderly (65 years and older)

The number of deaths among males age 65 years and older due to prostate cancer increased from 9 in 1996 to 17 in 2000, with a total of 60 for that period. A voluntary screening program for prostate cancer was initiated in 2000.

Persons age 65 years and older accounted for 103 of 192 hospital admissions due to heart conditions in 1998–2000. Congestive heart disease was the most common problem, accounting for 51 admissions; coronary heart disease/ischemic heart disease (9 admissions), and arteriosclerotic heart disease/coronary artery disease and angina pectoris (7 admissions each) were also important problems.

The Adina Donovan Home, a 29-bed residential facility for senior citizens adjacent to Peebles Hospital, is run by the Ministry of Health and Welfare. Thirty patients were cared for in 2000. The average age of residents is 68 years, and the average length of residence is 8 years. A home care program is offered by the BVI Red Cross.

Family Health

The maternal and child health program is based at the Road Town Health Clinic. The program offers child immunizations; growth and development monitoring; nutritional consults; pre- and postnatal care; and educational counseling for pregnant women.

Domestic violence and child abuse have become critical issues for the health sector, and an intersectoral committee is formulating protocols for reporting and care of the abused. A domestic violence act was passed in 1996.

A study on domestic violence in the BVI was conducted in 1998 through the Women's Desk of the Office of the Chief Minister. The study sample included women age 15–54 years from Tortola, Virgin Gorda, Jost Van Dyke, and Anegada. Of 700 survey questionnaires sent out, 330 (47%) were returned; most responses (79%) were from Tortola. The study found that 94 (28%) respondents reported have been physically abused, and of these, 43 (46%) reported the abuse to the police and 24 (26%) sought medical attention (18 through Peebles Hospital and 6 through the private sector).

Workers' Health

The Social Security Board reported 25,000 individuals covered for 2000. In that year, there were 121 claims and claimants. The most common claims were for fractures, lacerations, and broken bones. Most injuries were to persons employed in the yachting industry.

The Disabled

The Esleyn Henley Richiez Learning Centre is a school for children with mental and physical disabilities. It is located at John's Hole, Tortola, and is run by the Department of Education. The 17 students registered in 2000 ranged in age from 5 to 16 years, and their disabilities included learning disabilities (extremely slow learners) (8), Down syndrome (5), deafness (1), autism (1), cerebral palsy (1), and spina bifida (1).

By Type of Health Problem

Natural Disasters

The BVI suffered four natural disasters during 1996–2000: Hurricane Bertha, in 1996, which caused an estimated US$ 2 million in damages; Hurricane Georges, in 1998, which caused some US$ 12 million in damages; Hurricane Lenny, in 1999, which resulted in US$ 29 million in damages; and Hurricane Debbie, in 2000, which was not as devastating as the others, but damaged the water system. No outbreaks of communicable disease due to these hurricanes were reported. The Health Department updated the National Health Sector Emergency Management Plan in 2000.

Vector-borne Diseases

Dengue (types 1, 2, and 3) is the only vector-borne disease that affects the BVI; sporadic cases were reported during 1996–2000.

Diseases Preventable by Immunization

There were no cases of morbidity or mortality due to diseases preventable by immunization over the review period. The BVI has an aggressive immunization program, and all children age 0–5 years are immunized. Children under 1 year receive the DPT3, *Haemophilus influenzae* type b (Hib), hepatitis B, OPV, and BCG vaccines; MMR vaccine is administered at 1 year of age. Average rates of coverage for the period 1997–2000 were 98% for DPT3, 97% for OPV3, 99% for BCG, and 98% for MMR (Figure 4). DPT, polio, and MMR booster shots are given according to the immunization schedule until 11 years of age. The hepatitis B and Hib vaccines were added to the immunization program in 1999, and pentavalent vaccine, which provides coverage for diphtheria, pertussis, tetanus, hepatitis B, and meningitis, was added in 2000.

A hepatitis B vaccination campaign, which was funded by the Social Security Board and conducted in March 1999 and November 2000, targeted primary and secondary school students and teachers, health workers, and police and fire officers. A total of 4,829 individuals were immunized during the campaign, with particularly high rates of coverage among students (over 90%), teachers (100%), and fire officers (100%).

To reduce the risk of congenital rubella syndrome in BVI, a rubella mass vaccination campaign was conducted in January and June 2000. Out of a target population of 3,220 adults age 22–44 years, 2,910 (90%) were immunized.

Intestinal Infectious Diseases

Hospital data for the period 1996–2000 indicate that there was 1 admission for amebiasis, 95 for gastroenteritis, 2 for salmonella, 3 for shigellosis, and 4 for viral intestinal infection. In the same period, 68 children age 14 years and younger were admitted for gastroenteritis; of these, 49 (72%) were children age 5 years and younger. There was one death due to gastroenteritis in 1996.

Throughout the Territory in 2000, there were 134 reported cases of gastroenteritis among children under 5 years of age, and 281 in the population over 5 years of age.

Chronic Noncommunicable Diseases

Approximately 350 registered diabetics attended Government clinics in 1996. There were 27 hospital admissions for diabetes in 1999 and 30 in 2000; the 25–44 years age group (11 admissions), the 45–64 years age group (25 admissions), and the 65 years and older age group (18 admissions) were most affected.

In 2000, there were 42 hospital admissions for asthma, mainly among the 1–4 years age group (10) and the 5–14 years age group (18). A total of 286 patients were treated for asthma on an outpatient basis that year, with 64 patients age 1–4 years and 112 patients age 5–14 years.

Acute Respiratory Infections

There were 59 hospital admissions due to acute respiratory infections in 1996; most admissions (19) were among children under 1 year of age and among children age 1–4 years (20). There were 197 admissions among children under 5 years of age in 2000. There were 163 suspected cases of influenza in 2000.

Pneumonia accounted for 97 primary hospital admissions in 1999 and 63 in 2000. The age groups most affected were children age 1–4 years, with 48 total admissions, and persons age 65 years and older, with 52 total admissions.

HIV/AIDS

By the end of 2000, 30 cases of HIV/AIDS (20 males, 10 females) had been reported in the BVI, 7 of them since 1997. There were no cases reported in 1996. Only one female case of HIV/AIDS was reported between 1994 and 2000. There were 22 deaths due to AIDS by the end of 2000 (15 males and 7 females).

An HIV seroprevalence study of 408 pregnant women, conducted between February 1996 and August 1997, revealed no positive cases.

All blood for transfusion is screened for HIV.

Diseases of the Circulatory System

There were 159 hospital admissions for cardiovascular disease in 1996, accounting for 10% of all admissions that year. From 1998 to 2000, there were 50, 78, and 64 hospital admissions due to heart conditions for each respective year. Congestive heart disease was the main contributor, accounting for 22 (44% of admissions for heart conditions) in 1998, 35 (45%) in 1999, and 25 (39%) in 2000. Other important heart conditions during 1998–2000 were angina pectoris, hypertensive disease, and myocardial infarction (19 admissions each), and arteriosclerotic heart disease/coronary artery disease and coronary heart disease/ischemic heart disease (17 admissions each). The age groups most affected by heart conditions were 45–64-year-olds, with 56 admissions, and persons age 65 years and older, with 103 admissions.

Malignant Neoplasms

Hospital data revealed 21 deaths due to malignant neoplasms in 1999 and 22 in 2000; most deaths—13 and 17 for each respective year—were among persons 65 years of age and older. Males, who accounted for 15 deaths each year, were more affected than females.

In 1999, prostate cancer accounted for 8 of 21 deaths due to malignant neoplasms, breast and colon cancer for 3 each, and stomach cancer for 2. In 2000, prostate cancer accounted for 10 of 22 deaths due to malignant neoplasms, breast cancer for 3, stomach cancer for 2, and colon cancer for 1.

Prostate cancer caused 4 deaths each in 1996 and 1997, 7 in 1998, 8 in 1999, and 10 in 2000. There were 9 hospital admissions for prostate cancer in both 1996 and 1997, and 12 in 1998.

Accidents and Violence

Between 1997 and 1999, there were 51 hospital admissions due to motor vehicle accidents; 35 of those admitted were males and 16 were females, for a male-female ratio of 2.2:1. The age groups most affected were 15–24-year-olds (16 admissions) and 25–44-year-olds (23 admissions). There were no deaths due to this cause in 1996 or 1997; there was one death in 1998, two in 1999, and one in 2000.

Oral Health

In 1999, 1,120 schoolchildren were screened and 979 were examined by the Dental Services. In that year, 379 extractions and 1,669 surface restorations were performed.

Foodborne Illnesses

There were 24 suspected and 8 confirmed cases of ciguatera poisoning in 2000.

Mental Health

The number of active patients attending the mental health clinic in 1996 was 200, of which 184 were adults (79 males and 105 females) and 16 were children.

Among adult males, alcoholism and drug abuse are contributing factors to mental and behavioral disorders and hospital admissions. In 1996, 56 of 62 (90%) hospital admissions for psychotic conditions were classified as drug induced (marijuana and crack cocaine). Of these, 44 (79%) were between 15 and 44 years of age; 38 were males and 6 were females. Alcohol abuse resulted in approximately 55 admissions in 1996. In 1997, there were 65 admissions for mental and behavioral disorders. Of these, 34 were due to alcohol abuse (27 males and 7 females) and 7 (6 males and 1 female) to other substance abuse. Depression accounted for 6 and schizophrenia for 5 of the remaining 24 admissions for mental and behavioral disorders. Most cases of alcohol and drug abuse (21) occurred among the population age 25–44 years. There were only 22 hospital admissions for alcohol abuse in 1999.

In 1999, the Government hired a local psychiatrist who, in addition to managing psychiatric hospitalizations, also directs the Mental Health Services Unit.

The Sandy Lane Center offers drug rehabilitation and treatment, domestic violence, and child abuse services. In 1998, 114 clients were seen in a total of 1,737 visits. The drug treatment center saw 93 persons in 1999 and 86 in 2000; more than 79% of patients were males. Alcohol, marijuana, and crack cocaine were the three most abused substances.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

It is the policy of the British Virgin Islands Government to provide comprehensive health care, with special focus on women, children, the elderly, the mentally ill, and the handicapped. Health promotion is strongly emphasized, and the Government's goal is to expand the integration of health promotion beyond the activities and policies of the health sector to all Government planning processes, activities, and policies, particularly those that have an impact on health, such as education, employment, housing, transportation, and environmental resource management.

The Government's health priorities are the enhancement of hospital services, the strengthening of public primary health care services, and the improvement of environmental health, including solid waste management.

Health Sector Reform Strategies and Programs

With funding from the United Kingdom, the Government undertook a Health Sector Adjustment Project from 1993 to 1996, with the aim of implementing a new management structure and process, revising planning approaches and systems, revising financing strategies, improving quality of care, and optimizing health outcomes. As a result of the Project, a new management structure was agreed upon and partially implemented, and health sector studies on health information, health promotion, accident prevention, mental health, and environmental health were undertaken in order to provide local health managers with a sound basis for planning. Continuing health reform efforts are concentrated on improved health care delivery through increased efficiency, effectiveness, and responsiveness.

Recognizing that the Territory has outgrown most of its existing health facilities and that a major effort must be made to bring the health services up to recognized standards, the Government embarked on a study of the health system in 1999. The study recommended that the Government's goal be to procure high quality and accessible primary and secondary care services, to monitor and evaluate them, and to develop policies to govern the health sector, rather than continue to provide these services itself. In order to address some of the identified needs, the decision was made to upgrade Peebles Hospital's physical infrastructure, to improve community clinics, and to improve waste disposal programs.

The Health System

Institutional Organization

The Ministry of Health and Welfare is responsible for providing public health and social services, as well as for monitoring and regulating private sector providers. The Minister, in consultation with the Permanent Secretary and the Director of Health Services, makes policy decisions. The Permanent Secretary is responsible for the administration of the Ministry headquarters and for supporting the Minister in his policy role. The Director of Health Services is charged with the day-to-day management and planning of health services.

The Public Health Department is responsible for managing Government health services. The Department is organized into community services (primary care) and hospital services (secondary care) departments, each headed by a senior manager who reports to the Director of Health Services. Budgetary responsibility lies with the heads of the respective units.

The 1976 Public Health Act provides the statutory framework for protecting and promoting the population's health. In accordance with the Public Hospitals Ordinance, Government health services are provided free at the point of use to certain groups. These groups include full-time schoolchildren, nursing mothers, the elderly, the mentally ill, health workers, firefighters, the police, prisoners, and prison officers.

Patients requiring diagnostic and treatment services beyond the scope of Peebles Hospital are referred to Puerto Rico, Jamaica, Barbados, the U.S., U.S. Virgin Islands, and the U.K. Individuals

with private health insurance have the option of being evacuated overseas without ever entering the public hospital system.

Private Participation in the Health System

The BVI has a vigorous private health sector, encompassing both inpatient and ambulatory care. There is one private hospital (Bougainvillea Clinic), which specializes in plastic surgery, two private dental surgeries, and three private medical complexes, all located in Road Town. There are 15 physicians practicing in the private sector.

Many residents utilize private health insurance to access services through the private sector and care abroad, mainly in the U.S. Virgin Islands or Puerto Rico, either by choice or because they require specialized care unavailable locally.

Health Insurance

A compulsory social security scheme covers all paid employees, with employees and employers contributing equally to the premiums; some persons are covered 100% by the Government. Self-employed workers are also required to participate in the plan. The social security scheme includes maternity, occupational injury, unemployment, old-age pension, sickness, and survivor's benefits, as well as a funeral grant.

Discussion on the development and implementation of a national health insurance scheme continued during the review period.

Organization of Regulatory Actions

Health Care Delivery

The Government does not monitor or regulate the standards of health care, and as such, these activities are the responsibility of individual providers and institutions. Discussions on the formation of a hospital board, which would report to the Ministry of Health and Welfare, continued during the review period.

Certification and Professional Health Practice

The new Medical Act, passed in 2000, provides for the registration of medical, dental, and allied health practitioners, and for pharmacists. It also provides for the establishment of a Medical and Dental Council, as well as an Allied Health Professionals Council, in order to enhance and enforce standards for these categories of professionals. The Nursing Act provides for the certification of nursing professionals.

The Ministry of Health has the mandate to regulate private sector practice, registration, and licensing, but does not have effective mechanisms in place to do so.

Basic Health Markets

A certificate from the Director of Health Services and the Senior Pharmacist is required to import narcotics into the BVI; all other drugs used in the private sector are purchased independently and are not regulated by the Government.

Environmental Quality

Several departments are responsible for environmental quality in the BVI. The Environmental Health Unit, part of the Department of Health, has primary responsibility. The Water and Sewerage Unit (under the Ministry of Health and Welfare) is responsible for monitoring and maintaining the public water supply and waste disposal practices. Several other ministries and departments also are involved in environmental health matters including the Conservation and Fisheries Department, the Department of Agriculture (under the Ministry of Natural Resources and Labor), and the Water and Sewerage Department (under the Ministry of Communications and Works).

Food Quality

Food quality is monitored by the Environmental Health Unit's food hygiene program.

Organization of Public Health Care Services

Health Promotion

The health sector takes three main approaches to health promotion. The first is a medical approach, which includes such activities as breast, cervical, and prostate cancer screening; immunization; and medically managed behavioral changes, such as substance abuse treatment. The second is a behavioral approach, which focuses on health education, social marketing, and public policies to promote lifestyle changes. The third is a socioeconomic approach, which addresses and advocates for improvement in areas that impact upon health, such as housing and employment. Other health promotion strategies include health education, use of the media, and the development of health policy and legislation. Intersectoral action has led to improvements in water supply and quality, housing stock, and income levels, as well as the encouragement of a balanced diet and exercise.

The Health Education Unit is responsible for the development and coordination of health education and promotion initiatives. Among the Unit's accomplishments are the development of an asthma education and prevention program, and a radio campaign to promote HIV/AIDS prevention and education. The BVI also has an Intersectoral National AIDS Committee. A Health Promotion and Wellness Council was created on Virgin Gorda in 1997.

Disease Prevention and Control Programs

The Environmental Health Division is responsible for food hygiene, vector control, water quality surveillance, institutional hygiene, and the investigation of such complaints as septic tank problems, rodents, and abandoned vehicles.

The control of vector-borne diseases is the responsibility of the Environmental Health Division's Vector Control Unit. Dengue is the most important vector-borne disease in the BVI. The usual control measures are fogging, oiling of ponds, and the supply of larvivorous fish for use in cisterns and other water containers. In 1999, the Vector Control Unit completed its four quarterly cycles of verification and treatment for most localities; a few were verified and treated five times. A total of 25,996 cumulative visits were made, of which 25,271 were actual inspections; 571 positive premises were found and 2,017 were treated with temephos. *Aedes aegypti* was found in 636 of 38,313 containers inspected. The Vector Control team stocked 1,054 cisterns with larvivorous fish. The house index for *A. aegypti* ranged from 2.10% to 3.36% during 1999, compared to 3.18% to 4.02% in 1998.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

The only public sector health laboratory is at Peebles Hospital. Samples requiring testing beyond the laboratory's basic diagnostic capacity are sent to CAREC, the U.S. Centers for Disease Control, a private lab in Puerto Rico, or a private lab on Saint Thomas (U.S. Virgin Islands) for analysis.

Efforts were made during the review period to improve the timeliness and completeness of the communicable disease reporting system. The district clinics, the Peebles Hospital Medical Records Unit, and the Peebles Hospital Laboratory are the system's reporting sites.

Potable Water and Sanitary Excreta Disposal/Sewerage Services

All households have access to potable water, mainly rainwater collected in household cisterns. By law, each home and commercial building must have a cistern attached. Piped water, obtained from several groundwater sources and from a desalination plant, is supplied by the Water and Sewerage Department and covers 80%–85% of the population.

The Water and Sewerage Department monitors the quality of the water it produces. The Environmental Health Division also performs water quality monitoring. The Division's water quality and institutional hygiene programs deal with the surveillance of water supplies and ensuring the maintenance of a basic level of sanitation in such public institutions as schools, preschools, daycare centers, and clinics. The bacteriological quality of the public water supply is monitored by the Environmental Health Division at least once every two months; in addition, cistern water is examined, and employees of water bottling companies are certified. In 1997, 63% of the water sampled by the Division was found to be satisfactory; this percentage increased to 77% in 1999. All unsatisfactory sources were chlorinated.

Approximately 90% of the population has a good sewerage system. There are two municipal sewerage systems—one in Road Town and one in Cane Garden Bay. The latter system was built in 1997 to protect the beach from pollution. The municipal systems are still expanding to accommodate increased hookups. Some 600 households are connected to these systems; others rely on septic tanks. Malfunctioning soakaways resulting from poor soil permeability continue to pose serious problems, particularly in communities where large apartment buildings have been constructed.

Solid Waste Services

The Solid Waste Department is responsible for the collection and disposal of solid waste, and operation of the incinerator on Tortola. Solid waste is collected by Department staff and by private contractors. The Government covers the cost of solid waste collection and disposal, though some people contract and pay private collectors. A combination of landfill and open burning is used on all major inhabited islands, except Tortola. A long-term landfill site has been designated for Tortola, but alternative management practices to reduce the bulk of waste and to increase recycling are needed. Hazardous and special waste is disposed of at the incinerator on Tortola, but guidelines and a better collection and disposal system are needed. No dumping fees or taxes are levied.

Pollution Prevention and Control

The BVI does not have the technical capacity to monitor air quality, nor are there any laws in place to prevent or control air pollution.

Food Protection and Control

The food hygiene program inspects food-handling premises and provides training for food handlers. All food handlers are required to have physical examinations, tuberculosis tests, and stool examinations for ova and parasites. The food handlers clinic, given by the inspector of the Environmental Health Division, offers weekly sessions on food handling techniques. Food handlers are required to attend on an annual basis to maintain certification.

Food Aid Programs

A cooked goods program is administered through the senior citizens program to benefit homebound seniors and those attending senior citizens centers. There are five centers on Tortola, and one each on Virgin Gorda and Anegada. A dry goods program provides benefits of US$ 50–225 per month to persons in need of public assistance. Both programs are administered through the Social Development Unit of the Ministry of Health and Welfare.

Organization of Individual Health Care Services

Ambulatory, Emergency, and Inpatient Services

Public sector primary care services are offered at the district health clinics. There are a total 13 health clinics in the BVI (2 are

satellite clinics)—the Road Town Health Center and eight other clinics on Tortola, two on Virgin Gorda, and one each on Jost Van Dyke and Anegada. The Road Town Health Center serves as a referral point for the district clinics. The clinic in The Valley, on Virgin Gorda, is staffed by two physicians; the clinic at North Sound is staffed by a resident nurse who is supported by The Valley clinic physicians. The clinic on Jost Van Dyke is staffed by a nurse practitioner, and the clinic on Anegada, by a public health nurse; both clinics are visited regularly by a physician. The clinics on Tortola and Virgin Gorda are adequately staffed and function well; the other clinics are understaffed.

District clinics provide a full range of child health services, including growth and nutritional monitoring, development assessment, treatment of common illnesses, counseling, school health, and screening for anemia, including sickle cell anemia.

Catchment populations are augmented by tourists and temporary residents, such as yacht dwellers, who may also receive care through the public health services.

Through an arrangement with the International Division of the U.K. Department of Health, a limited number of patients each year may access specialist care in the United Kingdom. The Government also has an agreement with a U.S. hospital corporation to provide critical tertiary care not available in the Territory.

The BVI has one 44-bed public hospital, Peebles Hospital, and one 8-bed private hospital, the Bougainvillea Clinic; both are located in Road Town. Peebles Hospital offers inpatient, obstetrical and gynecological, pediatric, general surgery, ophthalmologic, and psychiatric services; some neonatal intensive care services are also offered. The Government opened a four-station renal dialysis unit in May 2000 at Peebles Hospital. In that year, a total of 724 treatments were given to 55 patients. Other care services offered include cardiology, neurology, and some orthopedic services. Basic diagnostic services, such as biomedical tests, x-ray, and ultrasound, are also available at the hospital. The Government has a preferential arrangement with a private provider in Road Town to purchase computed tomography (CT) imaging services for the public sector, though some CT scans and magnetic resonance imaging are done on the U.S. Virgin Islands. Total admissions to Peebles Hospital increased from 1,824 in 1997 to 2,206 in 2000 (excluding the nursery), with an average length of stay of 5 days and a bed occupancy rate of 58%. The Bougainvillea Clinic specializes in general and reconstructive surgery.

Hospital ambulatory care includes emergency care and several outpatient clinics, including pediatrics, surgery, medicine, ophthalmology, dermatology, and obstetrics. Clinical support includes physiotherapy, x-ray, and laboratory services.

Three private medical complexes and several private medical practices in Road Town also offer primary care and basic diagnostic services. Services range from general practice, internal medicine, general surgery, obstetrics and gynecology, gastroenterology, dermatology, psychiatry, and pharmaceutical services. X-ray, mammography, ultrasound, CT, and laboratory services are offered as well.

Blood Banks

The BVI's only blood bank is located at Peebles Hospital. All blood for transfusion is screened for HIV. The Red Cross also screens blood donors.

Specialized Services

Reproductive health care is offered through the family planning clinic. The family planning nurse is stationed at the Road Town Health Center, but makes regular visits to the district clinics. The services offered through the family planning clinic are integrated family planning, contraceptive counseling, pregnancy tests, Pap smear screening, breast examinations, community outreach, counseling, gynecologic referrals, and STI counseling. In 2000, 46% of contraceptive acceptors chose injectables, 40% pills, 9% condoms, 3% intrauterine device, and less than 2% chose diaphragm or foam/jelly.

In addition to annual Pap smear campaigns, in 2000, the clinic collaborated with the Health Education Unit on the "Sista to Sista Competition," which encouraged women to have a Pap smear. Of the 242 Pap smears done in 2000, 6 dysplasias were detected and referred for further testing, where necessary.

Pregnant women are encouraged to seek prenatal care from district clinics or private practitioners. All pregnant women are referred to the hospital clinic by the 12th week of pregnancy, where an obstetrician identifies high-risk cases. Hemoglobin levels are appraised, anemia treated, VDRL tests performed, and tetanus toxoid is administered, if necessary. All pregnant women are referred to Peebles Hospital for delivery, though some go to the U.S. Virgin Islands or to Puerto Rico to give birth so that the child will have U.S. citizenship.

Hypertension and diabetes clinics are conducted on Tortola at Road Town, East End, Capoons, and Carrot Bay, and on Virgin Gorda at North Sound and The Valley.

The Community Mental Health Centre, located in Road Town, provides most of the ambulatory mental health care for the Territory through its outpatient psychiatric services. The Centre is directed by a psychiatrist, who also manages the inpatient care of psychiatric clients at Peebles Hospital. At the end of 1999, 236 clients were enrolled at the Centre. The mental health service's approach emphasizes treating individuals in their community, including monitoring and administering medication, providing family counseling, and promoting self-care. Mental health center staff visit the hospital, the prison, and the geriatric home as necessary. Mental health officers also travel on a regular basis to clinics on Tortola, Virgin Gorda, Jost Van Dyke, and Anegada to follow up on patients. Psychotic patients are admitted to the medical ward of Peebles Hospital. There are no psychiatric nurses on staff and quarters are cramped. Many of those who come in contact with the penal system, often for minor offenses, wind up in prison and are treated there by a mental health nurse.

Physical therapy and rehabilitation services are based at Peebles Hospital, and clinic and home visits are provided on the four main inhabited islands.

The Government's dental service provides basic routine care from the main clinics in Road Town and on Virgin Gorda; a mobile clinic services Anegada and Jost Van Dyke. Treatment is free for schoolchildren, the poor, persons over age 70 years, prison inmates, the severely handicapped, firefighters, and police; other adults are charged modest fees. Preventive, screening, and educational services are also offered. The dental officer also treats adults in private clinics part-time on a split-fee basis with the Ministry of Health and Welfare. The dental service is staffed by a dental surgeon, two dental nurses/therapists, a dental hygienist, and a dental assistant. The dental service monitors primary school dental health programs and conducts screenings during school visits. The dental hygienist made 68 school visits in 2000. In 2000, the dental service began a toothbrushing program in public primary schools.

Vision care is provided by Pearle Vision Centre, a private sector franchise. Vision screening for children and adolescents is done periodically as part of the school health program, and when students leave high school.

Audiological services were established in 1999. Over the period January 1999 to January 2000, there were 319 births. During that time, 136 (43%) of the new mothers were contacted concerning testing of their infants, and 97 babies were tested. Of these, 68% passed and were dismissed from the program. Those who failed were recalled for further testing and referred to off-island services, when indicated.

Health Supplies

Drugs

No drugs, vaccines, or medical equipment are produced in the BVI. The Peebles Hospital pharmacy is the central purchasing agency for the national public health services. Drugs are purchased through the Eastern Caribbean Drug Service (ECDS), then clinics requisition drugs from the hospital pharmacy as needed. Narcotics are not available at district clinics. Some drugs not included in the ECDS formulary are purchased directly from private suppliers. Private sector practitioners arrange their own drug purchases.

Immunobiologicals

Vaccines are purchased through the PAHO Revolving Fund for Vaccine Procurement. When urgently needed, some vaccines are purchased through a vendor in Barbados. Some vaccines are provided at no cost to private sector practitioners. A limited number of vaccines are ordered directly by the private sector.

Equipment

Most laboratory supplies and equipment are purchased from U.S. vendors.

Human Resources

Availability by Type of Resource

The British Virgin Islands has difficulty attracting and retaining health personnel due to the high cost of living, uncompetitive salaries, and limited opportunities for professional growth and development. Overall reliance on foreign-born and trained medical personnel remains high. Nurses tend to come from within the Caribbean, but doctors from farther afield. Non-nationals usually receive two-year contracts, and turnover is high among foreign staff.

There are 15 physicians and 3 dentists in the private sector.

Training

Through a health human resources initiative, 16 registered nurses began an intensive program at H.L. Stoutt Community College in March 2000, leading to a bachelor of science degree in nursing from SUNY at Buffalo. Further professional training is undertaken in other Caribbean countries, the U.S., or the U.K. Health personnel also participate in local staff development programs organized by the Health Department and the Government's Training Division. In addition, they take advantage of programs provided through the University of the West Indies' distance education facilities at the Community College campus.

Health Sector Expenditure and Financing

Public health services are almost entirely financed by the Government. In 1996, the total expenditure of the Ministry of Health and Welfare accounted for approximately US$ 12.46 million (12%) of total Government expenditure. Community (primary level) services accounted for slightly more than US$ 2 million (16%) of the Ministry of Health and Welfare's expenditure, and hospital (secondary level) services accounted for some US$ 4.4 million (35%). By 2000, the total Ministry of Health and Welfare expenditure was an estimated US$ 17.18 million, or approximately 17% of total Government expenditure (some US$ 99 million). Community services accounted for approximately US$ 2.88 million (17%) of the Ministry's expenditure, and hospital services for some US$ 6.6 million (38%). The public health services' overseas medical expenditure was US$ 92,263 in 2000. Data on expenditure on private sector health services are unavailable.

A nominal fee is charged for public sector health services, though children, health workers, prisoners, police, firemen, and pensioners are exempt. User fees generally raise only 8% of the operating costs of primary and secondary health care services. For example, Government revenue from medical and dental fees was US$ 895,000 in 2000.

State Social Security

Over the period 1996–2000, the Social Security Board financed some improvements to the Peebles Hospital emergency

room. It also purchased some physical therapy equipment and collaborated in various vaccination campaigns.

Private Resources of Institutions and Corporations

Mossack Fonseca Trust, Inc. purchased gynecologic equipment for Peebles Hospital during the review period.

External Technical Cooperation and Financing

BVI's Expanded Programme on Immunization received technical assistance from PAHO during the review period, and financial assistance for the 2000 rubella vaccination campaign. The National Youth Council's AIDS Youth Project was funded by PAHO/CAREC during the review period.

FIGURE 1. Gross domestic product, annual growth (%), British Virgin Islands, 1991–2000.

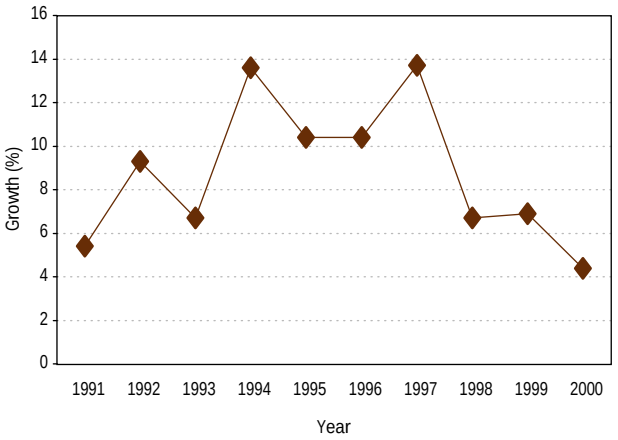


FIGURE 2. Population structure, by age and sex, British Virgin Islands, 2000.

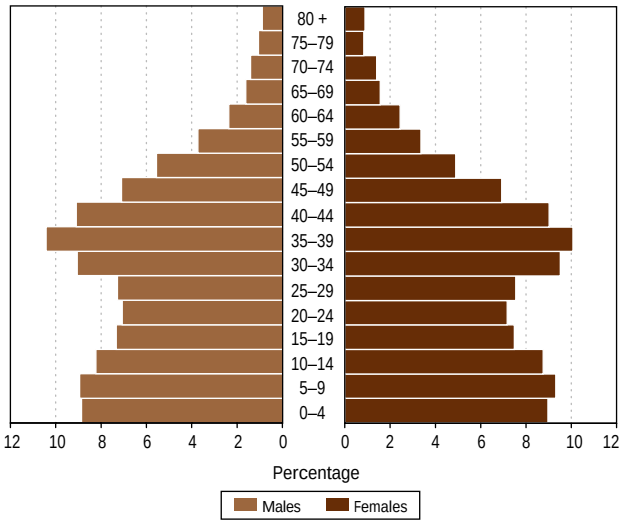


FIGURE 3. Estimated mortality, by broad groups of causes and sex, British Virgin Islands, 1995–2000.

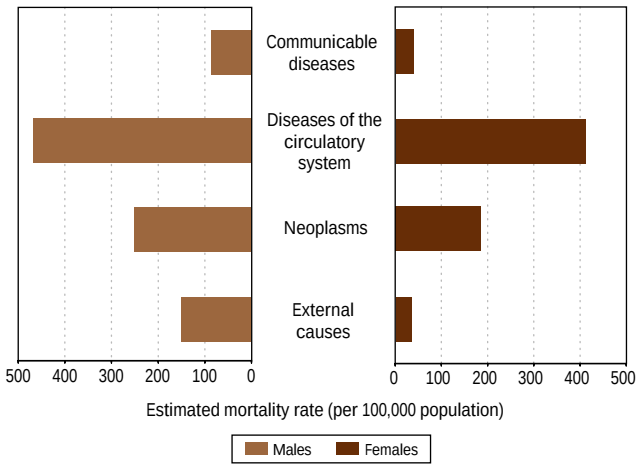
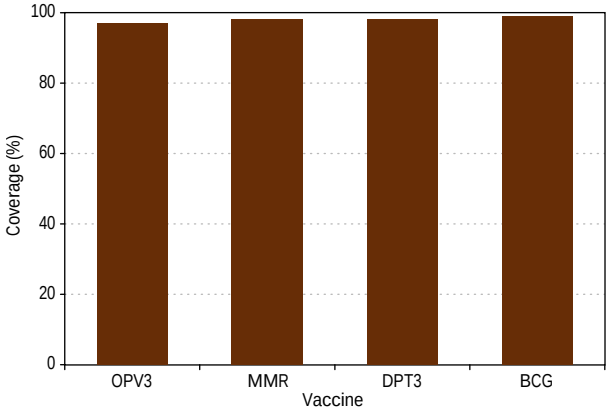


FIGURE 4. Vaccination coverage among the population under 1 year of age,[a] by vaccine, British Virgin Islands, 1997–2000.



[a]MMR vaccine is administered at age 1 year.

CANADA

OVERVIEW

Canada is the largest country in the Americas, encompassing 10 million km^2 of land that is as diverse as its population of 30.7 million people. Multiculturalism is fundamental to Canada: approximately two-fifths of the country's population has origins other than British, French, or Aboriginal. Canada is governed as a parliamentary democracy, and it comprises a federation of 10 provinces and 3 territories, including the April 1999 addition of Nunavut, a territory that was previously a part of the Northwest Territories. English and French are the two official languages, and the country has a dual legal system that embraces common and civil law traditions. Canada has an extensive social security network, including old age pension, family allowance, employment insurance, and social assistance. Basic health care, such as physician and hospital services, is provided to all Canadians through a universal health care system that is free at the point of delivery.

In 1998, the gross domestic product (GDP) was Can$ 28,814 per capita (in 1998, US$ 1 = Can$ 1.55). Figure 1 shows annual GDP growth from 1990 to 2000. Total health expenditures were $83.9 billion in 1998, representing 9.3% of GDP, down from the peak 10.0% level reached in 1992. Per capita health expenditure was $2,776 in 1998.

There is little gender variation by age group, with the exception of a slightly higher percentage of women in the oldest age groups. In 1997, Canadians aged 14 years old or younger made up 20% of the population, and 12% of the population was age 65 years old and older. Figure 2 show Canada's population structure in 2000. Life expectancy at birth in 2000 was 82.1 years for women and 76.3 years for men. At all ages, women have a greater life expectancy than men, but the 5.6 year advantage that existed for women at birth declined to 2.6 years by age 75.

According to the 1996 census, there were some 799,000 Aboriginal people living in Canada, representing approximately 2.8% of the total population. Of these, 69% were North American Indian, 26% were Metis, and 5% were of Inuit ancestry. The birth rate for Registered Indians is consistently higher than the national birth rate in Canada, resulting in a relatively young Aboriginal population. With a majority (53%) of the population under the age of 24 and a growth rate nearly double that of the general Canadian growth rate, Aboriginal people are also one of the fastest growing segments of the population. Among the Aboriginal population, life expectancy increased by nearly nine years for both sexes between 1980 and 2000. Nevertheless, in 2000, the life expectancy for Aboriginal females and males was estimated to be 6.9 and 4.8 years lower, respectively, than that for the general Canadian population.

Canada's population is highly urbanized and largely concentrated in the provinces of Ontario (38%) and Quebec (24%), although British Columbia (20%) experienced the highest population growth rate between 1991 and 1997. Immigration plays a vital part in Canadian society. The 1996 census showed that 60.5% of Canadians reported English as their mother tongue, 23.3% reported French, and 16.1% reported a mother tongue other than the two official languages. In 1996 there were 226,000 new immigrants, most coming from Asia, the Middle East, and Europe. In 1996, immigrants represented 17% of the Canadian population, with Ontario (25.6% of immigrants) and British Columbia (24.5%) being home to the highest percentage of immigrants in the country. Most immigrants tend to settle in urban areas.

Overall, 99% of the adult population is literate. According to the 1996 census, 34% of Canadians had completed post-secondary education; this was the first time that a census had recorded more university graduates than people reporting less than a Grade 9 education.

In 1998, there were roughly 324,000 births in Canada, for a rate of 1.54 live births per woman of childbearing age. The crude birth rate for 1998 was 11.3 live births per 1,000 population, the lowest since before 1972. The birth rate for the Aboriginal population was 27.5 per 1,000, more than double that of the Canadian population. From 1986 to 1998, the age-specific fertility rates declined from 119.0 to 101.6 per 1,000 population for women in the 25–29 age group. These rates increased from 72.5 to 84.6 births per 1,000 population, and from 22.3 to 32.8 births for women in the 30–34 and 35–39 age groups, respectively, suggesting that women are waiting until later in life to have children.

Mortality

In 1998, the age-standardized mortality rate in Canada was 6.5 deaths per 1,000 population. The male mortality rate was higher than the female rate: 8.3 per 1,000 population versus 5.2 per 1,000, respectively. This was true in every province and territory, although the total provincial mortality rates dropped from east to west: from a high of 7.5 per 1,000 in Prince Edward Island to a low of 6.2 in British Columbia. The mortality rates for the territories were much higher than for all provinces: 8.9 per 100,000 in Yukon and 10.1 in the Northwest Territories in 1996. Men in the Yukon Territory had the highest mortality rate in the country (16.7 per 1,000), while women in that territory had the lowest mortality rate (4.2 per 1,000). The crude death rate of the Aboriginal population was approximately 5.5 per 1,000.

In 1998, the infant mortality rate was 5.3 per 1,000 live births, of which neonatal mortality was 3.7 per 1,000 and post-neonatal mortality, 1.6 per 1,000 live births. In 1997, perinatal mortality was 6.2 per 1,000 live births and maternal mortality was 4.4 per 100,000 live births.

Despite the fact that the 1997 rates had declined steadily from previous years, diseases of the circulatory system remained the major broad group of causes of death in Canada, with 79,457 deaths or 37% of total deaths. The crude mortality rate for circulatory diseases in 1998 was 262.5 per 100,000. Figure 3 shows estimated mortality rates by broad groups of causes and sex for 1998. This was followed by malignant neoplasms as the second leading cause of death according to broad causes, at a crude rate of 204.1 per 100,000. The crude mortality rate for external causes was 43.8 per 100,000; communicable diseases, 39.0 per 100,000; and conditions of the perinatal period, 7.0 per 100,000.

Age-standardized data by sex reveal that the leading causes of death for women in Canada in 1997 were all circulatory diseases, 187.7 per 100,000; all malignant neoplasms, 148.5; accidents and injuries, 24.4; pneumonia and influenza, 19.2; and diabetes mellitus, 14.8. For males, the age-standardized leading causes of death were all circulatory diseases, 307.0 per 100,000; all malignant neoplasms, 229.7; accidents and injuries, 60.2; pneumonia and influenza, 31.5; and diabetes mellitus, 206. The most frequent sites for cancers continue to be breast for women and prostate for men. Cancer incidence and mortality rates have also steadily declined, especially among women.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Infant mortality rates vary substantially among the Canadian provinces and territories, with higher rates found in northern areas and in regions with a larger percentage of Aboriginal peoples; some Aboriginal populations experience infant mortality rates twice as high as the national rate.

In 1998, 1,811 infants died in Canada before their first birthday. Of these deaths, 70% occurred in the neonatal period and 30% in the post-neonatal period. Perinatal conditions (46% of infant deaths) were the greatest single cause of death of infants under 1 year of age, followed by birth defects (27%) and sudden infant death syndrome (SIDS) (8%). The perinatal mortality rate was 6.2 per 1,000 live births in 1998. There were also significant geographic differences in perinatal mortality in the 1998 data, ranging from 4.7 per 1,000 live births in Alberta to 9.6 in the Northwest Territories. In 1997, the perinatal mortality rate was higher for males (6.9) than for females (6.3). In the neonatal period, the leading causes of death were respiratory distress, prematurity, low birthweight, and congenital anomalies. The two leading causes of post-neonatal death were sudden infant death syndrome (SIDS) and congenital abnormalities.

In 1998, 5.7% of all live births in Canada were low birthweight newborns (under 2,500 g). While the rate of low birthweight among Aboriginal infants did not differ significantly from the national average, the rate of high birthweight (associated with high neonatal mortality) was significantly higher than the national average. The rate of pre-term births was 7.2% in 1998.

According to the Canadian Hospital Injury Reporting and Prevention Program, in 1997, 4,104 children under 1 year of age were treated for injuries; of these injuries, 3,300 occurred in the home. The rate of infant hospitalization due to injuries in 1996–1997 was 983 per 100,000 population, and the rate of infant death due to injury was 26 per 100,000.

The national prevalence of breastfeeding initiation is 75%, but there were marked differences by age, income, marital status, and place of residence. Women aged 29 years old and older, who have higher education levels and income, and who are married have a consistently higher rate of breastfeeding, and immigrant mothers are more likely to breastfeed than non-immigrants. A striking regional difference was observed in initiation rates, increasing from east to west, showing a range from a low of 53% in the Atlantic provinces to a high of 87% in British Columbia. Research has revealed that Aboriginal mothers are less likely to initiate breastfeeding than mothers in Canada overall (54% compared to 75%), but are more likely to breastfeed for six months or more if they do breast-feed (39% compared to 24%).

Schoolchildren (5–9 years)

Injuries are the leading cause of death (41%) among Canadian schoolchildren between the ages of 5 and 9, followed only by deaths attributed to cancer (18%). The death rate due to injuries for children aged 5 to 9 is 3 per 100,000. Injury-related deaths among children and youth have declined dramatically in the last 20 years. In 1997, 24,214 injured children between the ages of 5 and 9 were treated in hospital emergency departments. More than half of these children were injured during play (54%, or about 13,000 injuries) and 10% of injuries were related to transportation. Among children aged 5 to 9 years old, boys have a con-

siderably higher rate of hospitalization (3,101 per 100,000) than girls (2,537 per 100,000).

While the incidence of childhood cancer has been relatively stable over the past 15 years—with leukemia (3.8 per 100,000), brain tumors (2.9 per 100,000), and lymphoma (1.4 per 100,000) being the most common cancers diagnosed in children 5 to 9 years old—there have been significant improvements in overall mortality rates.

Adolescents (10–14 years)

The leading cause of death among adolescents between 10 and 14 years old was external causes or injury (52%)—this includes poisoning from experimentation with illicit and licit substances, as well as motor vehicle traffic accidents and suicides. Cancer was the second leading cause of death (13%) for this age group. Among 15–19-year-olds, external causes and injuries accounted for 75% of deaths among males and 66% among females.

Respiratory conditions, including allergies and asthma, were the main cause of activity limitation among one-third of teens aged 12 to 17 years old in the reporting period. The most prevalent illnesses or medical conditions among Canadian adolescents, according to a World Health Organization survey, were allergies (15%) and asthma (12%). Depression was the most common psychosocial condition affecting adolescents, and young women aged 15 to 19 are more likely than any other age or sex group to exhibit signs of depression. A high rate of suicide, mainly among young men, is another troubling indicator of adolescent distress, with the suicide rate for the Aboriginal population being much higher than that for the general population. There also appears to have been a resurgence in adolescent substance use during the 1990s (according to a 1998 survey, 40% of Grade 10 students reported using marijuana) and a corresponding increase in deaths due to substance use.

In 1998–1999, 28% of youth aged 15 to 19 smoked either on a daily or on an occasional basis and 73% of them also drank alcohol regularly or occasionally. The percentage of Canadians who reported regular alcohol consumption increases from 5% in 12–14-year-olds to 61% in 18–19-year-olds. Both smoking and drinking were more prevalent among adolescents with lower educational levels, and cohort studies reveal that gender differences are very small until Grade 10, when substantially more girls are likely to be daily smokers.

Data also revealed that 22% of males and 19% of females reported that they first had sexual intercourse by the age of 14. According to the study, 66% of males and 61% of females reported using no protection during sexual intercourse. According to the 1996–1997 National Population Health Survey, 13% of males and 19% of females between the ages of 15 and 19 reported having had two or more sexual partners and not having used condoms in the previous year. The survey also revealed that female youth (51%) were more likely to have had sexual intercourse than male youth (43%). Despite the above results, teenage pregnancies have declined significantly in Canada over the past 20 years in all areas except the Northwest Territories (137 per 1,000) and the province of Quebec (33 per 1,000).

The chances of having a sexually transmitted infection other than AIDS are highest among young people aged 15 to 24. The highest rates of chlamydia (114.8 per 100,000 population) and gonorrhea (16.8 per 100,000) infection are among females aged 15 to 19 years. The number of positive HIV test results among Canadians between the ages of 15 and 19 years has decreased from a high of 40 reported cases in 1996 to 24 reported cases in 1998; 32% of these cases were contracted through heterosexual contact, and 29% through men having sex with men.

Adults (20–59 years)

According to a recent Canadian study, "The Health Divide: How the Sexes Differ," men in this age group tend to drink and smoke more, and are more likely than women to be overweight. Women report higher levels of stress at home and in the workplace; women also access health services more often than men in Canada.

In 1998–1999, 76% of Canadian women aged 18 to 69 reported having had a Pap smear within the preceding three years, but 10% reported never having had a Pap smear; women with higher levels of education also were more likely to have had one. A 1998/1999 population-based survey showed that among Canadian women aged 50–69, approximately 66.3% reported having had a diagnostic mammogram in the previous two years.

The Canadian study on contraception indicates that in 2000, 84% of Canadian women used or had used oral contraceptives. In a 1996–1997 survey of Canadians between the ages of 15 and 59, one-sixth of respondents who were in a relationship of less than 12 months reported that they had not used a condom the last time they had sex. Canadians in this age group are, however, at an increased risk for HIV and other sexually transmitted infections because of their sexual behavior.

In 1998, the maternal mortality rate in Canada was 3.8 per 100,000 live births. Approximately 29% of normal birthweight newborns are discharged from Canadian hospitals within two days of birth, and short stays for mothers delivering vaginally also have increased, from 3.2% staying less than two days in 1989 to 25.6% in 1997. The consequences of these trends in terms of an increase in readmission rates have been documented and call for closer examination of such practices.

A Canadian survey on tobacco use revealed that approximately 24% of the population aged 15 years and older (about 6.6 million persons) were smokers. Smoking rates among women and men in the highest income quintile were 13% and 16%, respectively, in contrast to rates of 36% and 40% for the lowest income quintile. The deaths of 45,000 Canadians each year are attributable to the use of tobacco products. Direct and indirect health costs of smoking have been estimated at about $11 billion annually.

In 1996/1997, 53% of Canadians 12 years old and older reported ever drinking and 12.7 million Canadians considered that they regularly consumed alcoholic beverages.

Overall, 22% of Canadians were classified as physically active during leisure time by the 1998/1999 National Population Health Survey. Almost one-quarter (24%) were regarded as moderately active, while over one-half (51%) were regarded as inactive. Men were more likely to engage in vigorous physical activity during their leisure time, but about 1.4 times as many men were overweight as women. Being overweight is most prevalent among Canadians aged 45 to 64. There was no difference in the prevalence of obesity between adult men and women.

The Elderly (60 years and older)

In 1998, about 3.7 million Canadians, or 12.3% of the population, were 65 years old or older, an increase of one million seniors in the population over the past decade. Between 1980 and 1996, the age-standardized death rate for seniors declined 12%. Heart disease and cancer continue to be the main causes of death among seniors. Only 16.9% of seniors 65 to 74 years of age and 13.2% of seniors aged 75 and older reported no chronic illnesses in 1998/1999. Arthritis and rheumatism were the most common chronic conditions, followed by high blood pressure, allergies, and back problems.

In 1998/1999, 87% of seniors said they did not smoke. In 1996/1997, only 37% of seniors had at least one drink a month, compared to 50% of those aged 65 and under.

Overall, suicide rates among seniors are no higher than the Canadian average; in fact, senior women have a lower rate of suicide than the country's average. Senior men over 85 years old, however, have the highest suicide rate of all age and sex groups, and the rate has increased. In 1997, there were 34.3 suicides for every 100,000 men aged 85 and older, compared to a national average of 23 suicides per 100,000 for all men that year. In 1993, there were 28 suicides per 100,000 men over the age of 85.

In 1997/1998 seniors represented 36% of all hospital admissions for injury that year. Between 1994/1995 and 1997/1998, the number of admissions due to injuries from falls rose disproportionately in relation to the increase in the population of seniors. Based on 1998/1999 data, about 12% of seniors had received home care in the previous 12 months, a rate that has been stable since 1994/1995; 10% of senior males reported receiving respite care, as compared to 2.5% of women.

It is estimated that 4% of seniors living in the community have been victims of some form of abuse. In 1999, 3.3% of men and 2.9% of women over 65 were victims of violent crime, compared to 16.8% of male youth and 13.9% of female youth. Seniors, however, are more likely than other age groups to be victims of economic crimes (e.g., telephone fraud).

Family Health

In 1996, 42% of Canadians were single and 47% were married (including common-law and separated couples). Between 1991 and 1996, the number of common-law families increased by 28%, compared with a 19% increase of single-parent families and a 2% increase in married-couple families. In 1996, there were 1.1 million single-parent families (15% of all families). More than 80% of those single-parent families were headed by women, nearly one-quarter of whom had never been married. The average family size is 3 persons and the average number of children was 1.2; these figures have been virtually unchanged since the 1991 census.

A 1999 general social survey estimated that 8% of women and 7% of men who were married or lived in a common-law relationship had experienced some type of violence by a partner during the previous five years; in other words, 690,000 women and 590,000 men reported at least one incident of violence. Women were five times more likely than men to require medical attention for injuries incurred from abuse.

In 1999, children and youth under the age of 18 comprised 60% of all sexual assault victims and 20% of all physical assault victims reported among a sample of 164 police departments. Parents were more likely than other family members to commit these acts of violence against children and youth. Parents were responsible for 66% of physical assaults and 42% of sexual assaults against children under the age of 18. With the aim of preventing family violence and protect and treat its victims, Health Canada has established the National Clearinghouse on Family Violence, a national resource center for Canadians seeking information about violence within the family and looking for new resources being used to address the issue.

Workers' Health

In 2000, the size of the Canadian labor force was 15.9 million persons, or 65.9% of the population 15 years old and older, and the unemployment rate was 6.8%. Female participation in the work force increased from 36% to 59.5% between 1970 and 2000.

About two-thirds of employees reported days lost from work due to ill health in 1999. Most reported short-duration absenteeism, with 25% missing up to two days of work. People with higher education levels are less likely to be absent more than 10 days per year. The use of medication is accompanied by increased absenteeism, and there is also evidence of a positive association between smoking and higher levels of absenteeism.

Although there was a steady increase in work related injuries until the 1987 peak of 48.5 per 1,000, the rate declined to 27.6 in 1996. Men have 2.5 times more injuries than women, and are most likely to be injured at work between the ages of 15 and 29.

The Disabled

In 1998/1999, 18% of Canadians aged 12 years and older reported a disability, handicap, or ongoing limitation due to a health problem. In 1996, for all age groups combined, women were more likely to report activity limitations at home or any type of long-term disability. For both sexes, the rates of limitation

increased with age, to a peak of 33% at age 75. Among those older than 75 years, 44% reported some kind of long-term limitation. Overall, 25% of Canadians in the lower income levels reported some kind of long-term disability, compared to only 14% in the highest income levels.

Most disabilities are non-arthritic back problems, followed by vision or hearing impairments and musculoskeletal problems. The prevalence of the conditions listed above did not increase with age.

Indigenous and Other Special Groups

Aboriginal people remain at higher risk for illness and premature death than the Canadian population as a whole. As a result, life expectancy at birth for males and females is 71.5 years and 75.2, respectively, which is lower than the national figures for both sexes. The leading cause of death among Aboriginal peoples is injuries and poisonings, with a crude rate of 154 deaths per 100,000 population. They also suffer from more chronic diseases such as diabetes (three times more often) and cardiovascular disease than the general population—and there is evidence that the prevalence of these conditions is on the rise among Aboriginal people. In addition, the suicide rate is 2–7 times higher among the Aboriginal population than in the general Canadian population, and a cause of concern, especially among young men in Inuit communities.

The infant mortality rate for Registered Indian Populations in Canada in 1996 was 14 per 1,000—almost three times higher than the national average—although this represents a drop from the rate of 18 per 1,000 recorded in 1986. In Canada there are about 150 SIDS deaths each year, but Aboriginal infants have three to four times as high a risk of SIDS as non-Aboriginal infants.

Aboriginal children and youth have a higher rate of disability than those in the national population as a whole, and Aboriginal children living off-reserve have a higher rate of severe disability than those living on reserves. Inadequate housing and crowded living conditions contributed to higher rates of respiratory problems and other respiratory infectious diseases among Aboriginal children. Children in Aboriginal families also have a higher rate of unintentional injuries and early deaths from drowning, and they are more likely to smoke, drink, and use drugs at a younger age. Surveys of First Nations and Inuit communities reveal smoking prevalence rates two-to-three times higher than the Canadian national average (62%–73%).

Compared to Canadian families as a whole, a greater proportion of Aboriginal families are experiencing problems with housing and food affordability. These problems are likely linked to high levels of unemployment and pervasive low incomes. In 1996, the unemployment rate of Aboriginals ranged from 26% to 29%. In 1995, at least 44% of the Aboriginal population and 60% of Aboriginal children under age 6 fell below the Statistics Canada low-income cut-off rates.

By Type of Health Problem

Natural Disasters

Canada experiences floods, forest fires, snow storms, and tornadoes. The 1998 ice storm was the worst to hit Canada in decades, causing at least 25 deaths, many from hypothermia. The ice storm affected parts of Ontario, Quebec, New Brunswick, and Nova Scotia, and directly affected more people than any other previous weather event in Canada.

Vector-borne Diseases

Canada only has imported cases of malaria; over the past five years, the number of cases has dramatically increased. In 1997, 1,036 cases were reported in Canada, an increase from 430 cases in 1994. There have been no reported yellow fever cases in Canada in decades.

Diseases Preventable by Immunization

Since Canada first introduced vaccines, the country has experienced a 95% reduction in diseases preventable by vaccination. Poliomyelitis was eliminated officially in 1994, and the implementation of the two-dose measles immunization program has led to a seven-fold decrease in the incidence of reported measles in 1998. In 1997, 94% of 2-year-olds had received immunization appropriate to their age for measles, mumps, and rubella; 85% had received immunization for diphtheria, pertussis, and tetanus; 86%, for poliomyelitis; and 74%, for *Haemophilus influenzae* type b (Hib). Vaccination coverage in 1998 is shown in Figure 4.

No cases of diphtheria were reported in 1996. Only 2 to 5 cases have been reported annually from 1986 to 1995, and there have been no deaths due to diphtheria since 1983. As of December 1999, 28 cases of measles were reported, 8 of which were caused by exposure while outside of Canada; the remaining 20 were linked to an imported case. In 1998, there were a total of 12 laboratory confirmed sporadic cases. There were 117 reported cases of mumps in 1998. Mumps encephalitis has been reported to range as high as 5 per 1,000 cases, with a case-fatality rate of around 1.4%. There were 68 cases of rubella reported in 1998; however, there is concern that it is grossly underreported. The average annual incidence rate of pertussis decreased to 17 cases per 100,000 population between 1986 and 1996. In recent years, epidemics have increased in size. Almost 20% of cases caused illness severe enough to warrant admission to an intensive care unit, with a case fatality rate of 0.7%. Three cases of tetanus were reported in 1996. There were 55 *Haemophilus influenzae* type b (Hib) cases in 1996 and 46 in 1998. Although the immunization rate for Hib remains below that of other immunization programs, coverage has increased by 20% between 1995 (55%) and 1998 (75%). Hepatitis B rates are consistently higher for males than females, and reported cases in Canada remain around 970 per year, or 3.2 per 100,000 population.

Intestinal Infectious Diseases

There are no endemic foci of cholera in Canada; all cases are imported. Other intestinal infectious diseases such as ancylostomiasis, hookworm, ascariasis, necatoriasis, and trichiuriasis are uncommon and are not reported nationally as notifiable diseases. There are other foodborne or waterborne enteric diseases being reported in Canada, the most common of which are nationally notifiable. In 1998, campylobacteriosis was the most commonly notified enteric infection, with 14,236 cases and a rate of 47.1 per 100,000; followed by salmonellosis, with 7,040 cases and a rate of 23.3; and *E. coli* infections, with 1,484 cases and a rate of 4.9.

Chronic Communicable Diseases

In 1998, there were 1,798 cases of tuberculosis reported in Canada, with an overall rate of 5.9 per 100,000 population. In addition, tuberculosis was listed as the underlying cause of death for 114 individuals in 1997. There is an increasing proportion of cases among persons born outside Canada. In 1998, foreign-born cases accounted for 64% of all tuberculosis cases, up from 37% in 1981. Tuberculosis case loads among non-Aboriginal Canadians dropped from 48% of all cases in 1981 to 19% of all cases in 1998. The proportion of cases among the Aboriginal population, however, was unchanged, at 15% in 1998. The 25 to 34 age group has the largest number of reported cases, accounting for 19% of the total case load. The median age of Canadian-born, non-Aboriginal cases is older (58 years) than that of foreign-born (43 years) and Aboriginal (32 years) tuberculosis cases.

To date, there is little national data available regarding the interaction between tuberculosis and HIV. A recent study indicated that 4.2% of the cumulative cases of AIDS also had tuberculosis in 1997. Of the 1,975 cases of AIDS-tuberculosis coinfection reported in 1997, 120 died. In 23% of those deaths, tuberculosis was reported as the underlying cause of death, and in 35%, tuberculosis was reported as a contributing cause.

Leprosy is not common in Canada, and is not monitored as a notifiable disease.

Acute Respiratory Infections

In 1997, 304 Canadians died from influenza. In the influenza season during 1999/2000, the number of influenza cases reported by laboratories was higher than for any influenza season over the last 10 years. This is partly explained by the increase in influenza surveillance activities. Senior citizens (65 and older) represented 42% of laboratory confirmed cases in 1999/2000. Pneumonia caused 7,728 deaths in 1997.

Zoonoses

There were no cases of human rabies reported in Canada in the 1990s.

HIV/AIDS

At the end of 1999 there were an estimated 49,800 Canadians living with HIV/AIDS, a 24% increase from 1996. This increase is the result of both new infections and the fact that AIDS deaths have declined due to successful retroviral treatment. Approximately 4,190 Canadians became infected with HIV in 1999; 49% of them were attributed to the exposure category of men who have sex with men and 19% were attributed to intravenous drug use. The character of the epidemic is changing: from 1996 to 1999, there was a 30% increase of new infections per year among men who have sex with men and a 26% increase in the number of heterosexuals who were HIV positive. Furthermore, there was a 48% increase of women testing positive for HIV. Conversely, there was a 27% decline in the number of new infections among injection drug users.

The estimated number of prevalent HIV infections among Aboriginals was 1,430 in 1996, increasing to 2,740 cases in 1999, a 91% increase. This represents 5% of all prevalent HIV infections.

The annual incidence rate of AIDS cases in Canada in 2000 was approximately 17 per 1,000,000 population, and the male–female ratio was approximately 8.3:1 (Figure 5).

Sexually Transmitted Infections

As of 1996, chlamydia was the most common sexually transmitted infection (STI), and the rate of infection was 114.8 per 100,000. In contrast, the gonorrhea infection rate was 16.8 per 100,000, and syphilis, significantly lower, at 0.4 per 100,000 population. In 1999, there were 41,676 cases of chlamydia; 5,381 cases of gonorrhea; and 187 cases of syphilis. The chances of having an STI (other than AIDS) are highest among the 15 to 24 age group. The incidence of syphilis infection is most common in the 25–29 age group for both males and females. Men were more likely than women to become infected with gonorrhea and syphilis, but up to age 60, women are more likely than men to become infected with chlamydia. The highest chlamydia and gonorrhea infection rates are among females 15 to 19 years old, while the highest incidence among males occurs at later ages (20–24 years old). The highest rate of chlamydia occurred among women 15–19 years old (971.6/100,000) followed by women 20–24 years old (914.9/100,000); this represents an inversion of the pattern from 1989/1990, making it seem that the disease is moving to younger females over time. Geographically, gonorrhea and chlamydia infections were highest in the Northwest Territories (13 times the national rate), and lowest in Newfoundland.

Nutritional and Metabolic Diseases

Aboriginal people who live in northern communities exhibit a wide range of medical conditions caused by inadequate nutrition. Residents in remote areas tend to eat diets higher in fat, sodium, and sugar and lower in nutritional value. Medical conditions resulting from this include anemia, dental problems, obesity, respiratory illness, and non-insulin-dependent diabetes.

Body weight above the healthy range (body mass index of 27 or greater) has been associated with various health problems, including cardiovascular disease and diabetes. Several surveys have shown that the proportion of overweight men and women in

Canada increased steadily between 1984 and 1998/1999, from 22% to 37% among men, and from 14% to 26% among women. Being overweight is most prevalent among Canadians aged 45 to 64 and the increasing prevalence of higher body mass has been attributed to dietary changes and decreases in physical activity.

In 1997 there were 5,699 deaths for which diabetes mellitus was certified as the underlying cause, although the number of deaths for which diabetes was a contributor is probably five times higher. Age-standardized annual mortality rates for diabetes have increased since the early 1980s, reaching a rate of 20.6 per 100,000 in 1997.

New cases of insulin-dependent diabetes mellitus, type I, have been estimated at around 60,000 every year. Population-based estimates suggest that among Canadians aged 12 and over, the overall prevalence of diabetes ranges from 4.9% to 5.8%; this figure amounts to approximately 1.2 to 2.2 million cases, although only about 800,000 are actually diagnosed as having diabetes. The prevalence of diabetes increases with age, from 3% in the 35 to 64 year old age group, to 10% in those aged 65 and over. The prevalence rate of diabetes among Aboriginal peoples is approximately triple the rate of the general population, ranging from 10% at age 15, to 22.8% over age 65. Among the female youth population in Canada, 3.6% of Aboriginal females are diagnosed with diabetes, compared to 0.4% of non-Aboriginal female youth.

The diabetes burden in terms of health care costs, disability, work loss, and premature death is estimated at up to $9 billion annually.

Diseases of the Circulatory System

Cardiovascular disease is the leading cause of morbidity and mortality in Canada. It has a significant impact on the health care system and is the leading cause of hospitalization (excluding childbirth) for men and women. Based on the rate of hospitalization by age group, acute myocardial infarction and ischemic heart disease become important health problems beginning at age 45 for men and at age 55 for women. Marked differences remain in the rate of hospitalization and procedures between men and women, which are still unexplained. Cardiovascular disease not only affects the elderly, but is also the third leading cause of premature death of Canadians under the age of 75. Altering risk behaviors is therefore important from the early years in life. Greater efforts are being undertaken to prevent smoking, for example, since the rates of smoking among youth aged 15 to 19 years continue to rise, with the greatest increases among young women. Furthermore, the Canada Heart Health Surveys have found that 41% of men and 33% of women aged 18 to 74 had two or more major risk factors (smoking, high blood pressure, high cholesterol, physical inactivity, or obesity). In 1997, cardiovascular disease accounted for 79,457 deaths, or 37% of all deaths in Canada; ischemic heart disease accounted for 20.2% and stroke accounted for 7.4% of all deaths. Cardiovascular disease accounted for 36% of male and 38% of female deaths. Deaths from cardiovascular disease increase after menopause in women, but in men the percentage of all deaths due to CVD increases steadily from age 35 to 84.

Data from 1998 reveal that the crude mortality rate from cardiovascular diseases in Canada was 262.5 per 100,000; this broad cause group also accounted for 258.4 female deaths per 100,000, and 266.6 male deaths. The 1996/1997 Population Health Survey showed that 10% of Canadians 12 years and older reported that a health professional had diagnosed high blood pressure, 4% reported heart disease, and another 1% reported the effects of a stroke. In 1998/1999, 13% of females and 9% of males over the age of 12 reported that they had been diagnosed as having high blood pressure.

Malignant Neoplasms

According to the *2001 Canadian Cancer Statistics*, malignant neoplasms are the second leading cause of death among adults in Canada. An estimated 134,100 new cases and 65,300 deaths from cancer are expected to occur in 2001. Men outnumber women by 4.8% for incidence, and by 12.7% for mortality; 70% of new cases and 82% of deaths due to cancer occur among those 60 years old and older. Prostate, lung, and colorectal cancers contribute to 50% of new cases among men; breast, lung, and colorectal cancers make up 50% of new cases for women.

Almost one-third of cancer deaths in men (a rate of 69 per 100,000 population) and one-quarter (37 per 100,000) in women are due to lung cancer. Lung cancer mortality rates among men leveled off in the mid-1980s, and since then have consistently declined. In contrast, mortality rates among women continue to increase rapidly. Preliminary research indicates increased tobacco use among young women and teens, which may be the probable cause of this increase. Lung cancer incidence among women is 47 per 100,000.

Breast cancer incidence in Canadian women increased steadily over the past three decades. The benefits of screening programs and improved treatments, however, have resulted in a decrease in mortality since 1990. Among women, breast cancer incidence is 105 cases per 100,000 population, while breast cancer mortality rates, after decades of stable rates, have declined to a rate of 27 per 100,000.

After years of increasing steadily, the incidence rates for prostate cancer began to decline in 1994. In 1999, the rate was 118 per 100,000, a spike in incidence explained by the increased use of early detection techniques. Prostate cancer mortality rates also appear to have stabilized in the early 1990s; the rate for 2000 was 30 per 100,000.

Colorectal cancer is the third most common cancer for both men and women; incidence and mortality rates have steadily declined, especially among women. The incidence rate of skin cancer (malignant melanoma) is comparatively lower than that of other cancers (12 per 100,000 in males and 10 per 100,000 in females); however, it has almost tripled since 1971 and at least 3,700 new cases and over 700 deaths are expected to occur in 2000.

Accidents and Violence

In 1995/1996 there were 217,000 hospital admissions due to injury. The highest rate of admissions due to injuries was among Canadians over the age of 65—235 per 100,000 population among senior women and 152 per 100,000 population among senior men. Nearly two-thirds of hospital admissions due to injuries were the result of falls or motor vehicle injuries. Injuries intentionally inflicted by another person accounted for 5% of all injury-related hospital admissions, while another 2% were self-inflicted.

It is estimated that more than 90% of unintentional injuries are preventable. Injuries and poisonings are the number one cause of death in the Aboriginal population (crude rate 154 per 100,000).

Mortality rates for injuries or unintentional injuries have been declining in Canada; in 1997 they accounted for 4% of deaths. This decline is due mainly to a drop in deaths attributable to motor vehicle traffic injuries, which generally make up about two-thirds of these deaths. Motor vehicle traffic accidents were the major cause of death due to unintentional injury, and in 1997 they accounted for 35% of accidental deaths, followed by falls (29%), drowning and suffocation (6%), and fires (3%). However, due in part to the use of seatbelts and more stringent penalties against drunk driving, the number of deaths attributable to motor vehicle traffic accidents has declined, from 5,253 in 1977 to 3,055 in 1997.

In 1997 there were 3,681 suicides in Canada, almost 10 per day. There are, however, dramatic differences in suicide rates: men were four times more likely than women to commit suicide, but women attempt suicide more often than men. Men have an age-standardized death rate from suicide of 19.5 deaths per 100,000, compared with 4.9 deaths per 100,000 for women. Suicide among the Aboriginal population has been reported to be 2 to 7 times higher than for the Canadian population at large.

There were 581 homicides reported in Canada in 1997, a decline of 9% from 1996. Following a rapid increase in the late 1960s and early 1970s, the rate of homicides in Canada has reached its lowest point since 1969. In recent years, concern has grown over the number of young females involved in violent acts. Over the last 10 years, the rate of female youths charged with violent crimes has increased twice as fast as that of male youths.

Oral Health

Sixty-four percent of women and 60% of men aged 12 years and older reported having made a dental visit during 1996/1997. The highest rate of dental visits was reported by youth aged 12 to 14 years (67%), 15 to 17 years (71%), and 18 to 19 years (61%), but the frequency dropped sharply to 48% among people aged 20 to 24 years. Income level and dental insurance were the most powerful determinants for access to dental care. Low income Canadians were the least likely to have dental insurance, or to have visited a dentist during the past year. Among Canadians in the middle income group, only 45% visited a dentist in the previous year. By contrast, 73% of high income Canadians had dental insurance, and 81% reported a visit to a dentist in the previous year. In 1997, Aboriginal people reported lower rates of dental visits than the national average. Most communities across Canada use fluorinated drinking water.

Emerging and Re-emerging Diseases

The most salient events in terms of emerging communicable diseases have been small epidemics of meningitis caused by *Neisseria meningitidis*. In 1998 there were 155 reported cases of meningococcal infections, as well as 887 cases of viral meningitis, 158 cases of pneumoccocal meningitis, and 80 cases of other bacterial meningitis.

Over the past few years, there has been a significant increase in the prevalence of bronchial asthma, particularly in children and young Canadians. Researchers are investigating the relationship between asthma and air quality, including the role of such indoor contaminants as tobacco smoke, natural cooking gas, and animal dander, as well as outdoor contaminants.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

Health Canada's development of policies and programs designed to improve the population's status and reduce health inequities between population groups is guided by a population health approach. Strategies are based on an assessment of which conditions could harm or benefit the population as a whole or given subgroups within the population. The population health approach uses the following determinants of health: income and social status, social support networks, education, employment and working conditions, social environments, physical environments, biology and genetic endowment, personal health practices and coping skills, healthy child development, health services, gender, and culture.

Health Sector Reform Strategies and Programs

In 1994, the federal government called for a national forum on health, a broad, countrywide consultation process to gather advice on ways to reform the health care system and to improve the health of Canadians. In 1997, the forum produced the report, "Canada Health Action: Building on the Legacy," which focused on four key areas—values, striking a balance, determinants of health, and evidence-based decision making—and identified several priorities for action. Many of these priorities triggered various initiatives to improve the population's health, the most salient of which was the creation of the Health Transition Fund, which provides Can$ 150 million over four years to finance national, provincial, and territorial projects and innovations to

modernize health services and health delivery. To further support health research, the federal government also launched the Canadian Institutes of Health Research (CIHR) in June 2000. With the creation of this institute, the research budget was doubled over three years and several virtual institutes were created to link biomedical research, clinical research, health systems and services research, and population health research.

The Prime Minister and the Minister of Health recently created a new advisory body—the Romanow Commission—designed to provide additional information and direction to the Federal Government on how to effectively deal with major challenges that may face Canada's public health care system, including changing demographics, increasing cost of treatments and technology, and measures to ensure sustainability of universal health care.

The Health System

Institutional Organization

The Canadian health care system is financed mainly through federal and provincial taxes, administered mostly publicly, and delivered privately. At the national level, the Federal Department of Health, Health Canada, sets and administers national principles of the health system and assists the provincial/territorial health systems through funding transfers. In addition, Health Canada provides direct service delivery for specific groups such as veterans, First Nations and Inuit people, military personnel, people incarcerated in federal correctional facilities, and the Royal Canadian Mounted Police. Health Canada also is responsible for national health protection, disease prevention, and health promotion.

The administration of the health care system largely rests with the provinces and territories, and includes comprehensive coverage for medically insured health services. The provincial/territorial health care services adhere to federal-level national principles, as set in the 1984 Canada Health Act. The principles of the Act are universality, comprehensiveness, accessibility, portability of benefits, and public administration on a nonprofit basis.

Each of the ten provinces and three territories has a Ministry of Health or its equivalent, charged with the operation of the health care system and other social services in their jurisdictions. The ministers are politically accountable to their electorate. Provincial and territorial health insurance plans are operated by the corresponding Ministry of Health or by a separate agency closely related to the Ministry. The operation of these health insurance plans must conform with the principles and regulations of the Canada Health Act in order to qualify for full federal funding transfers.

There are several structures in place that allow the various government levels to consult with one another, such as the Conference of Ministers of Health, the Conference of Deputy Ministers of Health, and several Federal/Provincial/Territorial Advisory Committees. Among other efforts, these structures work to improve prevention programs, develop clinical practice guidelines, ensure the quality and appropriateness of health care, and the effective use of human and other resources. The 1999 Federal, Provincial and Territorial Advisory Committee on Population Health's "Second Report on the Health of Canadians" is an example of how officials from many jurisdictions can collaborate to provide national policy advice on population health. This undertaking is a commitment to review progress in health status and the determinants of health in order to identify gaps and propose improvements.

Most of the hospitals in Canada are operated as private, not-for-profit institutions that are run by community boards of trustees, voluntary organizations, or local municipalities. Hospitals have some degree of autonomy over their daily operation, though they must stay within their operating budgets as determined by regional or provincial health authorities. Some addiction centers and long-term care facilities are run privately and operate for profit. Such private, for-profit facilities account for less than 5% of the total number of Canadian hospitals.

Health Insurance

All Canadians are covered for medically-necessary physician and hospital services. Under most provincial legislation, private insurance companies cannot provide services already covered by the government programs, but they can supplement benefits that are not covered in full or for which there is no government insurance coverage (e.g. prescription drugs, dental and vision care, chiropractice, etc.). Many Canadians obtain private supplemental insurance for those services. Provinces and territories provide public coverage for some services beyond those that are benefits of the national insurance program for certain segments of the population, such as seniors, children, and recipients of social assistance.

Organization of Regulatory Actions

In addition to having responsibility for administering the Canada Health Act, and conducting national disease surveillance and health research and risk assessments, the Federal Minister of Health is responsible for regulatory functions to safeguard the quality and safety of food, water, drugs, consumer products, therapeutic devices, cosmetics, chemicals and pesticides, and for the administration of several health-related statutes. Generally, however, regulations for many health services and products are governed by a mix of federal, provincial, and territorial government offices, as well as some nongovernmental organizations. The assessment of the quality and effectiveness of health technologies, for example, is undertaken by the Canadian Coordinating Office for Health Technology Assessment at the federal level and by similar agencies at the provincial levels.

Hospitals in Canada may seek accreditation through the Canadian Council for Health Services Accreditation, a non-governmental body that assesses hospitals that have voluntarily agreed to meet various quality standards. The license to practice medicine in Canada is granted by each provincial and territorial medical licensing authority, under respective medical acts and upon meeting specific regulated conditions. However, to facilitate portability and reciprocity between different provinces and territories, the Medical Council of Canada establishes qualifications and maintains the *Canadian Medical Register*, which includes information on all licensed physicians.

Health Canada's new Health Products and Food Branch ensures the safety and quality of the Canadian food supply, drugs, and natural health products. Coordinating bodies at the federal level include intersectoral committees on food regulation and food inspection, and the Canadian Agricultural Research Council. In 1996, the responsibility for food inspection was transferred to the newly created Canadian Food Inspection Agency. Health Canada retains its jurisdiction over food safety, as regulated by the Food and Drug Act, and continues to direct research, risk assessment, standard setting, and evaluation of the safety of food and food related products.

Drug product review—which assesses the benefit/risk profile and the safety and efficacy of drugs—is conducted at the federal level by the Health Products and Food Branch, as regulated by the Food and Drug Act and the Controlled Drugs and Substances Act. The manufacturer prices of patented medicines are regulated by a federal agency—the Patented Medicine Prices Review Board (PMPRB)—a quasi-judicial body that regulates the highest prices that can be charged by manufacturers of patented medicine. The Board reports to Parliament on drug price trends and research and development. Currently, the federal, provincial, and territorial governments have several mechanisms to indirectly influence prices of non-patented medicines, but there is no national regulatory body dealing with non-patented drugs. The Health Products and Food Branch of Health Canada is responsible for regulation of biological drugs, blood products, genetic therapeutic products, tissues and organs, and also serves as a focal point for biotechnology research.

The Healthy Environments and Consumer Safety Branch (HECSB) within Health Canada ensures the safety and effectiveness of consumer products and conducts benefit/risk assessments of chemical and radiation hazards in the environment, as governed by the Canadian Environmental Assessment Act of 1995. The Act requires federal departments and agencies to assess the environmental implications of all of their projects. It also provides effective means to integrate economic factors and social issues, such as health, as well as public concerns into the government decision-making process. The Canadian Environmental Protection Act is administered by the Minister of the Environment, but it grants the Minister of Health the responsibility to control toxic substances, animate products of biotechnology, international air pollution, and international water pollution. HECSB also administers the Tobacco Act, which restricts tobacco product advertising and governs the labeling of tobacco product packaging.

The Pest Management Regulatory Agency (PMRA) was created by Health Canada in 1995 to consolidate the resources and responsibilities for pest management regulation. PMRA regulates all products designed to manage, destroy, attract, or repel pests that are used, sold, or imported into Canada. This is done in accordance with the Pest Control Products Act, and often involves interdepartmental collaboration with the Departments of Agriculture and the Environment.

Organization of Public Health Care Services

Health Promotion

Health Canada carries out and funds various population health, health promotion, and disease prevention and control programs, many of which target population groups, including Aboriginal populations, children, women, and seniors.

Although the federal government is mainly responsible for the health of Aboriginal peoples living on reserves in the North of Canada, provincial and territorial governments share some of this responsibility. In 1997, Health Canada announced "Gathering Strength: Canada's Aboriginal Action Plan," which sets a new course for policies for Aboriginal peoples, including new investments in health initiatives and services for this population. The 1999 budget also announced an investment of Can$ 190 million over three years to improve the health of First Nations and Inuit people and provide a broader range of care for Aboriginal communities. A new Aboriginal Research Institute was recently established, which will be part of the Canadian Institutes of Health Research.

The National Children's Agenda is a cooperative effort to ensure that all Canadian children have the best opportunity to develop to their utmost potential. As a way to advance the Agenda, the Government of Canada, working with provincial and territorial governments, reached an agreement in December 2000 to strengthen community support for early childhood development and is now working to implement the proposed actions of this agreement. Federal programs such as the Community Action Program for Children, the Aboriginal Head Start Program, and the Canada Prenatal Nutrition Program foster early childhood development, parental involvement and education, intersectoral approaches for children's well-being, and partnerships with other governments, nongovernmental agencies, and communities. These community-based programs reach more than 100,000 Canadian children and parents in more than 1,000 communities each week. The Government also has developed a National Strategy on Fetal Alcohol Syndrome/Fetal Alcohol Effects and in 1999 announced additional activities and funding for programs,

treatment, and rehabilitation through the Alcohol and Drug Treatment and Rehabilitation Program.

Health Canada's Women's Health Bureau ensures that women's health issues are given appropriate attention. In 1999 the Minister of Health launched the Women's Health Strategy, which commits Health Canada to monitor the effects that the health system's renewal is having on women and to consider women's particular needs when interpreting and enforcing the Canada Health Act. Health Canada also conducts research on and promotion of gender issues in cooperation with the five Centres of Excellence for Women's Health. Specific women's health promotion programs include funding for the Canadian Heart Health Initiative (Can$ 2 million per year), the development of National Guidelines on Family Centered Maternity and Newborn Care, the Canadian Breast Cancer Initiative, and the Canada Prenatal Nutrition Program. Food supplementation is the key intervention of this last program, and it is accompanied by counseling on nutrition, lifestyle issues, and family violence.

In 1998, federal, provincial, and territorial ministers responsible for seniors released the National Framework on Ageing, to assist in responding to the needs of Canada's aging population. "New Horizons: Partners in Ageing" was a Health Canada community funding program that provided financial support for innovative grass-roots projects involving seniors.

Other health promotion programs undertaken by the federal government focus upon specific health issues, some of which target at-risk populations. Such initiatives include the Canadian Strategy on HIV/AIDS, which allocates Can$ 42.2 million annually for HIV/AIDS policy development, programming, and research and surveillance; the five-year, Can$ 530 million National Strategy for Tobacco Control; the Canadian Active Living Challenge; and the Family Violence Initiative.

In response to the increasing prevalence of diabetes, the Government of Canada, along with the provincial and territorial governments and private organizations, has developed a five-year, Can$ 115 million Canadian Diabetes Strategy that includes Can$ 58 million for the Aboriginal Diabetes Initiative.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

The federal Department of Health also monitors disease incidence and mortality, identifies and assesses health risks, and provides epidemiologic and laboratory surveillance through its Population and Public Health Branch. These activities are carried out in close collaboration with Statistics Canada, the Canadian Institute of Health Information, and other federal entities. Provincial and territorial governments, laboratories, public health units, and voluntary agencies also participate actively in this process.

Potable Water, Excreta Disposal, and Sewerage Services

Safe water, sewage, and waste management services are operated by provincial, territorial, regional, and municipal authorities, in collaboration with the ministries of the environment. Approximately 99% of the Canadian population has safe drinking water, and about 95% has adequate disposal facilities. Treated municipal drinking water is supplied to 87% of Canadians, most of whom (86%) are served by central systems; the remainder are served by individual systems. Aboriginal peoples have some problems accessing such services, in part due to inadequate or nonexistent water treatment systems.

The federal government completed a Can$ 6 billion infrastructure investment, aimed at upgrading drinking water and recreational and ambient water, as well as developing water quality guidelines. The federal government also provides funding for Aboriginal peoples to construct and operate basic community facilities such as water, sewage, and electricity services; school roads; community buildings; and fire protection facilities. The Saint Lawrence Vision 2000 Development Fund was established by Health Canada and Fond de la Recherche en Santé du Quebec to support research on human health consequences from contamination of the Saint Lawrence River, Canada's major waterway.

Pollution Prevention and Control

Air quality is the responsibility of the federal government, through Health Canada's Healthy Environments and Consumer Safety Branch. Its Air Quality Unit actively researches the effects of air pollution on health and develops guidelines to protect outdoor and indoor air quality.

Food Safety

Health Canada is responsible for administering the Food and Drug Act at the national level; in practice, however, Health Canada shares the enforcement and implementation of food safety measures with the federal Department of Agriculture, the Canadian Food Inspection Agency, and provincial and territorial governments, all of which work together through public health units. Health Canada is responsible for issuing nutrition recommendations and guidelines for healthy eating and for reducing the risk of nutrition-related diseases.

After the World Food Summit, Canada released its Action Plan for Food Security in 1998, which monitors the cost of a nutritious food basket and develops education programs and income support initiatives to ensure food safety and security. The federal Department of Health also supports the Food Mail Program, which subsidizes transport costs of the most nutritious foods into remote, isolated communities; this program is led by the Department of Indian and Northern Affairs.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

Primary health care physicians—family physicians or general practitioners—are the first points of contact with the health care

system for most Canadians. Primary health physicians refer patients to specialists, prescribe drugs or diagnostic tests, and recommend hospital admissions. Most of these doctors are private practioners who submit their service claims directly to the provincial or territorial health insurance plans for payment. Hospital emergency rooms also are a point of access; in fact, some population subgroups, such as the homeless, tend to use emergency rooms as their first point of access for health services.

Nurses are generally employed in the hospital sector, but they also provide support at the primary health care level (community-based agencies, home-care groups), in private practice, or within the public health system. The Office of Nursing Policy was developed by Health Canada in 1999, and is charged with advising the federal Department of Health on the nursing perspective of various policy issues and programs, contributing to health policy development, and maximizing the potential of nursing human resources. Several other allied health care professionals also are involved in primary health care. Referrals are needed to access specialty services.

Most hospitals that provide emergency and inpatient services are nonprofit facilities administered by nongovernmental boards of directors drafted from the community. Hospitals are organized to provide acute or long-term care at the secondary or tertiary level. In some larger cities, hospitals have become highly specialized to address specific problems, such as orthopedics, heart health, cancer, and children's or women's health. Furthermore, as part of the restructuring of the health system, many hospitals in larger cities are being consolidated into one single urban hospital, often with multiple sites.

Private, for-profit hospitals represent less than 5% of all hospitals and are mostly long-term care facilities or institutions that provide specialized services, such as addiction treatment. Currently, most hospitals run directly by the provinces are psychiatric institutions, but many provinces are divesting themselves of these institutions. The federal government operates several hospitals that serve the military, veterans, and Aboriginal peoples.

Specialized Services

Canada's health care system also encompasses public health services, which originally were established to control the spread of infectious diseases, ensure public sanitation, and provide basic health education to the local population. Over time, the role of these public health units has evolved to provide services for health concerns and needs that are not met by the rest of the health care system, as well as to meet the needs of underserved population groups. Today, most of these services are funded and provided for separately from Canada's main health care components, and are increasingly provided alongside other health services through regional health authorities. Each public health unit operates under the direction of a regional medical officer of health, who liaises with local hospitals, health care practitioners, and voluntary agencies. Public health units provide some or all of the following services: maternal and child health counseling programs, immunizations, school health education, health surveillance and STD clinics (including AIDS management), food safety, and nutrition information.

Some provinces also have developed legislation and educational programs to guide and assist the practice of nurse practitioners in primary health care settings, as well as various screening programs for different health concerns. For example, all provincial and two territorial governments have established programs to provide breast cancer screening to asymptomatic women aged 50–69 every two years. Participation rates in organized programs of women aged 50–69 in 1997 and 1998 ranged from 11.5% to 54.7%, below the recommended 70% participation rate. A 1998/1999 population-based survey showed that among Canadian women aged 50–69, approximately 66.3% reported having received a screening or diagnostic mammogram in the previous two years; several women continue to receive opportunistic screening across Canada.

Despite the existence of various mental health associations and community groups, many people who suffer from depression often do not seek help. A 1997 review of best practices in mental health reform found that the availability of support—housing, vocational and educational services, crisis response services, and community-based case management—tended to reduce the need for institutional care. Mental health programs in Canada are under the responsibility of the provinces and territories. Mental health services at this level are provided through primary health care, general hospital psychiatric units, community mental health centers, specialized treatment facilities, psychiatric hospitals, community providers, and several community-based organizations.

Childhood immunizations are usually administered by general practitioners, family physicians, or through a public health unit; they are under provincial or territorial jurisdiction and, hence, are covered by provincial/territorial health plans.

Long-term and continuing care services generally are organized on two levels: institutional-based care and home-based care. The institutions involved range from residential care facilities that provide only limited health services, to intensive, chronic care facilities that provide care for the more demanding needs of institutionalized patients. Home-based care encompasses an array of services that enables totally or partially incapacitated clients to live at home, often preventing, delaying, or substituting long-term care or acute care alternatives. Home care is delivered under many organizational structures, and similarly numerous funding and client payment mechanisms.

Health Supplies

Drugs, including vaccines and serums, are developed by private pharmaceutical companies. Many multinational pharma-

ceutical corporations have facilities that conduct basic or applied research in Canada, and some domestic manufacturers process off-patent or generic medicines. Researchers or corporations wishing to market new drugs in Canada must submit a drug application with Health Canada; the product then undergoes a stringent review to determine whether the drug will be approved in the country.

Provincial and territorial ministries of health buy vaccines from licensed products available on the market, which are then provided to the public free of charge. The Division of Immunization at Health Canada helps the provinces and territories in immunization programs to reduce the incidence of vaccine-preventable diseases in the country and undertakes program evaluation and post-market surveillance. The National Advisory Committee on Immunization, comprised of public health experts and pediatric and infectious disease researchers from across the country, formulates guidelines on the use of vaccines and provides timely medical, scientific, and public health advice related to vaccines and prophylactic agents.

Medical equipment, such as wheelchairs, is often subsidized by service or disease-specific, nongovernmental organizations or charity groups. The purchase of certain technologies, such as expensive diagnostic tools, is regulated through provincial control on capital expenditures. At the federal level, assessment of these technologies falls under the mandate of the Canadian Coordinating Office for Health Technology Assessment and under similar provincial-level assessment agencies. The Therapeutic Products Directorate at Health Canada also is involved in the evaluation and monitoring of medical devices.

Human Resources

The number of per capita registered nurses has steadily declined in Canada: in 1989, there were 80.4 registered nurses per 10,000 population; in 1999, there were 74.6. Of the 228,450 registered nurses that were practicing in 1999, 62.5% were employed in hospitals. Nurses are increasingly working part-time (45.3%), however, as well as outside of the hospital setting in home care and public health services. The distribution of nurses has been determined by hospital demand and dispersion.

In 2000, there were 57,052 physicians in Canada, for a rate of 18.6 physicians per 10,000 population (9.4 general or family physicians and 9.2 specialists). This represents an increase from the 1986 rate of 17.4 physicians per 10,000 population. Most physicians are concentrated in urban areas, and there tends to be a shortage in rural, isolated areas. These problems have led to the development and implementation of several initiatives to ensure a more equitable and efficient distribution of physicians. In June 2000, for example, the Minister of Health created a Ministerial Advisory Council on Rural Health to provide expert advice on health issues and concerns in Canada's remote areas.

Because physicians are scarce in some northern areas or territories, nurse practitioners may provide pregnancy, labor, and after-birth care there. Midwives have recently become regulated in some provinces to manage planned home births, and some provinces now provide them with public funding. Canadians are more frequently using complementary and alternative approaches, and nearly two million people used these services in 1998/1999. The Minister of Health has established an advisory panel to provide a regulatory framework for herbal remedies, and many private insurance plans are beginning to offer coverage for such treatments.

The labor market for health professionals varies from occupation to occcupation. The groups that saw the largest per capita decreases between 1988 and 1997 were laboratory technologists (20%) and licensed practical nurses (17.1%). Conversely, there were per capita increases in rehabilitation services (52.6%), dental services (26.1%), and psychological and social services (22%).

The vast majority of health professionals in Canada need university training and require certification by provincial and territorial licensing bodies. Most provinces also offer training for rehabilitation assistants who work under the supervision of occupational and physical therapists.

Health Research and Technology

Based on recommendations of the National Task Force on Health Research, the federal government announced the creation of the Canadian Institutes of Health Research (CIHR) in 1999. CIHR includes 13 "virtual" institutes that bring together researchers who approach health challenges from the four disciplines that represent CIHR's four areas: biomedicine, clinical science, health systems and services, and sociocultural and other factors that affect the population's health. These virtual organizations support and link researchers working at universities, hospitals, and other research centers across Canada, in partnership with the voluntary health care sector, industry, and other government agencies. The Institutes focus on specific health issues or populations, and regularly update a database that reports on researchers involved in various initiatives, as well as alternative sources of research funding and support.

Health Canada also plays a role in ensuring the safety of health products and technologies. The federal Department of Health's Therapeutic Products Directorate is the national authority that evaluates and monitors the safety, effectiveness, and quality of drugs, medical devices, and other therapeutic products, including medical equipment and instruments, diagnostic testing tools, and biological products such as vaccines, blood and blood products, tissues, and organs. The Directorate also widely disseminates information to Canadians about the benefits and risks of all therapeutic products introduced into the marketplace. Through the Bureau of Licensed Product Assessment, the Directorate is re-

sponsible for post-approval assessment activities, including collection of adverse drug reactions through national and regional reporting centers; single generation and benefit-risk assessments; risk communication; coordination of market interventions; advertising policy and compliance decisions; monitoring medication incidents; and active surveillance of pilot projects.

In regard to health information, the Department of Health's Information, Analysis and Connectivity Directorate oversees key aspects of information—from the creation of information, through analytical research, to the dissemination of information and knowledge; the Directorate manages requests for access to information and houses the Government On-Line Project Office. Two other organizations also play vital roles in the production and dissemination of health related information: Statistics Canada tracks data related to various health indicators and disseminates this information in various media to the general public and to government departments; the Canadian Institute of Health Information is a national, not-for-profit organization responsible for developing and maintaining the country's comprehensive health information system.

Health Sector Expenditure and Financing

The Canada Health Act authorizes cash contributions to provinces and territories as part of the Canada Health and Social Transfer, and provides for a mandatory dollar-for-dollar penalty when a provincial or territorial plan fails to satisfy the criteria set by the Act. The 1996/1997 Canada Health and Social Transfer reformed federal and provincial/territorial cost-sharing arrangements for health services by combining the block transfer payment from the federal government to the provinces and territories for all provincial health, post-secondary education, and social services.

Total health expenditures in current Canadian dollars were estimated at Can$ 84.0 billion in 1998, and are forecasted to reach Can$ 89 billion in 1999, and Can$ 95.1 billion in 2000, reflecting projected increases in health care spending by the provinces and territories. Total per capita health expenditures were estimated at Can$ 2,776 in 1998, a 5.5% increase from 1997, or Can$ 144 per capita. Per capita spending on health is expected to continue to increase by 6% in 2000. These expenditures were equivalent to 9.3% of GDP in 1998, and are forecasted to remain at this level in 1999 and 2000 since it is believed that health expenditures and GDP will have grown at nearly identical rates.

Health expenditures by governments and government agencies (the public sector) in 1998 were estimated at Can$ 58.8 billion, equivalent to Can$ 1,946 per capita. This accounted for 70.1% of total health care spending, and was an increase of 5.9% compared to 1997. Private sector spending by households and insurance firms in 1998 totaled Can$ 25.1 million (or Can$ 830 per capita). The private sector accounted for an estimated 29.5% of total expenditures in 1999, down from 29.9% in 1998. This decrease is expected to continue in 2000.

Hospital care represented the largest share of health expenditures in Canada in 1998, accounting for 32.9%, followed by expenditures on drugs, 14.8%. Hospital expenditures financed by the private sector in 1998 totaled Can$ 2.5 billion, or 3.0% of total health expenditures and 8.9% of hospital expenditures. Spending on drugs, the second largest category of health expenditure in 1998, has steadily increased since the late 1970s. In 1998, total spending on prescribed drugs was an estimated Can$ 9.3 billion, a 10.6% increase from 1997. This is expected to increase to Can$ 11.4 billion in 2000 (or Can$ 14.7 billion when both prescription and over-the-counter drugs are considered together). The portion of prescribed drugs financed by private sources in 1998 was 58.6% or Can$ 5.5 billion.

In 1998, it was estimated that 74% of Canadians over the age of 12 had some form of supplementary insurance coverage for prescription drugs. In 2000, spending on drugs is estimated to have reached Can$ 14.7 billion, or 15.5% of total health care spending. Drug expenditures increased faster than any other major health cost. Both public (provincial plans) and private sector payers (insurance companies) are implementing measures to contain the cost of drugs. These measures include the use of restrictive formularies, with emphasis on the use of the most cost-effective products; the increase of deductibles or copayments; capping benefits; and improved information to guide appropriate prescription. Since 1996, federal, provincial, and territorial governments have undertaken collaborative work through the Working Group on Drug Prices to obtain a better understanding of pharmaceutical pricing practices and cost drivers within jurisdictions. Building on the recommendations of the National Forum on Health, governments are working towards the long term goal of a national prescription drug benefit program.

Although the mid-1980s saw expenditures on physicians grow at above average rates (10.0%), peaking at 15.7% of total health care spending in 1987, they have since grown at below average rates, leading to a decline in the share of total expenditure. The vast majority of physician services (99%) are financed by the public sector.

Total public and private per capita health expenditures are highest in the territories, due in part to their large geographical area and low population densities. Per capita spending on health in the Northwest Territories was Can$ 5,244 in 1998, followed by the Yukon at Can$ 3,262. Looking only at the provinces, British Columbia (Can$ 2,898) and Ontario (Can$ 2,875) had the highest per capita total expenditures on health in 1998, though there is not a significant amount of variation across the provinces. The public sector share of health care spending was greatest in the Northwest Territories (92%) and in the Yukon (84.7%), while Ontario (33.3%) and Alberta (32.1%) saw the highest proportion of private sector spending on health care.

Publicly financed health care spending in Canada takes place across four levels: provincial and territorial governments; direct health care spending by the federal government; municipal governments; and social security plans such as workers' compensation boards. Federal transfers for health to the provinces and territories are included in the provincial government data because national health expenditures are reported based on the principles of "responsibility for payment," rather than source of funds. In 1998, direct federal spending on health accounted for 5.2% of publicly financed health care spending; 91.9% of these funds originated from provincial and territorial governments, while social security funds accounted for 1.7%, and municipal expenditures, 1.2%. Total direct federal spending on health came from three federal departments: Health Canada (60%), the Department of Veteran Affairs (20%), and the former Medical Research Council (10%). Total provincial and territorial spending on health care was approximately Can$ 54.1 billion in 1998, and is expected to reach Can$ 62.01 billion by 2000.

Although provinces and territories have control over how the funds from the Canada Health and Social Transfer are spent, it is useful to examine the amount of money provided to them from the federal government, because it provides a more accurate picture of both direct and indirect federal spending. In 1998, for example, the federal government transferred Can$ 26.6 billion to the provinces and territories through CHST for postsecondary education, social services, or health care. By 2000, this figure had increased to Can$ 31.2 billion.

Health Canada has developed various strategies whereby many nongovernmental organizations and community groups receive funding support to undertake prevention programs and health education projects. The Family Violence Initiative, for example, develops innovative partnerships with community groups, and encourages organizations in various regions across Canada to develop projects aimed at raising awareness and developing local solutions to family violence with the help of federal funding support. Similarly, the Canadian Strategy on HIV/AIDS allocates Can$ 10 million of its annual Can$ 42.2 million budget to a community development component to support national NGOs and AIDS service organizations.

In 1998, out-of-pocket expenses represented the largest share of private sector financing (54.8%), followed by private health insurance (37%) and nonconsumption expenditures (8.3%), a category of expenditures that includes hospital nonpatient revenue, capital expenditures, and health research. During the 1980s and 1990s, expenditures by insurance firms grew more rapidly than out-of-pocket expenditures. In 1998, insurance expenditures were growing at a rate of 9.6%, three times the growth rate of out-of-pocket expenditures.

External Technical Cooperation and Financing

Health Canada has promoted and actively pursued partnerships and collaborative projects with various countries in the Americas. For example, Health Canada has developed two formal memoranda of understanding with the ministers of health of Cuba and Mexico, which cover activities in health promotion, health communication, and healthy community programs with Cuba and activities related to the health and well-being of seniors and long-term care with Mexico. In addition, Health Canada and partner organizations have carried out projects on gender-based health policy in Costa Rica; violence against women in Saint Lucia; and a regional partnership project among Health Canada's National Laboratory for Enteric Pathogens, PAHO, and 20 Latin American and Caribbean countries.

In Canada, PAHO is represented by the Canadian Society for International Health (CSIH), a nongovernmental organization. In this capacity, CSIH often works in collaboration with Health Canada, to enhance Canadian awareness and understanding of PAHO's efforts in the Americas and also to identify Canadian technical expertise for involvement in projects outside of Canada.

The Canadian International Development Agency (CIDA) is the federal government agency responsible for about 80% of Canada's development assistance. As part of a new framework for poverty reduction, outlined in the policy document, "CIDA's Social Development Priorities (2000)," programming will be strengthened in four key areas: health (including water and sanitation) and nutrition; basic education; HIV/AIDS prevention and care; and child protection. CIDA will increase its investments in these four areas from 19% to 38% of its total budget and will increase total expenditures to Can$ 2.8 billion over the next five years. The respective priorities' action plans have undergone broad consultation with governments and civil society in Canada, with partner countries, and with other donors.

CIDA has been an active collaborator with PAHO on nutrition and health issues and has provided significant extrabudgetary resources for such health projects and issues as HIV/AIDS projects with PAHO's Caribbean Epidemiology Center (CAREC), a national immunization program in Haiti, the Vaccine Preventable Diseases project (SIREVA), measles eradication, disaster relief, communicable diseases, rehabilitation of landmine victims, and the Canadian Consultant Technical Assistance Fund.

FIGURE 1. Gross domestic product, annual growth (%), Canada, 1990–2000.

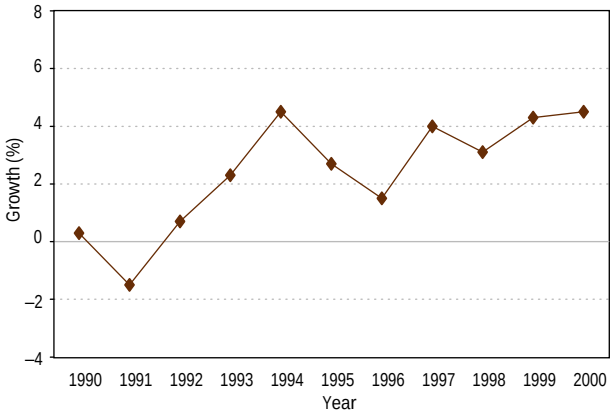


FIGURE 2. Population structure, by age and sex, Canada, July 2000 estimates.

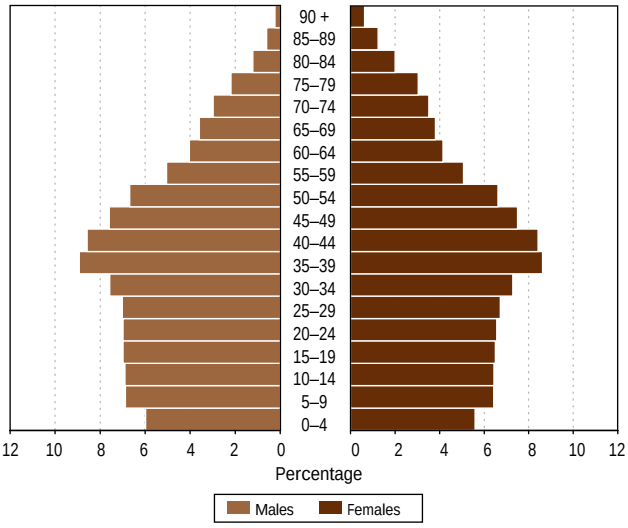


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Canada, 1998.

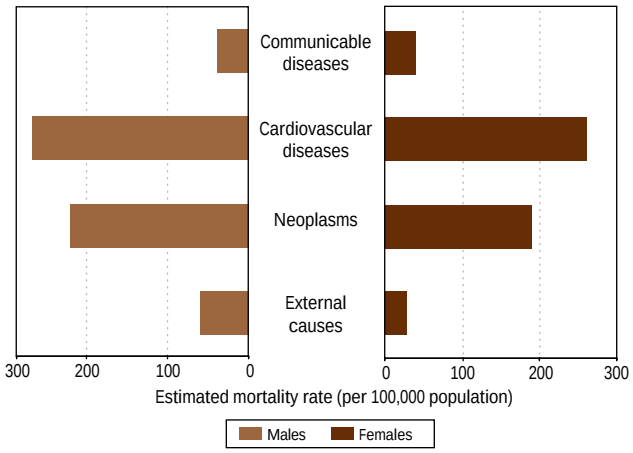


FIGURE 4. Vaccination coverage of children at 2 years of age, by vaccine, Canada, 1998.

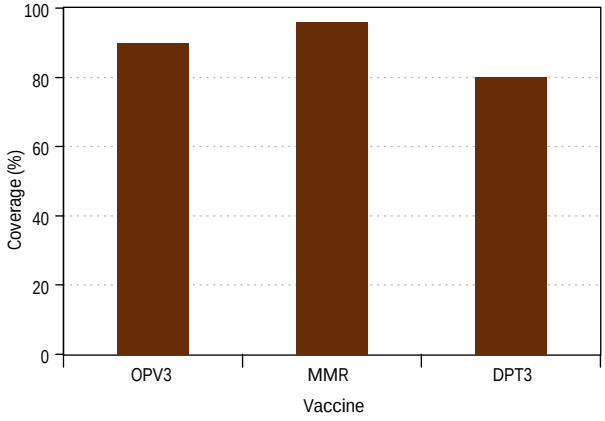
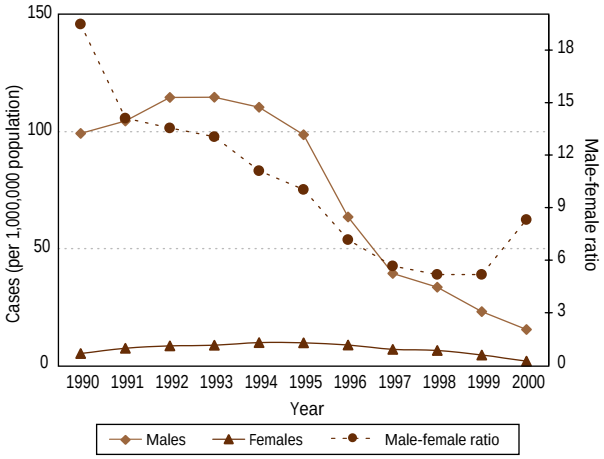


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Canada, 1990–2000.



CAYMAN ISLANDS

OVERVIEW

The Cayman Islands is a British overseas territory comprising the islands of Grand Cayman, Cayman Brac, and Little Cayman. The territory spans about 250 km^2 in the western Caribbean Sea, about 240 km south of Cuba and 290 km west of Jamaica. George Town, the capital, is located on Grand Cayman, the largest and most populous island. All the islands are generally low-lying, with the exception of a massive limestone bluff that rises on Cayman Brac. The last natural disaster to threaten the Cayman Islands was Hurricane Mitch in 1997. Damage to the islands was minimal, and there were no deaths or injuries.

The Governor, who represents the Queen of the United Kingdom, heads the territorial government and presides over the Executive Council. Ministers elected by the Legislative Assembly and the three official members sit on the Executive Council. Ministers delegate policy implementation and administrative matters to Permanent Secretaries.

The Cayman Islands are politically stable and economically strong. The exchange rate has remained constant over the past two decades, at Cayman Islands dollars 0.80 to US$ 1.00. The latest estimates (1997) put GDP at US$ 1.2 billion in 1999 prices. It is estimated that GDP growth slowed in 2000, between 4.4% and 4.6%, down from the five-year average of 5.0%. At the end of 1999, the aggregate consumer price index stood at 182.1, an increase of 5.1% over the 1998 figure of 173.5. The total labor force was estimated at 21,820 persons in 1998, and the unemployment rate at 4%. Unemployment stabilized at 4% in 2000.

Economic growth was mainly fueled by the finance and tourism sectors. The annual recurring Government expenditure nearly doubled, rising from US$ 163.2 million in 1995 to US$ 316.9 million in 2000.

According to the 1999 census, the population stood at 39,020 (Grand Cayman, 37,083; Cayman Brac, 1,822; and Little Cayman, 115), representing a 53% increase over the 1989 census (25,355). The population annual growth rate for 1991–2000 remained steady, ranging from 3.9% to 5.3%, with an average of 4.5%. Most of the population was between 20–59 years of age (62.2%), which is an indication of the magnitude of the workforce; 19.5% were under 15 years of age and 8.3% were 60 years old and older (Figure 1). The comparative figures from the 1989 census were 22.7% under 15 years, 60.2% 20–59 years old, and 9.1% 60 years old and older.

According to the most recent census, only 53% of the population were Caymanians, a drop from 69% in 1989. In fact, while the birth rate has been gradually declining, from 18.0 per 1,000 population in 1991, to 16.3 in 1996, and 15.1 in 2000, the total population has actually increased sharply, which is attributed to the rapid increase in the number of foreign work-permit holders and their dependents who live in the Cayman Islands as a result of the unavailability of local workers. This influx has burdened the territory's services, including health care.

As calculated in 1999, life expectancy at birth was 77 years, 75 years for males and 79 years for females. The crude birth rate in 2000 was 15.1 per 1,000 population, a downward trend from 16.3 in 1996 and 15.4 in 1999.

Schooling is free and compulsory for all children between 5 and 16 years old. Health care is provided free of charge to all schoolchildren. The adult literacy rate is about 98%.

Mortality

The crude death rate held steady during 1996–2000, fluctuating between 3.3 and 3.5 per 1,000 population. The leading causes of death during this period were diseases of the circulatory system (41%) and malignant neoplasms (23%).

There is 100% registration of deaths in the Cayman Islands. Mortality data is reported on all residents, whether Caymanians or work-permit holders and their dependents. Data are not complete on residents who die overseas, however. Mortality data of visitors (tourists) are analyzed separately. Deaths of residents average approximately 120 per year. The leading groups of causes of death in the 1996–1999 period were diseases of the circulatory system (41%), neoplasms (23%), and external causes (11%). The

mortality rate for circulatory diseases was 157 per 100,000 males and 101 per 100,000 females, while neoplasms had rates of 87 and 62 for males and females, respectively, in 1998 (Figure 2).

HEALTH PROBLEMS

Because the territory is small, with scant demographic or socioeconomic differences, health problems do not vary from one geographical location to another. There were about 25,000 hospitalizations in the 1996–2000 period, with an average of 5,000 hospitalizations per year, or 134 hospitalizations per 1,000 population. Of these, 84% were handled at Cayman Islands Hospital. The major causes for hospitalization were diseases of the digestive system (11%), diseases of the genitourinary system (7%), diseases of the respiratory system (7%), and diseases of the circulatory system (7%).

By Population Group

Children (0–4 years)

The infant mortality rate declined from 10.7 per 1,000 live births in 1996 to 7.0 per 1,000 in 1998. In 1991–2000, the number of infant deaths varied from 0 to 7 annually, with the highest infant mortality rate, 14.0 per 1,000 live births, occurring in 1991; there were 4 infant deaths in 1998 and none in 1999 or 2000. The average annual infant mortality rate during 1996–2000 was 5.9 per 1,000 live births. Of the 17 infant deaths during the reporting period, 9 were neonatal deaths, 10 were attributed to prematurity, and 2 to congenital anomalies. Stillbirths fluctuated from 5 in 1996, to 3 in 1998, and 8 in 2000. There was one death among children 1 to 4 years of age, due to accidental drowning.

About 24% of total hospitalizations at Cayman Islands Hospital during 1996–1999 were of children under 5 years of age; it should be noted, however, that 58% of these admissions were newborns, as all deliveries take place in the hospitals and newborns are counted as admissions (there were only two home deliveries in 2000). In those same years, 1,490 sick children under 5 years of age were admitted to the hospital, with an age specific admission rate of 143 per 1,000 population.

The major groups of causes for admission in children under 5 years old were diseases of the respiratory system (26%), certain infectious and parasitic diseases (15%), diseases of the digestive system (14%), and diseases of the genitourinary system (7%). Among the diseases of the respiratory system, the most common conditions were asthma (26%), acute bronchitis and bronchiolitis (17%), and acute pharyngitis and acute tonsillitis (13%). Of admissions due to infectious and parasitic diseases, 82% were for management of diarrhea and gastroenteritis, with an age specific hospitalization rate of 17.2 per 1,000 population.

Schoolchildren (5–9 years)

In 2000, the 627 school entry health screenings revealed that 100% of the children had received the three-dose, primary series of DPT and polio vaccines; 99.7% had received at least one dose of the MMR vaccine; 96.3% had received four doses of DPT and polio vaccines; and 96% had received two doses of MMR vaccine. Anemia is not a problem among this age group: of the 482 children tested for hemoglobin levels, 96% had levels of 11 g/dl or above; only 1 child tested below 10 g and 16 tested between 10 g and 11 g/dl.

One child in this age group who had acquired HIV through mother to child transmission died of AIDS during the reporting period. A total of 578 children were hospitalized, at a rate of 57 per 1,000 population, compared to 52 in 1995. The most common groups of causes of admission were diseases of the respiratory system (21%) and diseases of the digestive system (19%); 62% of children in this age group were admitted for the management of diarrhea and gastroenteritis, with an age specific admission rate of 6.1 per 1,000 population.

Adolescents (10–14 and 15–19 years)

Throughout the 1990s, there were between one and two live births to women under 15 years of age each year; there were only three live births in this age group between 1996 and 1999. There was one death due to malignant neoplasm of the liver and one due to infantile hemiplegia among 10–14-year-olds during the reporting period. There were 316 children in this age group hospitalized, for a rate of 39 per 1,000 population. The main causes for admission were external causes (23%), diseases of the respiratory system (13%), and diseases of the digestive system (16%).

The proportion of teenage mothers 15–19 years old declined from 8% in the 1992–1995 period to 6% during 1996–1999. Births to mothers under 20 years of age decreased from 13% during 1992–1995 to 9% in 1996–1999.

Eight deaths occurred among 15–19-year-olds between 1996 and 1999, all of them male: six were due to motor vehicle accidents and two due to homicide. A total of 548 hospitalizations were recorded among 15–19-year-olds, for a rate of 74 per 1,000 population in this age group in 1996–1999. The most common causes for admission among females were normal delivery (31%), other obstetric causes (20%), genitourinary diseases (8%), and diseases of the digestive system (7.9%). Of 138 males hospitalized during this period, 48 admissions were due to external causes (35%) and 23 were due to diseases of the digestive system (17%).

There were no suicide cases among 10–19-year-olds during the reporting period. In 1998, the National Drug Council conducted a drug use survey among students that had an 86% participation rate. Alcohol was the most common substance used in the 12 months prior to the survey (40%), followed by tobacco (9%), marijuana (7%), and inhalants (6%). Gender differences were seen only in terms of marijuana use, with males reporting higher use (9%) than females (5%). Although more than one-

quarter of students (28%) had tried cigarettes in their lifetime, only 9% were current smokers. While only 40% of students had used alcohol in the year preceding the survey, about two-thirds (61%) had used alcohol during their lifetime; most of them drank only on special occasions, but 13% drank on a weekly basis. About one in ten (11%) had tried marijuana at least once in their lifetime and 7% had used it in the past year.

Adults (20–59 years)

This age group represents 67% of the total population. Conditions related to pregnancy, childbirth, and the puerperium accounted for 18% of hospitalizations of adults. There have been no births to women older than 50 years since 1986. During 1996–1999, 91% of live births were to women 20–44 years old. There was only one maternal death due to eclampsia (in 1993) during 1991–2000. The rate of caesarian delivery decreased from 30% in 1995 to 23% in 1997, rising again to 26% in 1999 and to 27% in 2000. In that last year, 196 mothers were tested for rubella and 85% were found to be immune. In addition, 215 mothers were tested for VDRL and 5 were found to be reactive.

There were 93 deaths among the 25–59-year-old age group (19% of all deaths) in 1996–1999, for an average age specific death rate of 9.4 per 10,000 population. The most common causes of death in this group were external causes (34%), diseases of the circulatory system (27%), and neoplasms (24%). Of the deaths in this age group, 70% were males and 30% were females, with age specific death rates of 14 and 6 per 10,000 population, respectively. Among males, 23 deaths were due to external causes, 18 to cardiovascular diseases, and 16 to neoplasms; for females, 10 deaths were due to external causes, 7 to cardiovascular disease, and 6 to neoplasms.

In 1996–1997, 48% of total hospitalizations were in the age group 20–59 years old; 72% of them were females. The age specific hospitalization rate was 39 per 1,000 males and 74 per 1,000 females (excluding normal delivery). The main causes for hospital admissions for women were obstetric causes (28%), normal delivery (24%), genitourinary diseases (14%), and diseases of the digestive system (12%). Among males, the major causes for hospital admission were diseases of the digestive system (21%), external causes (20%), diseases of the circulatory system (12%), and mental and behavioral disorders (6%).

According to the Cayman Islands Drug and Alcohol Survey conducted among adults in 2000 (94% of all households selected for inclusion participated in the survey), alcohol and tobacco are by far the most commonly used substances. The survey showed that approximately 61% of respondents had tried alcohol during their lifetime, and more than half (54%) had consumed alcohol in the 12 months prior to the survey. Men were more likely to have consumed alcohol than women (69% vs. 45%). About 61% of 20–29-year-olds and 62% of 30–49-year-olds had consumed alcohol; only 42% of 50–59-year-olds had done so. Almost half of respondents (47%) reported having smoked tobacco during their lifetime, and slightly more than one-fifth (22%) had smoked during the year prior to the survey. The proportion of men who smoked during the 12 months prior to the survey (29%) exceeded that of women (17%). Those most likely to smoke were in the 20–29-year-old category. Almost one in six adults reported having smoked marijuana at some point in their lives, and 3.5% reported having used it during the year prior to the survey. Approximately 2.9% reported having used cocaine.

The Elderly (60 years and older)

The 1999 census revealed that 8.3% of the population was 60 years old and older, a slight decrease compared to the 1989 census, when this group represented 9% of the population. The 2000 Cayman Islands Drug Survey revealed that 24% of persons aged 60 years and older had consumed alcohol during the 12 months prior to the survey and 18% were smokers.

During 1996–1999, 75% of all deaths occurred in this age group, for an age specific death rate of 297 per 10,000 population. The most common causes were diseases of the circulatory system (47%) and neoplasms (24%).

During this period, 17% of hospitalizations were of persons 60 years and older, representing the highest age specific hospitalization rate (198 per 1,000 population); females accounted for 54% of admissions in this age group. The main causes for hospital admissions among women were diseases of the circulatory system (25%), diseases of the digestive system (14%), diseases of the respiratory system (13%), diseases of the eye (12%), external causes (8%), diseases of the genitourinary system (7%), diseases of the musculoskeletal system (6%), and neoplasms (6%). Among males, the main causes of admissions were diseases of the circulatory system (19%), diseases of the digestive system (12%), diseases of the respiratory system (9%), diseases of the eye (7%), diseases of the genitourinary system (6%), neoplasms (5%), external causes (5%), and diseases of the musculoskeletal system (4%).

Family Health

In 1998, the marriage rate was 8.0 per 1,000 population, close to the 8.8 figure seen in 1995. The divorce rate decreased slightly, from 4.3 per 1,000 population in 1995 to 4.0 in 1999. There is no comprehensive data available on the extent of contraceptive use in the Cayman Islands. Teenage mothers constituted 10% of new mothers during this period. A program for young parents begun in 1995 to help develop skills in young mothers continues to be carried out.

Workers' Health

There are no specific data on occupational diseases, but it is known that occupational health hazards are minimal. There are no major industries that use heavy equipment in the Cayman Islands, and there have been no major accidents in the construction indus-

try. There is no child labor in the Cayman Islands, as compulsory schooling precludes employment of children under 16 years old.

The Disabled

Specific data on the disabled are not available. About 52 disabled children attend Lighthouse School, a special public education facility. Common handicaps among these children are mental challenges (24), genetic disorders such as Down syndrome (5), cerebral palsy (7), and mental retardation (3). Eighty children, most of them developmentally delayed, are in an early intervention program.

By Type of Health Problem

Vector-borne Diseases

Diseases such as dengue, yellow fever, and malaria are not endemic. No *Aedes aegypti* mosquitoes have been found in the Islands since November 1996, although the Asian tiger mosquito was found in Grand Cayman in June 1997. It still occurs in low numbers in a few locations in George Town, and the Mosquito Research and Control Unit has taken measures to prevent its further spread.

Cases of imported malaria fluctuated between 2 and 4 each year, reaching a high of 12 in 1997; imported dengue cases ranged from 1 to 4 annually in the same period. The Mosquito Research and Control Unit is notified if any malaria or vector-borne illnesses are detected so it can institute appropriate control measures. Malaria prophylaxis and yellow fever vaccines are offered to those traveling to endemic areas.

Diseases Preventable by Immunization

There have been no reported cases of polio, diphtheria, or tetanus since 1986, and none of measles since 1991. In 1999, there was a small pertussis outbreak among primary schoolchildren (5–10 years), however, amounting to 7 cases. During 1997, there was an outbreak of rubella: 78 cases were reported in 1997 and 7 in 1998; 57% of the cases were females. There were no cases in 1999 and a localized outbreak occurred in 2000, resulting in 10 cases (4 males and 6 females) after exposure to an imported case.

There are between two and four cases of mumps reported each year; none were reported in 2000. Vaccination coverage among the population under 1 year of age in 2000 is shown in Figure 3. There were two reported cases of hepatitis B in 1998, and one each in 1999 and 2000. Three cases of hepatitis C were reported in 1998 and none in 1999 or 2000. All blood for transfusion is screened for HIV, VDRL, hepatitis B and C, and human T-cell lymphotrophic virus (HTLV-1).

Intestinal Infectious Diseases

There is no cholera in the Cayman Islands. Reported cases of gastroenteritis among children under 5 years of age have fluctuated widely during 1996–2000, ranging from 68 in 1996, to 260 in 1999, and 155 in 2000, with an average annual reported incidence of 53.2 per 1,000 population. There were no epidemics of foodborne diseases during the reporting period. Food poisoning cases occur sporadically, mostly due to ciguatera. The incidence of ciguatera food poisoning fluctuated from 2 cases in 1995, 17 in 1997, 0 in 1999, and 13 in 2000. Amebiasis and ankylostomiasis are not endemic to the Cayman Islands.

Chronic Communicable Diseases

The reported annual incidence of tuberculosis ranged from 0 to 5 cases. There were no cases in 1996 or 1997, three cases in 1998, and two in 1999; there were five cases in 2000, however, four of which were imported. During 1996–2000, none of the tuberculosis cases had HIV coinfection.

There were no cases of leprosy.

Acute Respiratory Infections

About 5% of deaths were due to acute respiratory tract infections in the reporting period, all of them in persons 60 years old and older. During the period, 2% of hospitalizations were due to acute respiratory infections. Of those admitted, 59% were children under 5 years of age, 17% were 20 to 59 years old, and 23% were 60 years old and older. Among children under 5 years old, the common conditions were acute bronchitis and bronchiolitis (32%), acute pharyngitis (24%), and pneumonia (22%).

Zoonoses

Rabies is not endemic in the Cayman Islands. One case of human leptospirosis was confirmed in 1998 and another in 2000. Other zoonotic diseases are not prevalent in the Cayman Islands.

HIV/AIDS

The first known case of HIV/AIDS in the Cayman Islands occurred in 1985. From 1985 to December 2000, there were a total of 54 known HIV-positive cases, 28 males and 26 females. Of the 54 cases, 29 developed AIDS, and 23 died. There were 15 new HIV infections and 10 AIDS cases during 1996–1999, with the average annual incidence of AIDS cases being 5 per 100,000 population, and the incidence of new HIV infections, 8 per 100,000 population. Of those infected with HIV, 65% were 20–34 years old when they first tested positive; 67% of them were heterosexual. There were two cases of mother-to-child HIV transmission (one in 1989 and one in 1994), representing 4% of all HIV cases.

Sexually Transmitted Infections

Sexually transmitted infections are underreported. The incidence of gonococcal diseases was 30 per 10,000 population (112 cases) in the year 2000, and 38 per 10,000 (147 cases) in 1999. The incidence of syphilis was 34 per 10,000 population (138 cases) in 2000 and 37 per 10,000 (146 cases) in 1999. The incidence of chlamydial infections has been 114 and 77 per 10,000 population in 1999 and 2000 respectively.

Nutritional and Metabolic Diseases

The percentage of newborns weighing less than 2,500 g at birth fluctuated between 6% in 1996 and 9% in 1998, with an annual average of 7% during 1996–1999. While obesity among children and adults is a cause of concern, there are no current data on its prevalence. Pregnant women and preschoolers are routinely provided with vitamin supplements.

Diseases of the Circulatory System

During 1996–1999 diseases of the circulatory system accounted for 41% of deaths due to defined causes, for a death rate of 133 per 100,000 population. For the 1992–1995 period, this cause accounted for 42% of deaths—a death rate of 154 per 100,000 population. Circulatory diseases were responsible for 38% of deaths among males and 43% among females. Ischemic heart disease caused 47% of these deaths, and cerebrovascular disease, 17%. During 1996–1999, 7% of hospital admissions were related to these conditions (66 per 10,000 population), and most of the cases (54%) were among persons 50 years old and above. Of 2,727 hospitalizations of persons over the age of 60 years, 528 (19%) were related to diseases of the circulatory system.

Malignant Neoplasms

During 1996–1999, 110 deaths were due to neoplasms, for a mortality rate of 74 per 100,000 population, similar to that seen in 1992–1995 (76 per 100,000): 23% of these were of trachea, bronchi, and lungs; 15% were of the prostate; and 11% of the female breast. The corresponding figures for the 1992–1995 period were 19%, 12%, and 15%, respectively. Neoplasms accounted for only 1.6% of hospitalizations during 1996–1999.

From late 1991, the Pathology Laboratory of Cayman Islands Hospital started diagnosing cancer specimens, and it is the only laboratory that maintains a comprehensive database of all cancers identified in the territory. A total of 606 neoplasms were diagnosed during 1992–2000, of which 283 were female and 323 were male. Neoplasms of the skin accounted for 42% of the cases. Between 1992 and 2000, the annual incidence rate of neoplasms was 194 per 100,000, and the average annual incidence rate for skin cancer was 81 per 100,000 population. Among both males and females, malignant neoplasm of the skin was the most common, 50% and 35% respectively. Among malignant neoplasms diagnosed, 48% were among persons ages 60 years old and older and 28% were in persons between 40 and 50 years of age.

Accidents and Violence

Road traffic accidents declined to 124 per 10,000 population in 1999, compared to 330 per 10,000 population in 1995. The number of fatal accidents fluctuated from 8 in 1995, 10 in 1996, 2 in 1998, and 8 in 1999. The 1998 introduction of seat belt legislation, public education efforts of the health services and the Police Department, and enhanced enforcement measures are responsible for this reduction.

There has been an increase in the incidence of assaults, from 4.2 per 1,000 population in 1995 to 7.2 in 1999. During 1996–1999, 11% of deaths among Cayman Islands residents were due to external causes, compared to 8% in 1992–1995. Of deaths from external causes, 29% were due to motor vehicle accidents and 27% were due to accidental drowning and submersion. Of the total 75 deaths among visitors during 1996–1999, 45% were due to accidental drowning and submersion and 26% were due to motor vehicle accidents. During the same period, 8% of hospitalizations were due to external causes: one-third were among persons under 19 years of age, and one-half among persons between 20 and 59 years of age, similar to the 1995 figures.

Mental Disorders

About 2.3% of total hospitalizations during 1996–1999 were for the management of mental and behavioral disorders. Of the 325 admissions in this category, mental and behavioral disorders due to alcohol and other substance abuse represented 26% of the admissions. Other conditions were mood disorders (27%), neurotic and stress related disorders (20%), and schizophrenia (17%).

During 2000, about 135 patients were admitted for various mental and behavioral disorders, 37% of whom were admitted for detoxification. Other major causes for admission were depression, 22%; psychosis, 19%; and bipolar disorder, 12%. In 2000, 13 patients were sent abroad for psychiatric care.

Oral Health

Oral health was measured using indices for decayed, missing, or filled teeth (DMFT). The DMFT index for 5- and 6-year-olds increased slightly, from 2 in 1995 to 2.11 in 1998.

Emerging and Re-emerging Diseases

Emerging and re-emerging diseases are not a problem in the Cayman Islands. During 1996–2000, however, there were three cases of meningococcal meningitis, 1 in 1999 and 2 in 2000.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

In 1999, "Vision 2008—Cayman Islands National Strategic Plan, 1999–2008" was developed to cover the 1999–2008 period. The 30-member planning team that began working on the plan in June 1998 was drafted from the community. "Vision 2008" encompasses 16 strategies that address various national issues, one of them being health. In terms of health, the plan supports and ensures the implementation of a comprehensive health care approach that emphasizes prevention, mental health, and wellness. Specifically, "Vision 2008" supports health needs assessments, programs for reducing the incidence of cancer and cardiovascular diseases, comprehensive mental health services, collaboration between the private and public health care system, and wellness

promotion. "Vision 2008" complements the earlier "Cayman Islands National Strategic Plan for Health, 1997–2001" that was established in 1995 and updated in 1998 and 1999. Major achievements of that strategic plan for health were: the construction of a modern, 124-bed hospital in Grand Cayman; the development of new health centers in the four health districts; enactment of health insurance legislation; and development of quality assurance programs. The revised mission statement for the Cayman Islands' national health policy endorses the reliance on comprehensive health care as a way to ensure the wellness of the people through a dynamic community-based health system.

The National Youth Policy approved in September 2000 promotes healthy lifestyles for youth.

Health Sector Reform Strategies and Programs

After the November 2000 elections, ministerial portfolios were reallocated, and the Department of Health Services now falls under the Ministry of Health and Information Technology. In 1997, health insurance coverage for employees and their dependents became mandatory.

The Health System

Institutional Organization

The Department of Health Services was responsible for the provision of all government health care, including public health services. The department operates two hospitals, the 124-bed Cayman Islands Hospital in Grand Cayman and the 18-bed Faith Hospital in Cayman Brac, as well as a public health unit, four district health centers, a general practice clinic at Cayman Islands Hospital, a dental clinic (including school dental services), the Lions Eye Clinic, and a clinic in Little Cayman. The Government operated hospitals are the only inpatient facilities. In addition, an 18-bed private hospital opened in 2000; various private outpatient clinics also provide health care locally. Because it is neither cost-effective nor efficient to provide tertiary care in the Cayman Islands, the Government has entered into a formal contractual arrangement with the United States of America to provide such services.

The Department of Health Services is under the direction of the Director of Health Services, who is assisted by the Deputy Director of Health Services, the Chief Medical Officer, the Medical Officer of Health, Chief Nursing Officer, Senior Dental Officer, Chief Financial Officer, Chief Administrative Officer, and Manager of Human Resources. Primary health care is provided through the district health centers. With the commissioning in 1999 of Cayman Islands Hospital in Grand Cayman, emergency care, specialist services, and inpatient care are provided through the hospital; general practice services are transferred to the community health services.

Substance abuse services were given departmental status in 2000. The Caribbean Haven Residential Center for inpatient substance abuse clients opened that same year; it has capacity for 15 residential and 8 day-care clients.

An Emergency Medical Relief Plan is in place in the event of a hurricane or other natural disaster. The National Health Coordinator ensures that the plan is updated on a yearly basis and that essential supplies are available and staff allocated. An Intersectional Committee oversees the Emergency Relief Plan, which forms part of the National Hurricane Plan.

Developments in Health Legislation

The Health Insurance Law was enacted in June 1997, providing health insurance for all employees and their dependents organized through their employer. Draft legislation also has been developed to establish various councils to regulate the practice of all health care workers in the territory. Medical, dental, nursing, pharmacy, and allied health professionals councils have been established to replace the outdated Health Practitioners Law of 1974.

The 1997 National Drug Council Law provides for the establishment of a National Drug Council, whose functions involve formulating policies and developing programs intended to prevent or reduce drug abuse. The Council promotes the establishment of a system to coordinate the treatment and rehabilitation of drug abusers and to educate the public.

Institutional Direction and Regulation

The Ministry of Health and Information Technology has the overall responsibility for ensuring quality of care in the Cayman Islands. The Department of Health Services is responsible for the management of the public sector health care institutions. The Health Practitioners' Board, a statutory body, is responsible for licensing all health care practitioners.

Degree of Population Segmentation

Cayman Islands Hospital is located in the capital, George Town. The health centers, located in various districts, provide all primary care services. Full time nurses are present at all health centers, although the frequency of physicians' visits varies depending on population size. Anyone can access the services of any health care facility on the Islands.

Decentralization of Health Services

Given the small size of the population and area of the Cayman Islands, the management of health services is centralized. Senior managers have decision making authority as set by general policies and guidelines, however.

Private Participation in the Health System

An 18-bed private hospital was commissioned in the year 2000, and there also are 19 private outpatient health care facili-

ties. There were 41 doctors in full time private practice who provided family health or specialized treatment on a regular basis. Private physicians use public hospital services.

Health Insurance

The government-provided basic health insurance covers emergency care, hospitalization, and some outpatient services. Many employees opt for additional coverage provided by private companies, however. The Government regulates all insurance carriers. In 2000, the Government contracted with a health insurance company to provide health insurance to all its employees and their dependents.

Organization of Regulatory Actions

Health Care Delivery

Although there is no legislation specifically designed to monitor, standardize, and regulate health facilities, the construction of any health facility requires approval from the territory's planning authority. Approval includes the review of construction plans by the Environmental Health Department and appropriate health professionals to ensure that health care standards are met.

Certification and Professional Health Practice

Only health professionals licensed by the Health Practitioners' Board are eligible to practice in the Cayman Islands. In order to cope with the increase in the number of health professionals, legislation has been drafted to establish professional councils that will regulate their respective practices.

Basic Health Markets

The Cayman Islands has no local manufacture of drugs or other medical supplies. The 1979 Pharmacy Law and its regulations as revised in 1999 sets controls for importing and dispensing drugs. Pharmaceuticals and medical equipment that have been approved in the United States or in the United Kingdom are automatically approved for use in the Cayman Islands. Any other drugs or medical equipment must be approved by the Health Practitioners' Board.

Environmental Quality

The Department of Environmental Health, which falls under the Ministry of Planning, Communications, and Works, is responsible for monitoring and ensuring environmental quality. Its mission is to preserve human life by minimizing and controlling environmental hazards. The department offers various programs, some of which involve the provision of services, while others are regulatory in nature. The department manages solid and hazardous wastes and monitors water quality throughout the territory. In addition, in an effort to continue educating the public on various topics of environmental health, the department distributes pamphlets and other information as part of awareness campaigns. It also participates in school programs, national fairs, and other events, and provides guided tours of the landfill and public sanitation laboratory. Campaigns are designed to foster waste reduction/recycling, food safety, cistern care, rodent control, anti-littering, and hurricane preparedness.

The department's laboratory continues to improve its quality, safety, and efficiency. For example, training in rapid methods in microbiology has resulted in the further development of the food-testing program. Moreover, the laboratory routinely monitors accommodations and food premises, and it also collects and analyzes recreational water samples from swimming pools and public beaches.

The laboratory's analytical chemistry section continues to monitor groundwater and surface water at the George Town and Cayman Brac Landfills, as well as to conduct a sampling program for used oil and incinerator ash; the samples are sent to United States laboratories for analysis.

Food Quality

As part of its food surveillance program, the Department of Environmental Health monitors imported containers containing chilled and frozen foods, recalls food products as needed, inspects food establishments, trains food handlers, monitors supermarkets, conducts post-mortem meat inspections, and responds to food-related complaints. The department is currently drafting food legislation as a way to attain more effective management of this critical program. Animal regulations control the importation of animals and meats in order to prevent the introduction of diseases such as bovine spongiform encephalitis and foot-and-mouth disease.

Organization of Public Health Services

Health Promotion

Vision 2008 fosters the development of a comprehensive health education curriculum and promotion of national wellness program. The National Strategic Plan for Health encompasses the development of programs to encourage community members to take responsibility for maintaining individual and community health. Health promotion activities conducted through intersectoral cooperation target disease prevention, fostering of healthy lifestyles, teaching of health skills, and protecting the environment.

Health promotion highlights during 1996–2000 included the organization of a smoking cessation course for women in collaboration with the Cayman Islands Cancer Society; the undertaking of a project with a local grocery store designed to raise awareness of heart disease risk factors and prevention of heart disease;

the conduct of a health awareness course for a Boy Scout group that provided valuable health information and encouraged health promotion among their peers; the development of a community health newsletter in 2000 that is widely distributed in the community; the provision of ongoing information about local health issues to the public, especially regarding available community health services; and the dissemination of breast cancer awareness and the availability of screening activities in association with the Lions Club of Tropical Gardens. As part of the development of health promotion in the workplace, a wellness assessment survey was carried out in 2000 among health services staff.

Disease Prevention and Control Programs

The Government of the Cayman Islands offers free immunization to all resident children. Given the high immunization coverage of infants with polio and DPT vaccines—between 93% and 95% in 1996–2000—no special campaigns were conducted. Because of the Cayman Islands' small population and few surveillance units, the acute flaccid paralysis surveillance is 100% complete.

It is estimated that 90% of infants are protected from neonatal tetanus at birth. After the occurrence of two new cases of whooping cough in 1997 and seven in 1999, the 18-month DTP booster was introduced in 1999. The territory's few tuberculosis cases have led to the admission of all pulmonary tuberculosis cases for 2–3 weeks of treatment to ensure compliance; the cases are discharged upon becoming smear negative.

In response to a rubella outbreak in 1997, a campaign to promote vaccination with MMR was carried out.

In 1999, the laboratory confirmation of any suspected mumps cases was initiated as part of the surveillance strategy of the disease.

There have been some changes in immunization policies and activities during 1996–2000: Hepatitis B vaccine, for example, has been part of the territory's childhood immunization schedule since November 1997. In order to protect schoolchildren who had not been immunized, a catch-up program was organized for the school population. Hepatitis B vaccination coverage of infants was 85% in 1999 and 74% in 2000. In 2000, DTP was replaced by DTaP and OPV by IPV, and thiomersal-free hepatitis B vaccine was procured. For convenience and to minimize the number of injections, the Cayman Islands started using a pentavalent vaccine consisting of DTaP, IPV, and Hib in the year 2000.

In recognition of its efforts in immunization, the Cayman Islands has received the Caribbean Region Surveillance Award from the PAHO Expanded Program on Immunization, winning first place in 1999 and third place in 1998 and 2000.

The Department of Environmental Health works closely with the Public Health Department to conduct field investigations of foodborne illnesses and other similar suspected or confirmed disease outbreaks. Both departments also work together to offer health awareness training to barbers, beauty parlor operators, cosmetologists, and to those doing tattooing and body piercing; training focuses on specific diseases such as skin infections and bloodborne pathogens, general health, and sanitation.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Training in the use of the Caribbean Public Health Surveillance Manual was conducted in 2000. An active surveillance system is in place for collecting notifiable disease data: the nurse epidemiologist visits the hospital twice or three times per week to identify any communicable disease occurrences.

An epidemiological team comprised of representatives from the Environmental Health, Laboratory, and Public Health departments was established in 2000 to regularly review the epidemiological situation. Representatives from the Veterinary Department, the Mosquito Research and Control Unit, and other physicians are consulted periodically as the need arises. The Cayman Islands Hospital Laboratory functions as the territory's public health laboratory. To test for dengue, measles, and serogrouping of meningococcal meningitis, however, samples are sent to the Caribbean Epidemiology Center (CAREC) or to a reference laboratory in the United States.

Potable Water, Excreta Disposal, and Sewerage Services

The Water Authority of the Cayman Islands, a statutory body of the Government, is charged with the provision and implementation of water and sewage infrastructure for the country and with the protection of the territory's water resources. In Grand Cayman, the authority supplies water to the district of George Town and eastward into the village of East End. A private company holds a government franchise to provide piped water supplies to the West Bay Beach area and the district of West Bay.

The Water Authority operates a small piped water supply system in Cayman Brac to serve a few customers. Potable water is provided via water tankers to customers not on the piped system. A private operation has been granted a government franchise to provide piped water to a very limited area of Little Cayman island. The population with piped water supply has increased to 90% in 2000 from 70% in 1995. In addition, rainwater collected from roofs in cisterns and groundwater is usually used for domestic purposes. Water quality is monitored internally by the companies and externally by the Department of Environmental Health.

The Water Authority operates a sewerage system that provides services to the tourist hotel areas of Grand Cayman. All other sewage treatment and disposal is through septic tanks with deep-well injection or soak-away fields. Septic tank collection services are available through private companies and the waste is treated at the Authority's wastewater treatment plant. Adequate excreta disposal facilities cover 99.5% of the population. Because the Water Authority's current sewage treatment method in Cayman cannot be expanded to accommodate the demands for wastewater treatment for all of Grand Cayman island over the next

10–15 years, proposals are under way to find ways to meet the Cayman Islands' needs in the long term.

Solid Waste Services

Residential solid waste is collected twice a week in Grand Cayman and three times a week in Cayman Brac and Little Cayman. Commercial collection is carried out at least on a weekly basis, with restaurants having daily collections. All three islands have sanitary landfills, and government-managed landfills are the only legal disposal sites in the territory. In addition, two bulk waste collection campaigns were organized in 2000, and public drop-off is provided at the George Town landfill 24 hours a day.

In 2000, approximately 57,500 tons of waste were delivered for disposal in the Grand Cayman landfill; this site is expected to reach capacity by early 2003; alternative waste management systems for the island are under study.

The recycling project that the Department of Environmental Health began in 1995 continues to collect, process, and market recyclable materials covered under the project.

Hospital infectious waste is collected and incinerated; small amounts also are collected from medical offices.

Pollution Prevention and Control

This is an area that is in much need of development. For the most part, air pollution implications are only considered in large-scale project proposals and as part of the Department of Environmental Health's review of construction plans.

There is a need for appropriate legislation to deal with this in a more effective manner. In addition, technical staff, equipment, and software is needed to further develop industrial hygiene components, such as air and noise pollution monitoring and hazardous material emergency response. Currently, these activities are carried out on a limited basis, most often in response to complaints.

Food Safety

The Environmental Health Laboratory is now equipped to conduct various food analyses and monitoring. A program to monitor ready-to-eat foods is in place at selected food establishments.

Food Aid Programs

Based on a financial evaluation, the Social Services Department provides financial assistance for food to those who are economically deprived.

Organization of Individual Health Care Services

Ambulatory, Emergency, and Inpatient Services

To minimize response time, ambulance services are strategically located—two in George Town, one in West Bay, and one in North Side.

Services offered at district health centers include daily treatment by nurses, and clinic treatment by doctors on specified days in general practice, psychiatry, nutrition counseling, child welfare, health education, and drug counseling. The West Bay Health Center has a daily general practice clinic, while others have clinics on specified days. A public health nurse provides public health services on Cayman Brac and Little Cayman. All services offered on Grand Cayman are available on the other smaller islands, although on a smaller scale. There are 32 outpatient health care facilities, 13 public and 19 private.

Auxiliary Diagnostic Services and Blood Banks

All public and private hospitals have radiological and laboratory facilities. Diagnostic services greatly improved during 1995–2000 with the addition of two CT scans, one in the private and one in the public sector, and one MRI unit in the private health sector. There are four mammography units, three in the private sector and one in the public sector. Blood banking facilities are at the government hospitals and all blood donations are screened.

Specialized Services

Mental health services are offered through outpatient clinic services at the hospitals and district health center, as well as through visits to homes and prison. Inpatient psychiatric care is provided in the medical wards of Cayman Islands Hospital and Faith Hospital. In 2000, 135 patients were admitted to Cayman Islands Hospital for inpatient psychiatric acute care, representing a 24% increase over the 109 admissions in 1999. Patients admitted for substance abuse detoxification were treated at Cayman Islands Hospital or transferred to the New Caribbean Haven Residential Treatment Center. Plans are under way to build a mental health facility for both inpatient and outpatient care.

The Dialysis Unit at Cayman Islands Hospital has eight patient stations and one special-care room with two additional stations for infectious patients. A nephrologist who joined the health services in late November 2000 oversees the medical aspects of the dialysis unit. In 2000, 3,025 treatments were offered, representing an increase of 81% from the 1,671 treatments offered in 1999. The number of resident patients undergoing dialysis more than doubled, going from 12 in 1999 to 29 in 2000. The underlying cause in most cases was diabetes. The program is being reviewed.

Eye care is provided by two full time ophthalmologists in the public sector and four in private practice. The Lions Eye Clinic in Cayman Islands Hospital is run by government staff and assesses and treats childhood visual development diseases, as well as glaucoma and diabetic eye disease. Laser treatment was introduced in 1999.

Dental care is provided by five government dental officers and nine private dentists. In addition, a visiting periodontist and two visiting orthodontists are available. Total dental visits to the

government dental service in 2000 were 26,337 (including school visits), for an increase of 10% over the previous year (23,980). The dental laboratory was upgraded with new crown and bridge equipment.

A decompression chamber for diving emergencies is located at Cayman Islands Hospital in Grand Cayman; it is operated by a volunteer group.

Prenatal and postnatal care and family planning services are offered free to all Caymanians. The Department of Health Services has continued to offer regular screening and follow-up Pap smears for all women.

A 1997–1998 study of the incidence of cervical cancer in the Cayman Islands revealed that the participation in cervical screening programs was low. To try and improve participation, a project in 1998 offered free screening to all women in both the public and private sectors. This considerably increased the participation for that year to 5,200 smears. A target of 5,200 cervical smears was again set for 1999 for the public and private sectors: in 1999, 4,739 women had had cervical smears, representing 91% of the target. Emergency contraception was made available at all health centers during the year 2000.

Health Supplies

All drugs, reagents, syringes, needles, and equipment are imported. Vaccines are procured through PAHO's Revolving Fund. The Cayman Islands Health Services Formulary includes all essential drugs.

Human Resources

The number of health professionals dramatically increased during 1996–2000. In 1995 there were 7.9 health professionals per 1,000 population, increasing to 12 in 1998, 14.6 in 1999, and 16 in 2000. There were 7.0 nurses per 1,000 population in 2000, compared with 4.3 in 1995. In addition to population growth, this sudden increase was due to the commissioning of the 124-bed new Cayman Islands Hospital in 1998/1999 and the 18-bed private hospital in 2000.

In 1995, there were 1.4 physicians per 1,000 population, rising to 2.0 in 2000. According to 2000 data, the breakdown of human resources in health per 10,000 population in the Cayman Islands was: 20.1 physicians; 7.2 midwives; 63.4 nurses, excluding midwives; 3.5 pharmacists; 3.4 dentists; and 7.2 community health nurses.

Training is available locally for practical nurses and emergency medical technicians. All other training must be sought overseas. The Government of the Cayman Islands supports the training of locals, but there are not enough candidates seeking training. As a result, 97% of the physicians and 75% of other health care professionals are non-Caymanians. All Caymanian health professionals are employed. All health professionals working in the territory are required to have 10 hours of continuing education per year; continuing education opportunities are offered locally and abroad.

Health Research and Technology

The scope of research is limited due to small population size and budgetary and staffing constraints. Efforts are being made to strengthen this research, however. In 1999, the Government entered into a three-year contract with an institution in the United States to conduct research on gene localization of non-progressive cerebella ataxia. The first phase—a health needs assessment in Cayman Brac—was conducted in 2000, and a needs assessment project in Grand Cayman is just beginning. As a follow-up to the 1995 oral health survey, oral health screening was conducted among 5- and 6-year-olds in 1998 and 12-year-olds in 1999.

Scientific documentation is readily accessed through the Internet and international organizations.

Health Sector Expenditure and Financing

Health sector expenditures rose from 10% of total Government expenditure in 1994 to 15% in 2000. The territory's small population and size does not make it feasible to break down expenditures by regions or social groups.

During 1990–2000, the Government's budget for health care services steadily increased—from US$ 12.7 million in 1990, to US$ 20.9 million in 1996, US$ 36 million in 1998, and US$ 46.8 million in 2000. Recurrent expenditures for health care out of total Government expenditures ranged between 10%–11% between 1986 and 1995, but the figure spiked to 14% in 1997 and 16% in 1999. These variations were attributable to the commissioning of the new health center and the Cayman Islands Hospital during these years. Per capita government health expenditure in 2000 was US$ 1,143, compared to US$ 552 in 1995. Data on private sector financing and expenditures on health are not available.

External Technical Cooperation and Financing

PAHO, CAREC, and CFNI provide training support through fellowships and workshops. This funding amounts to US$ 25,000 per annum. There is no external funding for health care delivery in the Cayman Islands.

FIGURE 1. Population structure, by age and sex, Cayman Islands, 1998.

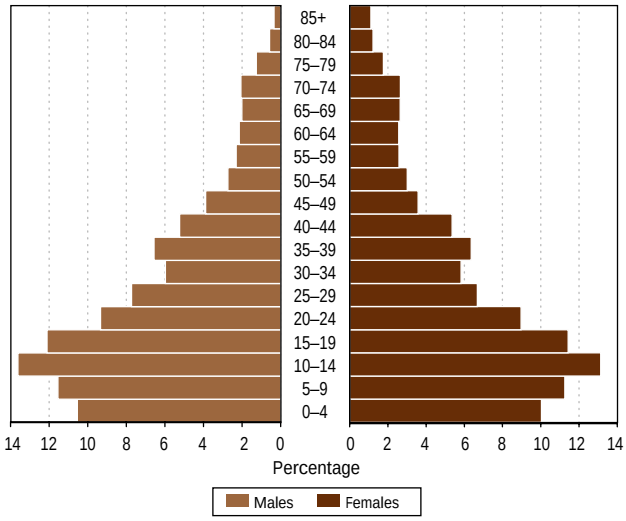


FIGURE 2. Estimated mortality, by broad groups of causes and sex, Cayman Islands, 1998.

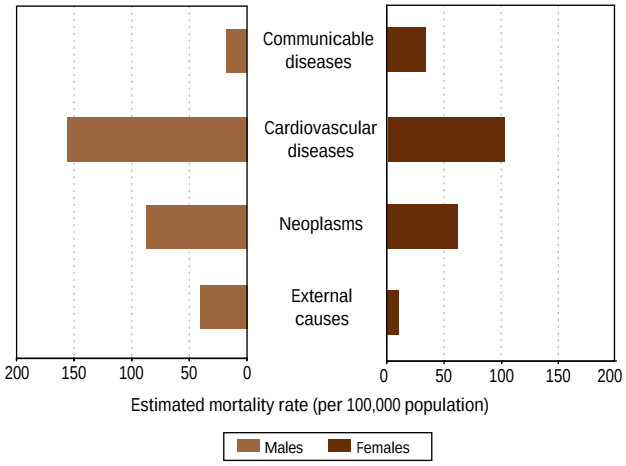
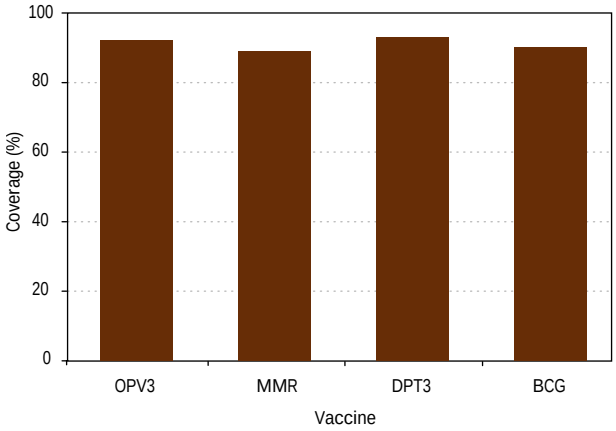


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Cayman Islands, 2000.



CHILE

OVERVIEW

Continental Chile has a surface area of 756,626 km^2. The most recent census (1992) showed the population to be 13,348,401, with just 14.41% living in rural areas. The estimated population in June 2001 was 15.4 million. The most densely populated areas are the Santiago metropolitan region (40%), followed by the Bío-Bío (12%) and Valparaíso (11%) regions. The country has eight indigenous groups that make up 10% of the total population: Aymará, Atacameño, Quichua, Mapuche, Rapa Nui, Colla, Kaueskar, and Yámana.

Different types of households coexist in the country. Two-parent families accounted for 57% of all households in 1996 and 55% in 1998. Extended families increased from 27% to 28.6% and single-parent families from 6.4% to 8.4% of households over the same period. In 1998, one-person households accounted for 7.6%.

Chile is a unitary State and its government is democratic. The country is divided into 13 political-administrative regions, which are, from north to south: Tarapacá (I), Antofagasta (II), Atacama (III), Coquimbo (IV), Valparaíso (V), the Santiago metropolitan region (RM), Libertador General Bernardo O'Higgins (VI), Maule (VII), Bío-Bío (VIII), Araucanía (IX), Lagos (X), Aisén del General Carlos Ibáñez del Campo (XI), and Magallanes (XII). The regions, in turn, are subdivided into 51 provinces and 341 "communes" (*comunas*), with 178 cities (over 5,000 inhabitants), 215 towns (2,000 to 5,000 inhabitants), and 768 villages (under 2,000 inhabitants).

The regional governments are headed by governors, who represent the country's president in the region. The provinces have provincial governors, who are subordinate to the regional governor. The "communes" are administered by the chief municipality, which is governed by the mayor and a municipal council (chaired by the mayor) as the decision-making and supervisory body. Mayors and council members are elected by popular vote every four years. The Ministry of Health is represented in the 13 regions by a regional secretary, who is a member of the regional governor's cabinet.

In 1989, the country held its first democratic elections after 17 years of military government. The current government's equity policy has the goals of creating new jobs, contributing to human dignity, reforming the health sector, reducing educational inequities, making progress in judicial reform, supporting small and medium-sized businesses, improving public transportation, building low-cost housing for the very poor, and reducing pollution.

Health care is one of the Government's priorities and reforming the health sector is one of seven major changes proposed for the period 2000–2006. The purpose of the reform is to guarantee the right to health of all Chileans, without discrimination; improve their levels of health; and reduce inequities owing to socioeconomic status and geographic location. The most relevant changes include solidarity financing and a law that protects patients' rights. Health policies are based on the principles of citizens' rights, equity, solidarity, quality, and participation.

The country experienced sustained economic growth until 1998, with GDP growing by 7.7% per year. Inflation was 4.7% in 1998 and unemployment rates were moderate. Owing to the crisis on international markets, growth turned negative in 1999 (close to –1.1%) (Figure 1) and unemployment rose significantly.

Aggregate social and economic indicators for the country show clear improvements, expressed in a reduction in poverty levels from 39.3% in 1990 to 20.6% in 2000 and growth in per capita GDP of 46.9% between 1991 and 1999, when it reached US$ 4,492. However, inequity between social groups and regions continues to exist. According to a socioeconomic survey (CASEN 2000), at the end of 2000, 10% of the wealthiest households captured 40.3% of income, while the poorest 10% obtained just 1.7%. The differences among "communes" are even more extreme. In 1998, just 6% of the population lived in "communes" with an average household income of more than US$ 800, while the figure for the "commune" with the highest average income was US$ 2,500.

In 1998, the income of the richest 20% of Chileans was 15.5 times higher than the income of the poorest 20%. When the financial subsidies paid by the Government to the poorest households are factored in, the figure falls to 13.9 times. In the same year, 70% of the country's households had an income below the national average.

With regard to basic physical and environmental living conditions, the CASEN 2000 survey showed very marked differences among "communes" in housing quality, potable water supply, and sanitary sewer systems. In some "communes," virtually every household met or exceeded the standard, but in 20 "communes," fewer than 50% of families had good-quality housing.

In 1999, the literacy rate among people aged 15 and over was 95.5% (95.3% for men and 95.7% for women). On average, Chileans attended school for 9.9 years. During the 1990s, there was a slow but steady increase in the coverage of preschool education. Basic education (eight years) is the only mandatory level and access to it is virtually universal (98.5% in 1999).

The 1999 National Employment Survey indicated that the economically active population grew from 5,500,000 in 1996 to 5,738,470 in 1998. Female participation in the workforce rose from 33.7% in 1996 to 36.1% in 1998. Whereas most women worked in "communal," social, or personal services, men were evenly distributed among the different branches of the economy. The national unemployment rate, which held steady at 6%–7% from 1990 to 1998, jumped to close to 12% between 1999 and 2000. Employment has not recovered as quickly as the economy. The main sources of employment in 1998 were "communal" services, commerce, industry, agriculture, hunting and fishing, transportation and communications, construction, and financial and social services. Salaried workers accounted for 65.5% of the workforce, the self-employed for 24%, service personnel for 5%, employers for 3%, and unpaid family laborers for 2.4%.

The demographic profile is in transition. Birth and mortality rates have declined in recent decades. The fertility rate dropped rapidly after relevant changes in the mortality rate took place during the second half of the 20th century. There is still ample room for the rate to fall further, which would lead to a declining population growth rate. This translates into slow growth and an aging population (Figure 2). During 1995–2000, the highest fertility rates were in the 20–24 years age group. In the last 41 years (1960–2001), the population growth rate fell from 2.4% to 1.2% and the population aged 65 and older grew from 4.3% to 7%. In 1998, children under age 15 accounted for 28.8% of the population, the 15–64 years age group for 64.2%, and persons aged 65 and older for 7%. The dependency ratio was 35.8% in 1998. Net migration in Chile has traditionally been negative and is not considered to be a decisive factor in population dynamics.

Life expectancy at birth in the period 1995–2000 was an estimated 75.2 years. The infant mortality rate was 10.1 per 1,000 live births in 1999. There are sharp differences in infant mortality among "communes," and in 1998, the rate ranged from 2.6 per 1,000 live births to 42.2 per 1,000.

Mortality and Morbidity

There were 81,984 deaths in 1999, for a rate of 510.7 per 100,000 population. The declared causes, which correspond to the adjusted mortality rates (per 100,000), are diseases of the circulatory system (150.3), malignant neoplasms (124.2), communicable diseases (67.5), and external causes (57.6) (Figure 3).

There is an overall downward trend in mortality rates, and mortality among men is higher in all age groups. Mortality rates fell among children in the 0–4 years age group and remained stable in the group aged 15–34. The difference between sexes widened at the expense of a slight increase in the rates for men. In the group aged 35–44, there was a slight reduction in mortality rates for both sexes, as was true in the groups aged 45–49 years and 50–79 years. In the group aged 80 and older, the difference between the sexes increased slightly, with a higher rate for men.

Mortality rates standardized by age and sex vary widely among "communes" and regions, including the Santiago metropolitan region. After eliminating the extreme values, the rates among "communes" range from 30 to 160 over a standardized average of 100. When the rates and household income obtained in a survey conducted in 1999 by the Ministry of Health are compared, an inverse ratio is found between mortality and average family income in the "communes."

As for morbidity, Table 1 presents the national situation for notifiable diseases over the period 1996–1999.

The data collected by the CASEN 2000 survey, which includes Chileans' perceptions of their quality of life, cover the main causes of morbidity, such as chronic and acute diseases, disability, and accidents. Among the first, arterial hypertension is the most prevalent chronic disease in Chile, followed by defects of refraction and gallstones. Women have higher rates of chronic diseases. The public reports an average of 9.5 bouts of acute illness per person per year (11 for women and 8 for men). Twenty percent of Chileans say they suffer from some degree of disability, with eye problems being the most frequent. Lastly, 1 of every 10 people had a serious accident in the previous year (10.5% of men and 9.5% of women).

The most recent information on hospital discharges is for 1997 and includes both public and private institutions. In that year, there were 1,092,995 discharges. The main reasons for hospitalization were complications of pregnancy, childbirth, and the puerperium (27.6%); diseases of the digestive system (11.3%); injuries and poisoning (10%); diseases of the respiratory system (9.4%); diseases of the genitourinary tract (6.8%); circulatory diseases (5.2%); certain conditions originating in the perinatal period (3.5%); and other illnesses (3.5%).

Health Problems

By Population Group

Children

Deaths among infants under 1 year of age accounted for 3.8% of total deaths in 1999. In the same year, infant mortality was 10.1

TABLE 1. Notifiable diseases, with number of cases and cumulative incidence rate per 100,000 population, Chile, 1996–1999.

	1996		1997		1998		1999	
Disease	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Diphtheria	2	0.01	0	0.00	0	0.00	0	0.00
Invasive *Haemophilus influenzae* type b disease[a]	156	10.68	65	4.46	26	1.79	35	2.42
Mumps	2,374	16.46	2,312	15.81	2,224	15.01	2,253	15.00
Acute flaccid paralysis[b]	76	1.80	75	1.77	65	1.52	89	2.07
Rubella	1,095	7.59	3,940	26.95	4,571	30.84	1,608	10.71
Measles	0	0.00	58	0.40	6	0.04	31	0.21
Neonatal tetanus	1	0.01	0	0.00	0	0.00	1	0.01
Tetanus (all others)	17	0.12	8	0.05	15	0.10	15	0.10
Pertussis	1,146	7.95	1,456	9.96	2,482	16.75	3,064	20.40
Cholera	4	0.03	1	0.01	24	0.16	0	0.00
Yellow fever	0	0.00	0	0.00	0	0.00	0	0.00
Malaria (imported cases)	6	0.04	10	0.07	7	0.05	7	0.05
Hantavirus pulmonary syndrome	3	0.02	30	0.21	35	0.24	26	0.17
Typhoid and paratyphoid fever	1,395	9.67	1,249	8.54	1,152	7.77	801	5.33
Hepatitis B	133	0.92	146	1.00	162	1.09	177	1.18
Hepatitis (all others)	8,180	56.73	10,525	71.98	5,796	39.10	4,666	31.07
Meningococcal infections	532	3.69	560	3.83	521	3.52	552	3.68
Brucellosis	8	0.06	13	0.09	16	0.11	21	0.14
Anthrax	19	0.13	13	0.09	16	0.11	17	0.11
Chagas' disease	363	2.52	424	2.90	556	3.75	560	3.73
Echinococcosis	343	2.38	442	3.02	314	2.12	292	1.94
Psittacosis	0	0.00	1	0.01	3	0.02	1	0.01
Rabies (human)	1	0.01	0	0.00	0	0.00	0	0.00
Trichinosis	43	0.30	64	0.44	44	0.30	85	0.57

[a]Rate in the population under 5 years of age.
[b]Rate in the population under 15 years of age.
Source: Ministry of Health.

per 1,000 live births and there was a drop in early neonatal, neonatal, and postneonatal mortality. Better perinatal and postnatal care and a new program for the use of surfactants in premature babies with very low birthweight in all maternity wards in the public system contributed to these results. The main causes of death were perinatal diseases, congenital anomalies, respiratory diseases, and injuries and poisoning. These four causes accounted for 86.5% of deaths in this age group. Average infant mortality rates mask significant differences among regions and "communes."

There were 461 deaths among children aged 1–4 in 1999, or 0.5% of the total, for a rate of 0.4 per 1,000 population. The leading causes of death were external causes (33.4%), followed by congenital anomalies, deformations, and chromosomal abnormalities (16%), and respiratory diseases (13.9%).

Schoolchildren

The 5–9 years age group accounts for 0.3% of deaths, making it the group with the lowest age-specific mortality rate (0.20 per 1,000 population). The deaths reported in 1999 were mainly due to external causes (39%), tumors (18%), congenital anomalies (10%), and diseases of the nervous system (10%).

The information provided by the National Children's Service and the National Statistics Institute and complaints made to the police indicate that between 50% and 75% of parents use physical punishment. Boys are the main victims of physical abuse and girls of sexual abuse. Close to 80% of abused boys and girls are under the age of 12 and almost one-third of them are under 5 years of age. The factors associated with abuse include alcoholism and psychiatric problems among abusers, the number of children in the family, unemployment and poverty, and a history of family violence.

According to UNICEF, in 1997, 75.9% of children completed basic education. According to CASEN 1996, 1.9% of children between the ages of 6 and 14 (47,000) worked and 2.4% neither worked nor attended school. Casual employment predominates in this age group and more boys than girls work. Most also attend school at the same time (63%). There is more child labor in rural and poor areas. According to the Sixth National Farming and Forest Census taken in 1997, 1% of rural workers are under the age of 15 and just 22.2% of them are paid.

Adolescents

The mortality rate among adolescents between the ages of 10 and 19 is 0.37 per 1,000 population. Injuries and tumors are the leading causes, for 18% of the total. However, when specific causes were examined, the first nine were found to be external, with suicide by hanging in fourth place, for 56 deaths, 41 of which involved young men. The male-female mortality ratio is 2.2:1.

In 1998, the suicide rate was 6.9 per 100,000 in the general population and 2.7 in the adolescent population (10–19 years), with the figures rising in 1999 to 7.2 and 3.2, respectively.

Fertility in girls and young women under the age of 20 increased as a percentage of total fertility to 16.2% in 1998. In other words, one of every six babies was born to an adolescent mother, for 16.6% of all live births in 1998. In the same year, 48% of teenage mothers lived below the poverty line. Thirty-six percent had not completed basic education and 56% of pregnancies were wanted. Among sexually active teenagers (15–17 years), 32.2% stated that they had not used any method of contraception in their most recent sexual encounter.

A study on drug consumption among urban students in 1999 performed by the National Drug Control Council indicated that 65% of students had consumed alcohol, 53% had used tobacco, and 6% had taken tranquilizers. As for illegal drugs, 23 of every 100 students have used them on at least one occasion: 21.7% marijuana, 4.6% coca paste, and 4.5% cocaine. The lowest average age for initiation of use was for tobacco (12.9 years), followed by solvents (13 years), coca paste (13.5 years), marijuana (14.4 years), and cocaine (14.8 years).

According to UNICEF, 4.2% of teenagers between the ages of 12 and 14 (32,000) and 9.7% of teens between 15 and 17 (78,000) worked in 1998.

Adults

People between the ages of 20 and 60 account for 53% of the country's total population. The CASEN 2000 survey includes information on the lifestyles of Chileans, based on a national sample of 4,069,395 people 15 years of age and older (44.4% were men and 55.6% women). The results indicate that 40% smoke (44% of men and 36% of women), 75% are not physically active (64% of men and 84% of women), and 34% are overweight (27% of men and 39% of women).

Adults between the ages of 20 and 44 have a mortality rate of 1.3 per 1,000 population. The leading causes of death are external causes, tumors, and diseases of the circulatory system, in that order. Seven of the first 10 specific causes of death are external, with traffic accidents involving motor vehicles occupying first place.

Mortality in the 45–59 years age group is 5.2 per 1,000 population. In 1998, the main causes of death were tumors (30% of the total in this group), followed by diseases of the circulatory system (21%), and diseases of the digestive system (15%).

In 1997, experts from the Forensic Medicine Institute handled 1,906 cases of sexual assault in the Santiago metropolitan region. However, the real magnitude of sexual violence is unknown, because an estimated 75% to 80% of all sexual crimes are not reported. Although a law on rape and other sexual offenses was passed in January 1999, in practice, services are not adequate or sufficient and the social climate does not favor reporting these offenses.

A study on the prevalence of mental illness and risk factors in primary care conducted in 1995 at 23 primary care clinics in the Santiago metropolitan region identified a higher incidence of emotional disorders in women. The WHO *International Study of Psychological Problems in Primary Care (Preliminary Report from the WHO Collaborative Project on "Psychological Problems in General Health Care"*) suggested that, although two of every three people who visited a primary care facility had some kind of psychological problem, only a tiny minority had consulted on that account (5 of every 100).

Most primary care facilities provide contraceptives, such as Copper T 380 intrauterine devices, combined birth control pills, and condoms. Some services also offer progesterone-only pills, which are generally used by breast-feeding women. Between 1991 and 1998, 19.1% of women and 17% of men used condoms. Sixty-nine percent of women and 64% of men did not use any kind of protection.

In 1998, cancers of the cervix and uterus were the fourth leading cause of death among women, with a mortality rate of 10 per 100,000; breast cancer was the second leading cause, with a rate of 13 per 100,000.

Medical intervention in the treatment of menopause is becoming increasingly frequent, particularly hormone replacement therapy with estrogen and progesterone.

In 1997, there were 1,126 deaths from prostate cancer, for a rate of 15.6 per 100,000 population. In 1998, the rate increased to 16.6 per 100,000. Prostate cancer is the third leading cause of death among men.

The Elderly

Mortality in the 65–79 years age group is 31.51 per 1,000 population. Tumors are the leading cause of death, followed by diseases of the circulatory system and diseases of the respiratory system. In the group over 79 years of age, the mortality rate is 138.62 per 1,000. The leading causes of death are diseases of the circulatory system, diseases of the respiratory system, and tumors, in that order.

Between 5% and 10% of people over 65 and 20% to 30% of people over 85 suffer from some kind of dementia.

According to a study conducted in 2001, 15% of people over the age of 60 are unable to read or write a message, 11% have never attended school, and 61% have between 1 and 6 years of schooling. Functional limitations are higher among low-income women who have not completed school. Sixty-one percent have

no partner, 82% live in their own homes debt-free, and 66% live with two or more people. Between 80% and 90% have considerable difficulty in bathing, 25% suffer from clinical depression, and 9% suffer from cognitive deterioration (10% of women and 7% of men).

Family Health

In 1993, the care provided by clinics was reoriented and they were gradually transformed into family health centers. This innovation has meant a change in the architectural model and use of physical space in the establishments. In 1999, there were 35 centers that attended to more than half a million people.

Worker's Health

In 1998, work-related accidents led to a loss of 3.3 million working days. Every day, 822 workers have accidents of this kind. Close to 2 million workers have no access to any kind of occupational health protection and a large percentage have limited protection (temporary workers, unskilled laborers). The accident rate dropped from 10% in 1998 to 9% in 1999. In 1996, the highest percentage of accidents occurred in the 25–34 years age group (8%). Seventy-six percent of the accidents reported by mutual insurance plans in 1999 affected men. Fifty-four percent of the accidents suffered by women occurred in service activities, and the largest number of accidents suffered by men was in industry, at 27%.

The aggregate rate of occupational diseases fluctuated significantly over the period 1995–1999, with values ranging from 4 per 1,000 population (9,400 cases) to 2.2 per 1,000 population (5,800 cases). The most commonly diagnosed occupational diseases in 1995 and 1996 were musculoskeletal diseases (26%), diseases of the skin and connective tissue (23%), poisoning (15%), and respiratory diseases (12%).

The Disabled

By 1994, Chile had already passed Law 19284 on the social integration of persons with disabilities. The policy stresses improving the educational, economic, and social status of this group; quantifying the disability by type and degree; intervening to introduce improvements in health care services; improving labor conditions; and adopting specific measures to prevent different types of accidents. The National Disabilities Fund (FONADIS) is in charge of the policy.

According to CASEN 1996, 616,000 Chileans, or 4% of the total population, had some kind of disability in that year. Although this figure is almost double the figure given in the 1992 census (283,888), it should be recalled that the definition of disability changed from total restriction caused by some psychiatric diseases to definitions based on the level of functionality. In 1996, 85% of persons with disabilities were of working age (over 14). Twenty-six percent of them worked, 2% were unemployed, and 72% were out of the labor force, which is significantly higher than the 45% for the general population and confirms that this group is excluded from the workforce.

The National Kindergarten Board performed a national survey in 1999 of 115,000 children, and, according to that survey, 1,500 have special needs for assistance and education: difficulties in verbal communication (48%), motor dysfunction (19%), mental impairment (13%), visual impairment (7%), multiple dysfunctions (6%), hearing impairment (5%), and alterations in relationships and interpersonal communications (4%). In 2000, 52,600 people were enrolled in special schools. Classifying them by type of disability gives the following breakdown: intellectual (29,000), verbal communications (20,500), hearing dysfunction (1,300), motor (922), visual (501), and autism (274). School integration projects are carried out in 1,100 regular schools and benefit 10,700 children and teenagers.

Indigenous Groups

In 1993, life expectancy was 63 years (67 for women and 60.3 for men) for the Aymará, 72.8 (76.1 for women and 69.7 for men) for the Rapa Nui, and 75.6 for Mapuche women and 68.5 for Mapuche men. There is a high concentration of indigenous groups in 39 of the country's "communes" and a significant presence in 26. Standard-of-living indicators are lower in these "communes" than in other parts of the country, and the correlation between poor areas and indigenous areas is high. Infant mortality rates for the Atacameño are up to 40 points higher than the national average, and life expectancy for the Aymará is up to 10 years less.

By Type of Health Problem

Natural Disasters

Chile suffered a number of natural disasters over the period 1996–2000. In 1998, La Niña caused a significant drop in precipitation that affected an extensive zone running about 1,500 km from north to south. From the Valparaíso region southward, water levels in the large reservoirs were low compared with the historical average, which led to serious problems in potable water supplies in rural areas, and an agricultural emergency was declared in 217 "communes." Traditional crops and livestock suffered, the number of forest fires increased, and 90,000 hectares of forest were lost, particularly in the Bío-Bío region. In October 1997, an earthquake affected a large part of the Coquimbo region, damaging 13,000 houses.

June 2000 saw heavy rainfall, storms, blizzards, and heavy snowfalls from the Antofagasta to the Lagos region. The main rivers burst their banks, causing partial flooding in many towns and farms; roads and bridges were washed out and thousands of people were left isolated. Almost all the health care establishments, which were also affected, saw increased consultations for respiratory diseases of different degrees of seriousness.

Vector-borne Diseases

The last malaria epidemic occurred in 1945 and no autochthonous cases have been reported since then. The country is free from the mosquito *Aedes aegypti*, and yellow fever, dengue, plague, and schistosomiasis are unknown in Chile.

Chagas' disease is endemic in rural areas and the outlying areas of cities in the Tarapacá and Libertador General Bernardo O'Higgins regions, with 850,000 people exposed. Mortality from the disease increased until 1985 and stabilized over the last five years at about 55 cases a year, for a rate of 0.4 per 100,000 population. This figure represents 0.07% of total deaths. The cause of death in over 80% of these cases was heart disease caused by Chagas; in the other cases, a different organ was affected. No deaths among children under 15 have been reported since 1989. There are virtually no differences by sex and the highest rates are in the 45–64 years age group.

Screening of donated blood has been mandatory since 1996. In November 1999, an international meeting was held in Santiago to certify the interruption of vector transmission of Chagas' disease, where Chile was declared free from transmission by *Triatoma infestans.*

Diseases Preventable by Immunization

National vaccination coverage of infants under 12 months with BCG, measles, Hib, OPV1, OPV2, OPV3, DPT1, DPT2, and DPT3 was 91% in 1998 and 96% in 1999 (Figure 4). Coverage of children between 12 and 23 months with rubella, mumps, and measles vaccine was 91% in 1998 and 96% in 1999. DT vaccination in schoolchildren was 90% in 1998 and 89% in 1999. Influenza vaccination coverage in adults over 65 was 95% in 2000 and 99% in 2001.

The last case of poliomyelitis occurred in 1975. In 1999, reporting of acute flaccid paralysis (the WHO surveillance indicator) was 25% higher than it had been in 1998 (2.1 and 1.7 per 100,000, respectively).

After a marked decline, at the beginning of the 1990s, diphtheria turned from endemic to sporadic. The last case was reported in 1996.

A country-wide mass vaccination campaign was conducted with the goal of eradicating measles in the Americas in 2000. In 1993, just one imported case was reported; in the following three years, no cases were confirmed. Subsequently, there were localized outbreaks and sporadic cases, totaling 58 in 1997, 6 in 1998, and 31 in 1999.

The highest incidence of pertussis in 19 years was reported in 1999 (20 per 100,000), and in 2000, the cumulative incidence was 73% higher than it had been in 1999 (6.4 and 3.7 per 1,000 population, respectively). In 85% of cases, the diagnosis was only clinical. An increasing trend in infants under 12 months of age was observed in 1996–1999.

Reporting of tetanus is mandatory. Sporadic cases occurred at a constant incidence of 0.1 per 100,000 population over the last decade. As for neonatal tetanus, the goal is to eliminate it by vaccinating all pregnant women. No cases were reported in 1997, 1998, 1999, or 2000.

The expanded program on immunization has had very good results against mumps with the MMR vaccine. In 1999, the morbidity rate was 15 per 100,000 population.

Although the incidence of rubella had declined thanks to the introduction of the MMR vaccine, there was an unexpected increase in the number of cases in 1997 and 1998 (28 and 31 per 100,000 population, respectively), with outbreaks in the spring and summer, which dropped to 11 per 100,000 in 1999 and 4.9 per 100,000 in 2000. A national rubella vaccination campaign was carried out in 1999, which consisted of immunizing all females between the ages of 10 and 29. A congenital rubella surveillance system was introduced in September 1999 and 13 cases were detected. By August 2000, the number had increased to 17 of a total of 313 suspected cases.

Since June 1996, vaccinations against *Haemophilus influenzae* type B have been gradually increasing, which has contributed to a drop in morbidity in children under the age of 5.

The rates of hepatitis have fluctuated and exhibit a rise every five years. A new surge can be expected, because the cumulative incidence rose in 2000 over 1999. Data on diagnostic confirmation of the cases reported indicate that, since 1997, hepatitis B has been diagnosed clinically and serologically, and, since 1995, confirmation of reported cases of hepatitis C was mainly serological. Until 1995, screening of blood banks was mandatory only for HIV, hepatitis B, and syphilis. In January 1996, the Ministry of Health included screening for hepatitis C.

Intestinal Infectious Diseases

In 1998, there was an outbreak of cholera in San Pedro de Atacama, with 23 cases.

The incidence of typhoid and paratyphoid fever is in clear decline. The lowest rate (5 per 100,000 population) was reported in 1999.

Chronic Communicable Diseases

Morbidity from tuberculosis dropped from 52 per 100,000 population in 1989 to 22 per 100,000 in 1999, which is close to the threshold for elimination, which was 20 per 100,000 in 2000.

Acute Respiratory Infections

Epidemic outbreaks of influenza occur during the cold months, with surges every three or four years. An influenza epidemic occurred in 1999. It began in May and peaked in June with 20,211 reported cases and a rate of 134 per 100,000 population. In 1999, 131 deaths from influenza were reported (0.9 per 100,000), for an increase of 62% over the previous year (81 deaths). The population aged 65 and older accounted for 89% (117) of total deaths. In 2000, influenza presented the expected seasonal increase but with a lower peak than in 1999.

Zoonoses

Between 1996 and 1999, rabies did not alter its epidemiological pattern, which is marked by permanent presentation in insect-eating bats and sporadic cases in domestic animals. There was one case of human rabies in that period.

The reported cumulative rate of anthrax in 1999 was the same as in the preceding year (0.11 per 100,000 population).

Brucellosis during 1999 was higher than the median for the previous five years, owing to the number of cases reported by the Osorno Health Service, which had one of the highest rates in the last decade. Isolated cases of the disease were found at other health services.

Trichinosis took the form of sporadic family outbreaks. The cumulative rate in 1999 was higher than in 1998 (0.3 per 100,000 population) on account of an outbreak in October in Ñuble.

Over the last decade, the rates of echinococcosis have held steady at between 2 and 3 per 100,000. In 1999, there was a slight drop in reporting, which fell to the lowest values in the decade. With regard to echinococcosis in humans, the number of cases notified fell slightly from 343 in 1996 to 313 in 1999. However, hospital discharges for this disease are high, more than 1,200 a year on average. This demonstrates that existing epidemiological conditions permit the perpetuation of the disease and that intervention programs to solve the problem have not been carried out, especially in rural areas.

HIV/AIDS

Because of its prevalence in urban areas, HIV/AIDS mainly affects people with access to health care and education. There is a clear trend toward its spread to women and the poor, but men who have sex with men are the main victims. Between 1984 and 2001, 2,479 deaths were reported. The cumulative rate is 280 per million population and it has been rising systematically over the years. Figure 5 presents the incidence of AIDS by sex and the male-female ratio from 1990 to 2000. In 1998, 1999, and 2000, an artificial reduction was observed owing to shortcomings in the reporting system, which will be corrected as the remaining reports for those years are received.

Since the start of the epidemic, 90% of victims have been men and 10% women, but there has been a relative increase in cases among women. The most highly affected age group is 20–49 years (85%), followed by persons aged 50 years and older (12.5%) and young people under the age of 20 (2.5%); there are no significant differences between the sexes. The main form of transmission is sexual, followed by the use of injectable drugs; vertical transmission ranks third, and transmission through blood fourth. The epidemic is incipient, which provides an opportunity for carrying out preventive programs.

Sexually Transmitted Infections

Traditional surveillance of sexually transmitted infections is based on a system of mandatory notification, with syphilis and gonorrhea being virtually the only ones reported. Historical series for syphilis are available since 1963 and for gonorrhea since 1981, with aggregate data on syphilis in pregnant women and congenital syphilis for the period 1990–1998.

The sentinel system is composed of six centers that cover a population of 3 million (1.49 million men and 1.51 million women) or 20% of the total population. The Health Services report the cases of sexually transmitted infections seen at the centers. The total rate reported is 71.6 per 100,000. The highest rate is in the 20–24 years age group (190.6), followed by the 25–34 years age group (146.4) and the 15–19 years age group (110.2). Rates of 83.8 per 100,000 were reported for women and 59.3 for men. The rates per 100,000 population reported in 1999 were 14.68 for syphilis, 14.21 for genital warts (*Condyloma acuminatum*), and 10.88 for gonorrhea.

Nutritional and Metabolic Diseases

Different factors have had an influence on the reduction in infant malnutrition, including sociocultural changes, the lower birth rate, and malnutrition prevention programs, such as the national supplementary food program and the breast-feeding promotion program. There has been a reduction in the number of live-born infants weighing less than 2,500 g over the last 20 years.

An emerging problem among children aged 2–5 is overweight and obesity. The Ministry of Health is conducting an education campaign and promoting more physical activity.

There are no recent national studies that demonstrate the true scale of the problem of diabetes. Estimates suggest that 5% to 6.5% of the adult population is affected. In 1999, about 160,000 diabetics were seen in the public health system alone, which amounts to just over half the beneficiaries estimated to have the disease. Ninety-five percent of all cases are type 2 diabetes, which primarily attacks adults. However, the situation is changing owing to the number of obese children. According to official mortality figures, there were 2,200 deaths from diabetes in 1998, but this figure underestimates the problem. According to the CASEN 2000 survey, which includes the national quality of life survey, the national average of declared prevalence of diabetes mellitus was 3.2%.

Diseases of the Circulatory System

These diseases are the leading cause of death, accounting for 27% of the total. They are also an important source of illness and disability. Ischemic heart disease and cerebrovascular disease, taken together, accounted for 69% of deaths from diseases of the circulatory system in 1996 (this classification does not include congenital anomalies of the circulatory system, which are classified together with other congenital defects).

In 1999, one of every three deaths was caused by a disease of the circulatory system, with a mortality rate of 148.8 per 100,000 population. It is the third leading cause of years of potential life lost. Hypertension is one of the main reasons for consultations at

the primary care level and is among the diseases most often mentioned in studies on perceived morbidity in the country.

The risk of dying from diseases of the circulatory system increases gradually with age; after the age of 5, it is significantly higher in males. Eighty-five percent of deaths are among people over the age of 60. The increase in risk with age is similar for the different diseases included in this group and is more marked in ischemic and cerebrovascular diseases. The risk of death is 37% higher for men than for women, on average.

The risk has dropped over the period 1997–2000, with a larger reduction for women (26% compared with 19% for men). Mortality in children under 5 has remained the same over the last 12 years. Most deaths in this group occur in infants under 12 months and the leading main causes reported on death certificates are primary pulmonary hypertension and other primary cardiomyopathies.

Public health strategies focus on controlling modifiable risk factors, particularly behavioral factors, and on controlling the illnesses that place people at greater risk for cardiovascular disease. Since 1997, Chile has participated in the CARMEN project (actions to reduce the factors causing noncommunicable diseases), which defined two key strategies: prevention and control of cardiovascular diseases, cancer, and diabetes, and of risk factors such as hypertension, obesity, dyslipoproteinemia, smoking, and lack of physical activity.

Malignant Neoplasms

Neoplasms are the second leading cause of death, accounting for 22% of the total. There is a greater prevalence of cancers of the digestive organs. In 1996, there were 16,700 deaths from tumors in different parts of the body. The risk of dying from cancer is clearly higher for males and is directly related to age. A national cancer register is being established.

Accidents and Violence

Since 1995, accidents have been the fourth leading cause of death; in 1997, the rate was 57 deaths per 100,000 population. The risk is higher for men than for women, with a difference of 4.2 in 1997. Excess male mortality is observed in all age groups, in all parts of the country, and for all the different types of accidents. Deaths from injuries and poisoning mainly affect adults 20 years of age and older.

Suicides account for 10.5% of deaths from injuries. In men, this cause ranks second, with a rate of 10.5 per 100,000 population; in women, it ranks third, with a rate of 1.7 per 100,000.

Oral Health

Epidemiological studies conducted in 1996, 1997, and 1998 point to the persistence of high rates of dental caries among children, with a national rate of 88% for children aged 6–8 and an average of 5.5 temporary and permanent teeth affected. Among 12-year-olds, the DMFT index for all parts of the country was 3.4. This value is somewhat higher than the goal proposed by WHO for 2000, which is DMFT-3. No information is available on caries in adults.

Emerging and Re-emerging Diseases

Ninety-five percent of hantavirus pulmonary syndrome cases occur in southern Chile and the disease primarily affects rural areas. Seventy-three percent of cases are among men, mainly farm and forest workers, with an average age of 29 and a range of 2–75 years. There have been 116 confirmed cases since 1993. Twenty-three cases were confirmed in 2000, 17 in 1999, and 31 in 1998.

Children under 15 make up 15% of the cases and the greatest risk of contracting the disease is during the productive years (20–39). General mortality is 50% (61 deaths), with a decline in the last two years. The lowest mortality rate was in 1999 (42%).

Meningococcal disease has been endemic since the 1950s, with approximately 500 cases a year. It affects slightly more men (54%) and children under the age of 5.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The policies and plans defined for the period 2000–2006 establish the following strategic goals: to enshrine citizen health rights, to undertake a solidarity reform of the financing system, to prepare a program for equal access to health care, to modernize the social safety net for health, to improve health guarantees in the public sector, to develop a government health promotion policy, to monitor respect for the rights of members of the private health insurance plans (ISAPREs), and to institutionalize the quality of care.

The Ministry of Health's short-term goals (2000–2002) are to provide timely access to care, respect the health rights of citizens by adhering to the patients' bill of rights, and create a national program of user participation. With regard to the quality of care, aims are to design a policy to improve service for users; make changes to the law governing the National Health Fund (FONASA); move ahead in establishing guarantees of health services; issue rules for access, quality, and timeliness of health services; design an occupational health policy and new regulations on basic sanitation and environmental conditions; establish an air quality monitoring program in the regions; regulate the production and sale of genetically modified foods; implement the sector investment plan; promote the signing of new programming agreements with the regional governments; and issue enabling regulations for the new Law on Health Care Professionals.

Health Sector Reform Strategies and Programs

To advance reform, the Government established an interministerial committee in 2000 chaired by the Minister of Health and

tasked with preparing the proposal the President would present to the country. The basic proposal establishes a guaranteed plan that is binding on the public insurer (FONASA) and the private insurers (ISAPREs) and assures effective and timely treatment of the most frequent, most serious, and most costly diseases. Priority is placed on primary care, and the family and community health teams will be strengthened. Consistent with the short-term goals (2000–2002), the hours of service of primary care facilities were extended. Copayments were eliminated for FONASA beneficiaries over age 65. In structural terms, the reform is intended to create a solidarity fund, financed by government contributions and three-sevenths of the mandatory health care quotas, which will finance a guaranteed plan for the members of FONASA and the ISAPREs.

In the general context of the reform, the Government has prepared draft legislation on the health rights and duties of individuals, which has been presented to Congress for consideration. As part of the project, a participation policy was designed to permit a wide variety of players to make their views and opinions heard.

The Health System

Institutional Organization

The Ministry of Health is the lead agency in the sector. It formulates and establishes health policies and issues general standards and plans and supervises, monitors, and evaluates compliance with them. The Health Services, FONASA, the ISAPRE Authority, the Public Health Institute, and the Central Supply Clearinghouse (CENABAST) report to the Ministry. The 28 Health Services act as the health authorities in their territories and are responsible for supervising, evaluating, and monitoring the delivery of health care services by different public and private suppliers. There is also an Environmental Health Service in the Santiago metropolitan region. The Public Health Institute is responsible for regulating drugs and medical inputs.

The health services system is mixed. Public insurance is provided through FONASA, which receives contributions from its members and transfers from the national government to cover indigents and to carry out public health programs. It manages all public funds and the contributions paid by workers who choose this option. By law, all workers are required to pay 7% of their monthly wage into public or private health insurance.

The private sector is represented by the ISAPREs, which are private health insurers. Their members can pay additional premiums to improve their insurance plans. The ISAPREs are overseen by the ISAPRE Authority. There are also employers' mutuals that specifically administer insurance for on-the-job accidents and occupational diseases. This is the only kind of insurance fully funded by employers.

Although FONASA and the ISAPRE Authority are independent managers, they are subject to oversight by the Ministry of Health and its Subsecretariat, which bear responsibility for sector policy. The Public Health Institute controls medications and medical inputs and acts as the national reference laboratory and producer of vaccines and reagents. CENABAST procures products for the public sector.

Services are also delivered by public and private suppliers. The vast majority of primary care establishments depend on the "communes," and the hospitals are under the direction of the Health Services. There are a series of clinics, centers, laboratories, and pharmacies managed by private individuals or companies. There are only a few not-for-profit nongovernmental organizations and their work is limited to some rural health centers and hospitals operated by churches. However, there are charitable institutions such as the Red Cross and Hogar de Cristo that carry out health promotion activities and provide direct assistance for people who are ill.

FONASA covers 63% of the population and the ISAPREs 23%. The remaining 14% is covered by other private plans (such as the armed forces plan) or has no insurance at all.

There are two categories of membership in FONASA. Beneficiaries belonging to the institutional category are required to use the public network of suppliers. All of the indigent population is included in that category. The other category is free choice, which is reserved for contributors. In this case, individuals can select from a pre-established list of service providers, who are predominantly public, although some are private.

The ISAPREs can be restricted or open. In the first case, membership is limited to certain people, generally those who work in a given company or sector of the economy. In the second, anyone may become a member. Most of the ISAPREs (26 nationwide) work with private providers but the possibility exists of reaching agreements with public health institutions. Some ISAPREs have their own networks to provide care for their subscribers. In that case, the insurance contract is negotiated individually between the insurer and the contributor, who is required to make a copayment whose amount varies considerably. However, the ISAPREs may not offer health insurance plans with fewer benefits than FONASA offers.

The public health services are required to attend to all demands for emergency services. Also, the public health programs (such as immunization and tuberculosis control) are aimed at the entire population, without discrimination. After a period of continued growth that peaked in 1995 with coverage of 26.3%, the ISAPREs' share in the system has shrunk. The subscribers who left the ISAPREs generally migrated to FONASA.

FONASA provides more than 2,000 different services and is responsible for supervision and control over public health sector financing. As is true for all public sector institutions, the Office of the Controller General has ultimate control over its management. The ISAPRE Authority is responsible for the supervision and control of the ISAPREs. The Authority issues rules regarding membership conditions, the content of health insurance con-

tracts, the nature and costs of the plans, and fees for services. It regularly publishes its rulings in cases of litigation between the ISAPREs and their members. These rulings are helping to build up a body of jurisprudence in this area. Last, it conducts technical studies and generates statistics that allow the ISAPRE system to be analyzed.

Vital statistics (birth and death certificates) are the most solid element in the information system. Their coverage is above 90% and they make it possible to calculate mortality rates and the disease burden. The system for surveillance of communicable diseases is also functional and universal. Data are scarcest for diseases that are not included in the surveillance system, and for financing, and service delivery.

Organization of Regulatory Actions

Health Care Delivery

Health care is regulated by rules that form part of the Ministry of Health's programs. The programs define coverage, frequency of contacts between users and service providers, and the responsibilities of the different levels in the system. Although most of the program guidelines are designed for services offered in public sector establishments, where there are mandatory frameworks, they also serve as a reference for the organization of care in private establishments.

The Health Services Directorates are responsible for regulating public and private health care establishments located in the territory of the respective Health Service. This function is exercised through the medical and paramedical professions offices of the Health Services.

Certification and Professional Health Practice

Professional degrees may be granted only by universities, which are regulated by the Ministry of Education. The legal framework does not make it mandatory to obtain certification in a medical specialty after obtaining a degree in general medicine. Certification of a specialty (or subspecialty) is granted by universities after a period of formal training. For physicians who have not followed a formal course taught by a university, there is an alternative mechanism for certification of medical specialists through a national certification board (CONACEM). Universities and specialist scientific societies sit on the board.

The Health Services Directorates, through their offices of medical and paramedical professions, are empowered to regulate certain aspects of the practices of professionals who provide health services in the geographic area of the respective Health Service.

Basic Health Markets

The drug market is governed by a series of regulations on standards for products and distribution and sales chains and is affected by factors such as the significant market share of generic drugs, the large presence of national laboratories, and the existence of the Ministry of Health's Central Supply Clearinghouse. There are no price controls on medications. Generic drugs account for 38% of the total pharmaceutical market, but only 10% of sales revenue generated. This large share of the market held by generic drugs causes the average price of medications to drop. During 1998, the average price per unit on Chile's drug market was US$ 3.40 and the average price of generic drugs was US$ 0.88. The laboratory with the largest presence was Laboratorio Chile (27% of the market), whose production has been geared to generic drugs for many years. Other emerging national laboratories have followed this trend.

Environmental Quality

Under the Health Code, the health sector is responsible for overseeing the elimination or control of all environmental factors, elements, or agents that affect the health, safety, and well-being of Chileans. To carry out this mandate, the Ministry of Health, through the Environmental Health Division, has established different programmatic areas to regulate, control, and oversee the different risk factors for health. There are programs in the fields of basic sanitation, air pollution, hazardous chemicals, hazardous waste and liquid industrial waste, food hygiene, vectors of sanitary importance, zoonoses, microbial and parasitic diseases, environmental impact assessment, occupational health, public places, and environmental emergencies. Eleven Health Services have raised their environmental health programs to the rank of subdirectorate, and 11 maintain them as departments. These environmental health subdirectorates and departments, together with the Environmental Health Service of the Santiago metropolitan region, are the bodies responsible for prevention, control, inspection, and oversight in the environmental area. Environmental testing is performed by 20 laboratories that operate in coordination with the Public Health Institute, which acts as the national reference laboratory in microbiology, bromatology, environmental pollution, and occupational health.

Food Quality

The new regulations governing food safety are intended to provide basic health standards for the safety, purity, and nutritional value of food and dietary guidelines. There is also a control and hygiene program with national coverage and coordination, which is supported by the national network of bromatological laboratories. Food safety and control activities pursuant to the Health Code are reflected in the fact that approximately 60,000 food samples are analyzed each year. The samples are subjected to microbiological tests (75%), chemical-bromatological tests (20%), and parasitological tests (5%). The levels of noncompliance with the standards are 8% for the microbiological tests, less than 5% for the chemical-bromatological tests, and under 3% for the parasitological tests.

Evaluation of Health Technology

Since 1997, the Ministry has had a Health Technology Evaluation Unit responsible for providing technical support to identify the most cost-effective processes for addressing the country's priority public health issues. This unit, which has institutional links to the International Network of Agencies for Health Technology Assessment and the International Society of Technology Assessment in Health Care, was recognized in 1998 as the Chilean Agency for Health Technology Assessment.

Organization of Public Health Care Services

Health Promotion

The general objectives of the National Health Plan (1997) are to promote healthy lifestyles and a healthy environment, increase individual and community knowledge and capacity for self-care, and bolster the regulatory function of the State with respect to factors that determine health. The National Council for Health Promotion (Vida Chile) was established as an intersectoral agency composed of 24 national institutions, which is responsible for advising the ministries and regional and local governments, supporting implementation of "communal" plans, and recommending public health policies. In the last three years, a health promotion plan has been established in 257 "communes." To achieve the objectives, strategies include programs for healthy "communes," health-promoting schools, the health for people program, healthy workplaces, and the CARMEN project. The Chilean government signed the agreements reached at the Fifth Global Conference on Health Promotion held in Mexico in 2000.

In 2001, there were 305 "communal" health promotion plans, while the strategy for health-promoting schools has been introduced in 2,435 educational institutions and 32 schools have been accredited by the health sector as health-promoting schools.

Disease Prevention and Control Programs

The Ministry of Health's basic programs (children, women, adults, and oral health) and their respective subprograms have been designed to take a comprehensive approach, including promotion, prevention, treatment, and rehabilitation. The Ministry of Health has established specific prevention programs, including immunization, food supplements, control of respiratory diseases, prevention of traffic accidents, control of the Red Tide, and eradication of Chagas' disease. There are also programs to detect cervical and uterine cancer and breast cancer, with coverage of 60% and 30%, respectively.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

The Public Health Institute carries out epidemiological surveillance in cooperation with the Ministry of Health's Epidemiology Department. Through the National Control Department, the Public Health Institute monitors the national system for the control of pharmaceutical products, food, cosmetics, pesticides for sanitary and domestic use, and medical articles. The Institute also acts as the national reference center and is the body that certifies clinical laboratories and blood banks around the country. Thus, the Institute provides support for ministerial programs to control communicable diseases and the quality of pesticides, clinical laboratories, and blood banks.

Potable Water and Sewerage Services

In 1998, 99% of the urban population had access to potable water through public systems, 90% had access to sewer systems, and 4% had access to an adequate sanitation technology, chiefly septic tanks and soakaways. One percent of the urban population (115,000 people) had no water service and 7% (853,000 people) had no adequate sewage disposal system.

The country has not established national coverage goals for potable water and sanitation services. However, the development plans of the urban sanitation companies state that by 2005, 100% of the urban population will have potable water and 100% will have residential sewer connections. It is expected that the "camps" (areas where housing is temporary and substandard) will have been eradicated by then.

According to the Pan American Center for Sanitary Engineering and Environmental Sciences, 77% of the rural and urban population had residential sewer connections in 1998 and 16% had no connection but had an adequate on-site private or shared disposal system. In that year, 94.2% of the population had residential water connections, while 5.8% did not receive that service.

Chile's water quality standards have not been updated to coincide with WHO guidelines. Water quality monitoring, particularly in urban systems, is considered effective. Monitoring of rural water systems is not totally satisfactory.

The reliability of Chilean sanitation companies is high. The operation of year-to-year regulating reservoirs, the requirement to comply with development plans, and the fact that the same regional enterprise generally manages the different water resources in a watershed contributes to the security of supplies even in the event of serious drought.

Solid Waste Services

In a culture that prizes disposables over recyclables, the amount of waste grows steadily and has become a problem for waste management companies. The largest volumes of domestic waste are generated in consolidated urban areas. In 1994, 99.1% of the urban population had regular residential trash collection service. Eighty-three percent of all the trash collected in urban areas is disposed of in sanitary landfills. The different stages of domestic waste management are largely performed by private enterprises. About 80% of "communes" with populations of over 50,000 have contracted out their trash collection

services. This private sector participation has some drawbacks; very few companies dominate the market, which leads to higher costs.

An estimated 29,300 tons of hospital waste are produced each year. There is no legal classification of hospital waste, although categories are distinguished that require separate handling: infectious waste, pathologic waste, sharp objects, pharmaceutical waste, and radioactive and genotoxic chemical waste. Noninfectious residential waste does not need to be handled separately. In practice, infectious waste is not always handled separately. Some health facilities have incinerators but most do not have adequate treatment systems. Health legislation gives little direction regarding hospital waste.

Pollution Prevention and Control

Information is available on sources of industrial emissions for the cities of Temuco, Viña del Mar, and Valparaíso, obtained from two studies conducted by consulting firms for the National Environment Commission (CONAMA) to compile inventories of emissions in regions V and IX. The methodology used in the studies to prepare the inventories was similar to the methodology used by the United States Environmental Protection Agency. In these cities, emissions from mobile and residential sources were inventoried and it was concluded that metering equipment should be installed in the future in Temuco, Rancagua, Valparaíso, and Viña del Mar.

Food Safety

Food safety and control systems are based on the Health Code. The Food Health Regulations, which establish specifications for food products for human consumption in Chile, came into force in 1996.

The Health Services, specifically the subdirectorates of environmental health or the environmental programs departments, are responsible for overseeing compliance with the legislation, through their food safety programs, which are headed by veterinarians.

Food Aid Programs

Chile has had a national supplementary food program for several decades, whose beneficiaries are children under 6 and pregnant women. Food is delivered through primary care facilities that monitor pregnancy and the growth and development of the child. Milk, grains, and rice are provided in amounts that depend on the nutritional condition of the beneficiaries. There is also a supplementary food program for schoolchildren, operated by the National School Assistance and Bursaries Board, which reports to the Ministry of Education, that consists of providing breakfast and lunch in schools, depending on the socioeconomic classification of the children and their families. In recent years, a supplementary food program has been established for older adults, which is delivered through primary care facilities.

Organization of Individual Health Care Services

Ambulatory, Emergency, and Inpatient Services

The public health network is composed of ambulatory and hospital facilities offering services of different complexity. They include 196 general hospitals, 20 high-complexity hospitals, 526 primary care clinics, 1,840 rural health posts and medical stations, and 73 establishments of other kinds. There is one clinic for about 28,500 people (1 for 17,100 if only FONASA members are considered). There is one rural post for every 1,900 rural dwellers, considering only FONASA members, who represent an estimated 14.6% of the total population. In recent years, more complex ambulatory facilities have been added to the public network, such as the diagnostic and treatment centers (five in the country) and the health referral centers (six in the country). These centers are intended to bolster outpatient treatment and reduce the need for hospitalization.

There were a total of 35.4 million medical consultations and checkups in 1999 or the equivalent of 2.4 per person per year (or 3.9 per person per year if only FONASA members are considered). This represents an increase of 15% since 1995. Of this total, 81% were consultations and 19% check-ups.

An oral health monitoring program benefits close to 3% of Chileans. There were 1.4 million first visits in 1998 and 455,000 (33%) patients were pronounced to have healthy mouths after being provided with curative and preventive treatment. Such good results were not obtained with the other two-thirds.

In 1998, 36,663,341 laboratory tests and 3.4 million imaging studies were performed, which represent 2.2 and 0.2 per visit, respectively.

In the private sector, the ISAPRE Authority reported that 13.7 million medical consultations took place under that system in 1999, although it did not report on their nature. It also reported that 16.2 million diagnostic tests had been performed, for 3.6 medical consultations and 4 laboratory tests per beneficiary. The vast majority of the services were provided by the private sector. An unknown portion of the 6.9 million consultations attended to by physicians and nurses paid by FONASA under the free-choice category should be added to that figure.

The country has about 30,000 hospital beds or 1 bed for every 5,000 people (or 1 for every 3,000 FONASA beneficiaries), which represents a reduction of 10% during the 1990s. The private sector has about 11,000 beds distributed among 223 hospitals, clinics, and maternity facilities. The ISAPRE Authority reported 424,500 hospital discharges in the private sector in 1999, which is higher than in previous years.

In 1998, there were approximately 1 million discharges from public hospitals and the bed occupancy rate was 71%, with an average stay of 6.8 days. The five most frequent causes of hospitalization were complications of pregnancy, childbirth, or the puerperium (15%); diseases of the digestive system (12%); diseases of the respiratory system (11%); injuries

and poisoning (8%); and diseases of the genitourinary system (7%).

Urgent treatment is provided by emergency services in hospitals and emergency primary care services. The main private hospitals and clinics also offer emergency care. In recent years, the Ministry of Health has promoted the establishment of a prehospital emergency care system, with rescue ambulances of different complexity and response capacity and a dispatching center. The system operates in the three most heavily populated regions (metropolitan Santiago, Valparaíso, and Maule) and work is being done to extend it to the rest of the country.

Auxiliary Diagnostic Services and Blood Banks

Auxiliary diagnostic and therapeutic services are offered by the public and private sectors. In the public sector, the services are located in hospitals and serve demand generated in ambulatory services as well as in hospitals. They are complemented with a few "communal" laboratories in the large urban "communes."

In the private sector, auxiliary diagnostic and therapeutic services are offered by units in private hospitals or clinics or through establishments that only offer services of this kind. Blood banks are mainly linked to public hospitals and to the largest private hospitals. In 1999, 218,000 units of blood were donated and 98% of them were screened for HIV, hepatitis B surface antigen (HBsAg), hepatitis C, syphilis, and Chagas' disease.

Specialized Services

Dental care is provided by public and private suppliers. In the public sector, the oral health program gives priority to comprehensive care for children and pregnant women and offers emergency services for the rest of the population. Treatment is provided through primary-level clinics and some hospitals provide specialized services. The Ministry of Health's program for children has stepped up its preventive approach. This effort is complemented by the operation of dental clinics in municipal schools, which are subsidized by the Ministry of Education through the National School Assistance and Bursaries Board. Since 2000, the First Lady's Cabinet has promoted a campaign called "Sonrisa Mujer," to provide care for women who have lost teeth. Some ISAPREs are beginning to institutionalize private dental care in provider networks, although coverage is still low. Treatment has been complemented by public health actions, such as fluoridation of drinking water.

Mental health is the area with the greatest mismatch between supply and demand in both the public and private sectors. In the public sector, long-term specialized hospital care is only provided in three establishments. Acute care for patients is provided in those same establishments and by the psychiatric services that exist in some general hospitals. In recent years, under the national plan for psychiatric care and mental health, the establishment of shelters to deinstitutionalize some patients and encourage their reentry into society has been promoted. The public system also provides ambulatory care at community mental health centers in some urban "communes," which are administered by the respective municipalities. The ISAPREs offer only minimal coverage for psychiatric care in their health plans.

Reproductive health services are provided by public and private suppliers. The Ministry's program includes family planning and contraceptives (hormonal, intrauterine devices, diaphragms), which are provided free at primary care establishments. Normal pregnancies are monitored at primary care facilities and high-risk cases are referred to hospitals. Both the public and private sectors have centers that offer treatment for infertility but coverage is still low.

Geriatric services are scarce in the public and private sectors. Public care is offered through the general services provided by primary-level facilities and general hospitals. There is only one specialized center (the Geriatric Institute in the Santiago metropolitan region), which still has limited capacity. The private sector has protected residences for older adults that offer care. The quality of these establishments is linked to cost.

Treatment for cancer patients is provided in some specialized establishments, both public and private, which offer surgery, chemotherapy, and radiotherapy. The National Cancer Institute and three other regional centers that are somewhat less developed are operated by the public sector. The Ministry has established national chemotherapy programs for certain types of childhood and adult cancer. The private sector has centers that offer radiation therapy, some under agreements with the public insurer to treat its beneficiaries.

Rehabilitation services are provided in public and private establishments, although coverage is low in both cases. In the public sector, there are some national reference centers located in the Northern Metropolitan Santiago Health Service for the adult population and the Eastern Metropolitan Santiago Health Service for children. Some establishments in other regions also offer rehabilitation services, such as the regional hospital in Concepción. In the private sector, the most important services are provided by a not-for-profit foundation, the Children's Rehabilitation Institute, which has centers in the Santiago metropolitan region and other parts of the country. In recent years, social and political awareness of rehabilitation has increased and one of the most significant expressions of this fact was the establishment of the National Disability Fund (FONADIS), which comes under the Ministry of Planning and Coordination.

Health Supplies

Drugs

Data from 1999 indicate that there are 16,000 registered pharmaceutical products. However, sometimes companies register the same active principle under a trademark, its generic name,

and as a similar product. Accordingly, the number of drugs registered is higher than the number of pharmaceuticals that are actually sold. Over-the-counter drugs account for 14% of registered products and generic drugs for 38% of total sales; total drug sales amounted to US$ 632 million in 1998 (US$ 42 per capita). There has been a sharp rise in spending in recent years, which almost doubled between 1994 and 1998. The low average price per unit in the Chilean pharmaceutical market (US$ 3.40 in 1998) is associated with the significant market share held by national laboratories and the widespread use of generic drugs. Financing for medications follows the general rationale of financing for health services.

Public and private establishments buy their pharmaceuticals from laboratories and distributors. In the public sector, CENABAST acts as a clearinghouse to consolidate and facilitate procurement for establishments that want to use its services. It is also the official distributor of the products included in national public health programs (for example, vaccines and tuberculosis drugs). Pharmaceutical services administrators operate in the private sector, taking charge of all aspects of medications, from their selection to their use. The presence of a pharmacist is mandatory in private pharmacies where most of the units are sold in the country (80%). A pharmacist's presence is also mandatory in public hospitals but not in private clinics.

Immunobiologicals and Reagents

The Production Department of the Public Health Institute is responsible for public production of immunobiologicals. The products manufactured exclusively for the expanded immunization program include the DPT vaccine and diphtheria toxoid. The Institute also makes the typhoid vaccine, the rabies vaccine for human and veterinary use (which it exports to other Latin American countries), and the tetanus antitoxin.

The Public Health Institute also produces some specific reagents that are used to diagnose infectious diseases. Private companies that sell such reagents on the domestic market must obtain health clearance from the Public Health Institute.

Equipment

Heavy investments were made in the public system during the 1990s, whose main results were the construction or reconstruction of 13 hospitals, for US$ 260 million. In addition, another 53 hospitals and 13 clinics or specialized consulting facilities were modernized for US$ 180 million and US$ 105 million, respectively. Construction and modernization included civil works and medical equipment.

Regional studies of the system conducted in 1999 reported equipment worth US$ 571 million, with US$ 523 million of that figure corresponding to medical and industrial equipment and the remaining US$ 48 million to vehicles. About 32% of equipment has outlived its useful life.

Human Resources

According to the College of Physicians, the country had 17,467 physicians in 1998 (membership in the College of Physicians is not mandatory). This figure, which amounts to 18 physicians per 10,000 population, has remained stable in comparison with previous years. The 12 faculties of medicine (9 public and 3 private) graduate about 600 new doctors a year. Projections indicate that there will be a 50% increase in the number of physicians in 10 years. It is estimated that just 8,000 of the country's 18,000 nurses work in the public sector.

As of March 2000, 13,100 physicians or 75% of the total worked in the public sector. Of them, 1,700 (13%) are contracted by the municipalities at the primary care level. Many physicians work in both the public and private sectors. In 2000, there were a total of 60,000 professionals, technicians, and health assistants in the public sector and there was one nurse for every three physicians. In that year, the public health sector employed 90,000 people, which indicates that administrative and service staff accounted for one-third of the total.

As for developments in the number of health services employees, there was an increase of about 5,000 physicians and 1,000 nurses between 1990 and 2000, for a rise of 76% and 37%, respectively. There are glaring shortages of certain professionals, such as nurses and ophthalmologists, and an unsuitable ratio between professionals and support staff.

Health Research and Technology

Health research is carried out primarily in universities and research centers. The Government, through the National Science and Technology Council, provides incentives for health research, which has been targeted more to basic sciences and clinical areas than to public health. To promote essential research on the country's priority health problems, the Ministry of Health has developed a national research policy directed to health policies and has established the Research and Technology Commission, whose members are drawn from the faculties of medicine and public health schools and departments of the country's main universities.

The incorporation of technology reached its peak during the 1990s, as part of major investments in the public health system in Chile. Technology development was not limited to infrastructure and equipment projects but extended to information and management technologies. The same process took place in the private sector.

National scientific information on health is generated in universities, scientific societies, and the Ministry of Health. The information is presented in traditional printed formats, although recently efforts have been made to present it electronically to facilitate access by different users. Progress has been made in establishing a virtual health library, whose consultative committee is composed of representatives of the Ministry of Health, the library of the Faculty of Medicine and Public Health School of the University of Chile, the National Science and Technology

Research Council, the National Library of Congress, and the Society of Editors of Scientific Journals.

Health Sector Expenditure and Financing

Information on health spending is provided by FONASA for the public sector and the ISAPRE Authority for the private sector. There is no information on out-of-pocket spending. In 1999, average per capita spending for the total beneficiary population of FONASA and the ISAPREs was US$ 279 (US$ 245 for FONASA beneficiaries and US$ 362 for ISAPRE beneficiaries). The public sector is financed from government contributions, quotas, and copayments by members of the public system and operating income. In 1999, the distribution was 54%, 39%, and 7%, respectively; in 1990, the figures were 41%, 53%, and 6%. Direct contributions by municipalities, which were estimated to average US$ 8.50 per capita in 1998, should be added to these figures.

Spending on health accounted for 17.1% of public social spending in 1999, a percentage that has remained relatively stable. As a percentage of GDP, health spending rose from 2% in 1990 to 2.8% in 1999. As for private spending, in 1999, distribution in the ISAPREs was 63% for medical services, 18% for other services (mainly subsidies for labor disabilities), and 19% for administrative and sales costs. The profit margin was about 0.5% above operating income. The cost structure is stable but there has been a reduction in profit margins in recent years.

External Technical Cooperation and Financing

In 2000, external technical cooperation was received for projects on the quality of life, mental health, epilepsy, equity in health, and HIV/AIDS. Efforts were made to seek lines of work shared with the United Nations system and between it and its national counterparts. Cooperation projects exist with Germany, Canada, and France. The IDB is processing a loan of US$ 45 million for indigenous health promotion. Financial cooperation from WHO is approximately US$ 2 million a year between funds provided by the country office and by headquarters.

FIGURE 1. Gross domestic product, annual growth (%), Chile, 1990–1999.

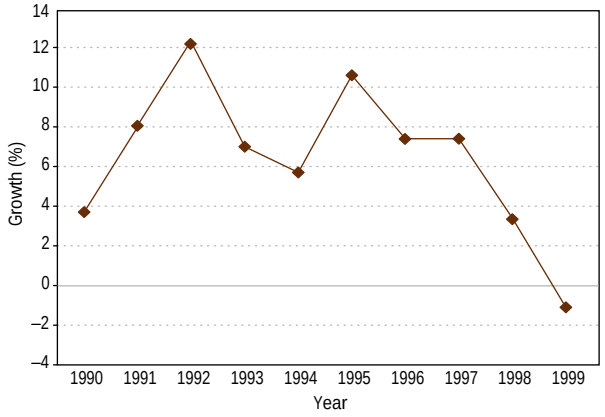


FIGURE 2. Population structure, by age and sex, Chile, 1998.

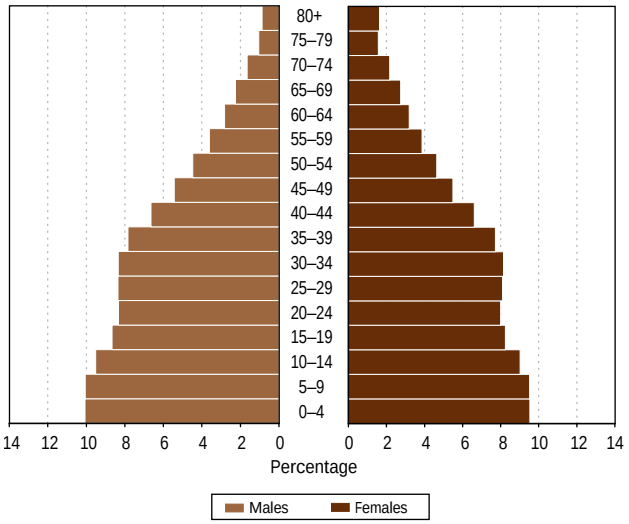


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Chile, 1995–2000.

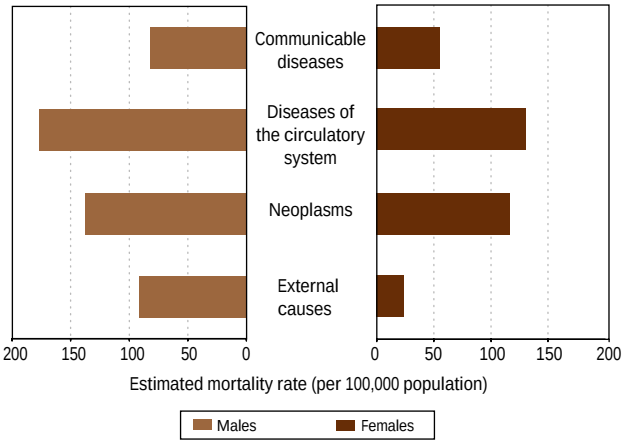


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, Chile, 2000.

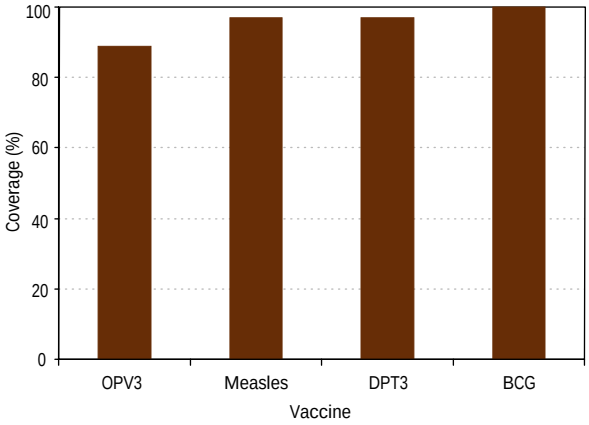
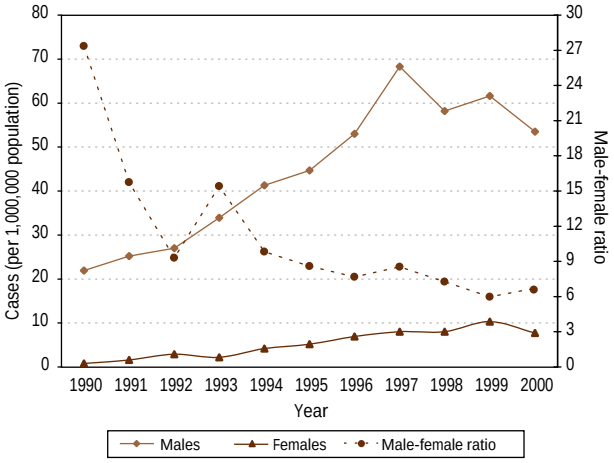


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Chile, 1990–2000.



COLOMBIA

OVERVIEW

Colombia has a land area of 1,141,748 km^2, with a topography dominated by three branches of the Andean mountain range. In 2000, an estimated 42,299,000 people lived in the country's 32 departments, which are divided into 1,076 municipalities, according to the National Administrative Department of Statistics (DANE). The departments of Santa Fe de Bogotá, Antioquia, and Valle had more than 4 million inhabitants each, and another 12 departments had 1–2 million each.

In 1999, Colombia faced its most serious economic recession in 60 years, with GDP declining by 4.3% (Figure 1) and unemployment rising to 18%. The low price of coffee on the world market and the extensive damage inflicted on coffee-producing areas by the earthquake on 25 January of that year added to Colombia's economic problems. Although the economy grew by 2.8% in 2000, unemployment reached 19.7%. That year, the DANE estimated that, although the working-age population increased by 25,000 a month, the number of employed persons grew by only 22,000 a month. The number of persons living in poverty increased from 19.7 million in 1997 to 22.7 million in 1999. Between 1995 and 1999, Colombia's total indebtedness rose from 19.1% to 34% of its GDP. In 2000, public expenditure was reduced, the tax base was broadened, a special tax on financial transactions was established, and measures were taken to control tax evasion. In addition, the salaries of government employees were frozen and an attempt was made to reduce bureaucracy and noninvestment spending. Although these actions halted the economy's downward trend, no progress was made in solving the problems of unemployment, poverty, or the steadily worsening situation of the most vulnerable sectors of the population.

The country's development is seriously hindered by inefficient social expenditures. For example, spending on education is more than 4% of GDP, but national coverage is only 88%. Health spending, in turn, was 3.9% of the GDP, according to the National Planning Department. The national Gini coefficient of 0.56 remained unchanged between 1997 and 1999, but the inequality of income distribution decreased in some departments, such as Nariño (where the index went from 0.67 to 0.55), Guajira (from 0.53 to 0.48), Caldas (from 0.61 to 0.54), Antioquia (from 0.60 to 0.52), and Quindío (from 0.61 to 0.52). On the other hand, the inequality widened in the departments of Cesar (from 0.53 to 0.59) and Bogotá (from 0.52 to 0.56). According to the 1993 census and estimates made by the DANE in 1995, about 25% of the municipalities fell within the two strata with the highest proportion of unmet basic needs (UBN); another 25% were in the two strata with better living conditions. Inequality is also seen in the number of persons covered by the subsidized health care system—that is, the medical benefits plan for those unable to pay, who between 1993 and 2000, amounted to 59.8% of the total population with UBN. Nonetheless, 15 departments had a large proportion of UBN and low coverage under the subsidized system; 7 others, including the 3 most densely populated, had a low percentage of UBN and high subsidized coverage. Social inequality can also be seen in the negative impact economic liberalization had on the agricultural sector in the 1990s. Some of Colombia's grains and basic products were not competitive on the world market, and by the end of the decade, 700,000 ha of agricultural production had been lost, while planting of illegal crops doubled from 57,500 ha in 1994 to 112,000 in 1999. These changes exacerbated the armed conflict and societal deterioration, and contributed to the increase in all forms of violence.

For more than 35 years, Colombia has been suffering from a major armed conflict. The current government has initiated negotiations for a peace agreement with the guerrilla movement that will be based on territorial integrity, democracy, and human rights. Five protagonists are involved: the guerrilla movements known as the Revolutionary Armed Forces of Colombia (FARC) and the National Liberation Army (ELN), the regular armed forces, the so-called United Self-defense Forces of Colombia (AUC), and the civilian population. The situation is marked by the highest levels of violence in Colombia's recent history, and it is undoubtedly the factor that weighs most heavily on the country's political life. In 2000, the FARC and the Government agreed on a joint agenda for negotiation, which was later accepted by the ELN as well, with the aim of reaching a national agreement. Civil soci-

ety is demanding an ever-greater presence in the peace process, especially in overseeing it to ensure that conditions favorable for reconciliation are created. Plan Colombia, a strategy formulated by the Government to lay the foundations for sustainable peace, is based on four components: economic and social recovery, negotiation of the armed conflict, an anti-drug policy, and strengthening of institutions in conjunction with social development.

The human rights situation continued to deteriorate in 2000, especially because of mounting crimes against life, liberty, and personal integrity and safety. It is estimated that some 70,000 antipersonnel mines are scattered throughout 164 districts in 23 different departments. In the first half of 1998 alone, mines killed 100 people and injured 155, 78% of whom were soldiers who returned to civilian life without any social rehabilitation. Mass population displacement due to violence is a glaring expression of the humanitarian crisis. Colombia ranks fourth in the world and first in the Americas in the number of displaced persons. According to the Social Solidarity Network, an estimated 400,000 displaced persons were in need of immediate assistance in 2000. The Commission on Human Rights calculates that, between 1985 and 1999, 1,700,000 persons were displaced due to violence. The United Nations has given priority to 139 municipalities, 19 of which are net receivers of population; 40, receivers and exporters; and 80, net exporters.

Massacres, defined as "a single criminal action that causes the violent, indiscriminate, and arbitrary death of three or more persons, usually civilians and, more specifically, to the most vulnerable groups of the population," are the most flagrant and barbaric violations of human rights and of international humanitarian law. They are the principal cause of population displacement, especially among peasants. The number of massacres in Colombia doubled between 1996 and 1999, from 188 to 403; according to the Public Defender's Office, one of every four massacres reported in 1999 occurred in Antioquia, one of the departments that has been most affected by population displacement. The National Institute of Legal Medicine and Forensic Sciences estimated that the impact of the approximately 25,000 homicides recorded annually translated to 1.3 million potential years of life lost due to violent death in 1998–1999.

The observed trend suggests that population displacement can be expected to continue and that potential new emergencies will arise. For example, the call under Plan Colombia for intensified crop fumigation in the department of Putumayo, which is the source of 70% of the country's coca, could trigger an even greater outflow of people to Nariño, Cauca, and the border with Ecuador. Another major concern is the persistence of drug trafficking and the high levels of crime associated with it. Even when drug cartels are broken up, they remain active, and Colombia has become the world leader in cocaine and heroin production, with 103,000 ha devoted to coca and 9,000 ha to poppies.

Colombia is experiencing the demographic and epidemiological changes typical of transitional societies, such as population aging, decreasing fertility, rapid urbanization, and the persistence of communicable diseases among a large proportion of the population and the increasing importance of noncommunicable diseases as causes of morbidity and mortality in a large proportion of the population. In 2000, the National Population Health Survey (ENDS–2000) reported that life expectancy at birth had increased to 70.6 years, fertility dropped to 2.8 children per woman, and 71% of the total population lived in urban areas. Figure 2 shows the distribution of the population by age and sex in 2000.

Mortality

Colombia has been using the International Classification of Diseases, Tenth Revision (ICD-10), since 1997 to classify causes of death. Diseases of the circulatory system continue to occupy first place, with a downward trend from 125.6 to 115.4 deaths per 100,000 population between 1995 and 1998, followed by external causes, which declined slightly, from 107.8 to 105.1 per 100,000. Malignant neoplasms (62.1 deaths per 100,000 population in 1998) and communicable diseases (30 deaths per 100,000 population in 1998) remained stable during that period. The percentage of deaths from ill-defined causes fell from 6.2% in 1995 to 3.0% in 1998 (4.2% in 1997, coinciding with the change to ICD-10). Figure 3 shows estimated mortality rates by broad groups of causes and sex in 1998.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

In 2000, Colombia had 4.8 million children under 5 years old. According to ENDS–2000, the infant mortality rate that year was 21 deaths per 1,000 live births and ranged from 17 per 1,000 in Bogotá to 29 per 1,000 in the coastal area. It was noted that age of the mother (especially mothers under 20 years and over 40), the time between pregnancies (when fewer than two years), and number of deliveries (more than three) were factors associated with higher levels of infant, neonatal, and postnatal or perinatal mortality. The DANE estimated that the mortality rate for certain diseases originating in the perinatal period rose from 480 deaths per 100,000 live births in 1985 to 750 in 1998. In this age group, according to ENDS–2000, the prevalence of chronic undernutrition was 13.5%; diarrhea, 13.9%; and acute respiratory infections, 12.6%.

Schoolchildren (5–9 years)

There were 4.8 million children aged 5–9 years in 2000. DANE information shows that in 1998, this age group accounted for 1,537 deaths (36.9 per 100,000 boys and 26.7 per 100,000 girls);

more than 65% of deaths were due to external causes, 18% to communicable diseases, and 13% to malignant neoplasms.

Adolescents (10–14 and 15–19 years)

In 2000, adolescents numbered 8.6 million: 4.4 million were between the ages of 10 and 14 and 4.2 million were between 15 and 19. According to the DANE, in 1998, there were 7,864 deaths in the adolescent population (133.4 per 100,000 males and 47.9 per 100,000 females). In young men aged 15–19, violence accounted for 69% of the deaths; there were 13 male deaths for each female death in this age group. Data from a national survey on juvenile drug use showed that among the population surveyed alcohol and marijuana continued to be the most consumed drugs; 15.2% of all persons who drank alcohol and 6.8% of cigarette smokers were under 18 years of age. The prevalence of cocaine consumption in the general population is 3.8%; 15.2% of those are 11–15 years old and 30.4% are 16–18 years old. According to ENDS–2000, 56% of 10–14-year-olds live with their parents. During the 1990s, the proportion of pregnant women aged 15–19 years almost doubled, from 10% in 1990 to 19% in 2000.

Adults (20–59 years)

In 2000, the adult population in Colombia numbered 26 million. According to the DANE, 78,280 deaths were recorded for this age group in 1998 (406.3 deaths per 100,000 males and 168.9 per 100,000 females). At the end of the 20th century, the adult population aged 15–44 saw an increased disease burden, especially among males, attributable to the rise in homicides and in AIDS as causes of death. In 1997, the Second National Study on Mental Health and Psychoactive Substances revealed a downward trend in tobacco use, from 29.7% in 1987 to 22.2% in 1998; 3.7% of the general population were recent ex-smokers (less than 1 year), with no difference between the sexes. ENDS–2000 found that among sexually active females living with a male partner, there was a 77% prevalence of contraceptive use; an average of 37 months between pregnancies (as opposed to 34 months in 1995) and 46 months for women with a university education; and a crude birth rate of 24.4 per 1,000 population, compared with 27.0 in 1995.

The Elderly (60 years and older)

In 2000, 7% of Colombians (3 million people) were aged 60 years and over. According to the DANE, in 1998, there were 73,121 deaths in this age group. The leading diseases for both sexes were ischemic heart disease; chronic obstructive pulmonary disease; diabetes mellitus; and malignant neoplasms of the trachea, bronchus, lung, prostate, and uterine cervix.

Family Health

Domestic violence is a high-priority problem. According to ENDS–2000, 41% of women who ever lived with a partner declared they had been physically abused by their partner (and an additional 20% by another relative). In addition, 34% had been threatened by their partner: the most common threats included desertion (23%), taking away their children (18%), and refusing to provide financial support (16%); 11% stated they had been raped by their spouse (and an additional 7% by another person). Only 20% of the physically abused women lodged an official complaint. In 1997, the Second National Study on Mental Health and Psychoactive Substances disclosed that 9.7% of children had been emotionally abused and 4.3% had been physically abused. The National Institute of Legal Medicine and Forensic Sciences recorded 34 homicides due to physical abuse in 1999, and it evaluated 9,896 cases of sexual abuse of minors, either within the nuclear family (33%) or outside it (67%).

Workers' Health

Every year there are thousands of cases of severe trauma and hundreds of deaths due to exposure to physical and chemical hazards in the workplace. The artisanal industries do not provide adequate health conditions for their employees. The main problems are underreporting of the morbidity and mortality caused by occupational diseases and work-related accidents; the lack of technical assistance programs aimed at the working population; overlapping jurisdictions; the dearth of human resources trained in occupational health research, clinical diagnosis, and treatment of occupational illnesses; the lack of epidemiological surveillance in the area of occupational health and risks; and the absence of national standards and limits on permissible levels of chemical substances that are harmful to both workers and the environment. Industrial centers and areas of agricultural production pose the highest occupational risks.

The Disabled

Colombia lacks systematic and reliable registration of disability. Information is limited to the 1993 census, which recorded 593,546 disabled persons, and to a demographic study conducted by Pontificia Universidad Javeriana in nine departmental capitals since 1995. The latter identified 2,360,000 persons with disabilities, 12.1% of them under 14 years old and 27.6% over 60, and most of them males.

Indigenous Groups

The indigenous population of Colombia, which endows the nation with its ethnic and cultural diversity, was estimated at 2% in the year 2000. In all, there are 81 groups, who speak 17 autochthonous languages; 92.6% of these people live in rural areas, compared with 7.4% in municipal seats. In addition, there is an ethnic population of African origin that numbers more than 10 million and represents 25% of the nation's total. A humanitarian mission that visited 22 indigenous communities in 1992–1993 found that the most prevalent health problems afflicting both sexes were acute respiratory infections, intestinal parasitosis, and acute diarrheal disease.

By Type of Health Problem

Natural Disasters

Many of Colombia's natural disasters can be attributed to a large extent to environmental deterioration, poor natural resource management, and inadequate risk prevention. The country's vulnerability to natural and manmade disasters is increased by its hydrometeorological, geological, and topographic characteristics; deficient environmental protection measures; and the proliferation of human settlements in high-risk areas. The departments most vulnerable to floods and land or mudslides are Córdoba, Sucre, and Bolívar, plus areas along the Sinu River. Nariño, Cauca, Quindío, Valle, and Choco, in turn, are at greatest risk of earthquakes, whereas Bogotá and Antioquia are at intermediate risk. Government policy tries to guarantee effective and timely management of technical, administrative, and financial resources for preventing, mitigating, and attending to emergencies; rehabilitation of areas struck by disaster; and establishment of institutional responsibilities in affected areas to make them less vulnerable and more self-sufficient in coping with disasters.

Vector-borne Diseases

Malaria poses a serious public health problem for Colombia. It is estimated that 18 million people live in areas where malaria is transmitted. In 1998, there was an epidemic with 240,000 confirmed cases. In 2000, there were 141,047 confirmed cases—a figure consistent with the endemic level observed over the preceding decade—and this number included 52,056 cases of *Plasmodium falciparum* infection (for a *P. vivax-P. falciparum* ratio of 2:1) and 41 deaths. The malarious area, in which 90% of the cases occurred, covered 462,701 km^2 and was concentrated in 154 municipalities, located in 9 departments. The annual parasite index in this area was >10 per 1,000 population.

Another serious public health problem in Colombia is dengue. Around 65% of the urban population face a high probability of becoming infected with dengue or dengue hemorrhagic fever (DHF). The average number of cases per year is 30,000, but in 1998, a total of 57,985 cases were documented, including 5,171 cases of DHF. The dengue-2 and dengue-4 serotypes were circulating simultaneously. In 2000, there were 22,772 reported cases of classic dengue and 1,819 cases of DHF, with 19 deaths. The most affected cities were Huila, Cali, Cúcuta, Bucaramanga, and Barranquilla.

The high index of *Aedes aegypti* infestation in many municipalities poses a serious risk factor for the urban transmission of yellow fever, and jungle yellow fever continues to be active in Colombia. Jungle yellow fever can occur as both an endemic and an epidemic disease: in the 1990s, there were an average of four cases per year, although eight and six cases were reported in 1996 and 1997, respectively. The most affected regions were located at the base of the eastern and central Andean ranges. The average case-fatality rate was 35%, but was as high as 100% in 1996 and 63% in 1997. In 1999, two cases were confirmed (in Caquetá and Putumayo) and in 2000, there were four cases (in Guaviare, Meta, and Vichada). The expanding range of *A. aegypti* and the threat of *A. albopictus* have raised fears of a possible reurbanization of yellow fever.

On average, 6,000 cases of leishmaniasis are reported annually. In addition, it is estimated that 8 million people live in areas where Chagas' disease is endemic.

Diseases Preventable by Immunization

In 1993, Colombia joined a regional partnership for the elimination of measles by the year 2000; successive national campaigns in 1993, 1995, and 1999 achieved coverages of 97%, 95%, and 90%, respectively, in children under 5 years old. Reports of suspected cases increased from 632 in 1997 to 1,267 in 2000, while the number of laboratory-confirmed cases fell from 308 in 1995 to 0 in 2000, and the number of clinically confirmed cases (without blood sampling or other analysis) dropped from 473 in 1995 to 34 in 1999 and to 1 in 2000. Coverage with measles vaccine was 79% in 1999 and 80% in 2000. Eighty percent of the country's municipalities achieved less than 95% coverage in 1999, as did 75% of municipalities in 2000. Rubella was added to the measles surveillance system in 2000, and that year, 679 suspected cases were reported, 155 of them laboratory confirmed and 4 of them clinically confirmed. The reports included outbreaks among military personnel (in Bogotá, Nariño, and Norte de Santander) and sanitation workers (Norte de Santander). According to the Health Information System (SIS-12), rubella cases numbered 6,302 in 1996, 1,901 in 1997, 1,906 in 1998, and 974 in 1999.

Vaccination against *Haemophilus influenzae* type b was introduced in 1998, with coverage levels of 51.7% in 1999 and 64.4% in 2000. There has been a decline in meningitis caused by *H. influenzae* type b among children under 5 years, from 306 cases (6.4 per 100,000) in 1998 to 163 cases (3.4 per 100,000) in 1999 and 119 cases (2.8 per 100,000) in 2000.

Most of the reported cases of pertussis occurred in the department of Antioquia (181 in 1998, 255 in 1999, and 264 in 2000). Also, in 2000, there was an outbreak of 46 cases with 7 deaths in the indigenous population of Sierra Nevada de Santa María.

Reported cases of hepatitis B numbered 1,354 in 1998, 1,490 in 1999, and 1,283 in 2000; most of the cases were in endemic areas (Orinoquia, Amazonia, and Santa María).

There were 183 cases of acute flaccid paralysis in 1997, 180 in 1998, and 190 (1.4 per 100,000 population under 15 years) in 1999. None of these cases was laboratory confirmed as poliomyelitis.

Neonatal tetanus declined steadily throughout the 1990s, falling from 160 cases in 1989 to 10 in 2000. A total of 489 municipalities are included in the area at risk, but in 1999, only 6 of these municipalities (1.2%) registered an incidence of 1 case per 1,000 live births or higher.

Only 3–5 annual cases of diphtheria were reported during 1997–1999, but in 2000 there were 39 suspected cases, including an outbreak in Cali, with 7 laboratory-confirmed cases, 1 clinically confirmed case, and 1 death. The patients affected were between 3 and 18 years of age.

During 1995–1996, coverage with vaccines in the regular immunization schedule exceeded 90%, whereas in 1998–1999, no coverage reached 90% and only the vaccines against tuberculosis (BCG) and measles exceeded 80%. In 2000, coverage was 90.9% for BCG; 82.4% for OPV; 78.5% for DPT; 78.2% for hepatitis B vaccine; 64.4% for Hib; and 79.5% for MMR (Figure 4).

Intestinal Infectious Diseases

In 1998, a total of 445 cases and 7 deaths from cholera were reported for the entire country, followed by 18 cases in 1999 (11 of them confirmed), and 1 case in 2000.

Chronic Communicable Diseases

Tuberculosis has reemerged as a public health problem. The causes are multiple, including increased poverty, migration and population displacement, the growth of marginal communities, the weakening of control programs, insufficient political will, and inadequate patient education. Nonetheless, available information appears to indicate that the incidence of the disease fell significantly between 1970, when the rate was 58.6 per 100,000 population (12,522 cases), and 1999, when it was 26.5 per 100,000 (10,999 cases). Reported cases in 2000 totaled 11,590. In the 1999 treatment cohort, 78% were successfully treated and 66% were cured.

National policy calls for eliminating leprosy as a public health problem. In 2000, the reported incidence was 0.5 per 10,000 population (2,124 cases), and in four departments the rate was higher than 1 in 10,000. It should be noted that, although the incidence has been reduced, the proportion of new cases with some degree of disability has risen, which indicates delayed diagnosis of the disease.

Acute Respiratory Infections

Acute respiratory infections continue to be one of the leading causes of morbidity and mortality in children under 5 years old, even though mortality from pneumonia fell from 51.0 per 100,000 population in 1988 to 34.1 in 1998. The morbidity rate for acute respiratory infections rose from 174.0 per 100,000 population in 1991 to 214.0 in 1996.

Zoonoses

Since 1994, 61.8% of Colombia's canine population, estimated at 3.4 million, has been vaccinated against rabies. Cases of canine rabies decreased from 350 in 1990 to 67 in 2000. At the same time, human rabies dropped from 10 cases in 1990 to 1 case in 2000. In the late 1990s, monoclonal techniques were used to characterize the different strains of rabies in circulation, and the following strains were found: variant 1 (dog, mongoose); variant 3 (vampire bat); and variant 4 (insectivorous bat).

Three important varieties of equine encephalitis exist in Colombia: Venezuelan, Eastern, and Western. In 1997, the Venezuelan and Eastern varieties of the virus were detected in an equine epizootic that occurred in the department of Casanare. The introduction of serologic techniques in 1995 to detect IgG and IgM antibodies has facilitated epidemiological surveillance. Since then, no human cases have been reported.

HIV/AIDS

Of the 17,163 cases of HIV/AIDS registered between 1983 and March 1999, 11,381 corresponded to carriers of HIV infection and 5,782 to patients with AIDS, 85% of which were males (Figure 5). During the same period, 3,441 deaths were reported (90% in males). In 2000, it was estimated that 67,000 persons were carriers of HIV. Sexual transmission, both homosexual and heterosexual, is the predominant means by which the infection is transmitted. The first case of vertical perinatal transmission of HIV in Colombia was observed in 1987, and 195 cases have been reported since then. According to sentinel surveillance studies, the prevalence of HIV in pregnant women was 0.1% in Bogotá and 0.4% in Cali, which implies that transmission patterns in mountainous areas differ from those on the coast. The association of tuberculosis and HIV is not well documented in Colombia, but some studies suggest that 15% to 20% of HIV/AIDS cases are associated with tuberculosis and that 6% to 14% of tuberculosis cases are associated with HIV.

Sexually Transmitted Infections

There has been a noticeable deterioration in programs for the prevention, control, and surveillance of sexually transmitted infections, due in part to the concentration of technical and financial resources for fighting HIV/AIDS. The overall incidence of sexually transmitted infections ranged from 350 per 100,000 population in 1985 to 130 per 100,000 in 1996. It has been estimated that primary syphilis is declining, while other forms of the disease, including congenital syphilis, have leveled off. Of the 56,343 cases of sexually transmitted infection reported in 1996, about 35% were gonorrhea, 16% were syphilis, and 14% were hepatitis B. Three-fourths of these cases were in persons aged 15–44 years and 11% were in persons under 15 years of age.

Nutritional and Metabolic Diseases

According to ENDS–2000, the average height of Colombian women was 154.6 cm (6% measured less than 145 cm). Their average body mass index was 24.7, and 3% of mothers were at risk (BMI <18.5). At the same time, 30% of mothers had excess weight for height, and 11% were obese. The prevalence of chronic undernutrition was 13.5% in children under 5, with 2.8% at risk for severe undernutrition. The prevalence of exclusive breastfeeding through the fourth month of life was 23%, and through

the sixth month, 12%; on average, children under 3 years of age were breast-fed for 15 months.

The prevalence of anemia in children under 5 years old increased from 18% in 1997 to 23% in 1995, and it was higher in the 12–23-month-old group (36.7%) and in rural areas (27.2%). The prevalence of vitamin A deficiency was 14.2%, with higher rates in the Pacific (20.3%) and Caribbean (19.3%) coastal regions. In 1998, Colombia certified internationally that 92% of salt for human consumption met the national standard: in a sample of 6,000 schoolchildren, it was found that urinary iodine levels were sufficient (over 100 µg/dl) and the prevalence of grade 1 goiter was 7%.

Diseases of the Circulatory System

During 1995–1998, mortality due to diseases of the circulatory system accounted for 26% to 30% of all deaths. The highest rates are for ischemic heart disease, cerebrovascular damage, and hypertension (44.0, 31.1, and 13.5 per 100,000 population, respectively).

Malignant Neoplasms

Stomach cancer is the neoplasm with the highest incidence in Colombia, followed by lung cancer, and leukemia and lymphoma. In men, the lung and prostate are the most frequent sites; in women, cervical and breast cancer head the list. In 1998, the mortality rate from neoplasms was 62.7 per 100,000 in the population as a whole. By site, the highest mortality rates were for the stomach (9.6), lung (6.3), leukemia and lymphoma (5.4), cervix (4.8), prostate (4.2), and breast (3.4). The departments with the highest mortality from neoplasms were Quindío (91.3), Risaralda (84.2), and Valle (83.6).

Accidents and Violence

The last 25 years have seen an increase in accidents and violence, especially homicides (25,000 per year on average). According to the National Institute of Legal Medicine and Forensic Sciences, there were 36,947 violent deaths in 1999, of which 23,209 were homicides, 7,026 were due to traffic accidents, and 2,089 were suicides. The groups most affected were men aged 25–34 years (9,097 deaths) and 18–24 years (7,925 deaths). In five departments, the homicide rate approached or exceeded 100 per 100,000 population: Cauca (97.5), Arauca (101), Risaralda (110), Antioquia (120), and Guaviere (136).

Oral Health

According to the Third National Study on Oral Health, the prevalence of bacterial plaque in 1998 was 81.6% (95% in persons under 20 years of age and 27% in those over 60); the plaque index was 1.6 in 7-year-olds and 1.2 in 12-year-olds. In persons aged 15–44 years the index was 0.8, 25% lower than in 1980, when it was 1.1, which suggests there has been an improvement in clinical levels of hygiene. In 5-year-old children, there was a 30% reduction in the average number of teeth with a history of caries, and the DMFT index was down from 4.2 in 1980 to 3.0 in 1998. Although Colombia did not reach the dental health goal set by WHO and the World Dental Federation for this sector of the population, the fact that 39.6% of these children had no dental caries indicates there has been positive, though modest, progress in raising the level of primary dental care.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

In 1990, the health sector gave impetus to Law 10 on Municipalization of Health, which launched the process of strengthening national health system institutions at all levels. This initiative, which sets forth the fundamental principles of sectoral reform, was reflected in the new Constitution of 1991. These mandates, in turn, were taken into account in Law 60, which defined the scope of responsibility of the different territorial jurisdictions and stipulated the resources to be made available to them. The legal framework was further refined by the enactment of Law 100 (1993), which created the General Health and Social Security System (SGSSS) and, under it, a comprehensive pension plan, coverage for work-related risks, supplementary social services, and the health and social security system itself. The main overall objective of the SGSSS is to expand coverage for participants in the contributory regime, participants in the subsidized regime, and those who are "linked" to the system. The latter are included in the system through subsidized services because they are blocked from participating in the subsidized or contributory regimes.

This scheme looks ultimately to the attainment of sufficient solidarity in income redistribution so that coverage can be provided not to only insured individuals but also to their spouses, minor children, and even parents and relatives up to the third degree. Its guiding principles are efficiency, universality, solidarity, integration of services, unity, and social participation. The reform process was initially led by the Ministry of Labor and was intended to modify the existing scheme for pensions. However, in the course of technical discussions it was decided to reform the service delivery system as well.

Since 1993, health policy has been dictated by the goal of implementing and advancing sectoral reform, taking advantage of market forces and regulated competition to make social spending on health more efficient. Priority has been given to the separation of responsibilities, competition between public and private insurance, public and private offers of basic packages for individual care, and the encouragement of competition among providers with a view to improving efficiency and quality and facilitating freedom of choice. The SGSSS today is faced with: (1) a major hospital crisis, primarily in public institutions, which carry the market burden of providing services to the poorest segment of

the population and those tied to the system through subsidized health services, plus the added financial risk of caring for the latter, because under the subsidized Mandatory Health Plan (POS) they receive only a partial per capita reimbursement; (2) paralysis in the extension of health coverage under both regimes because of the fiscal crisis, increased unemployment, and the fiscal adjustments in the macroeconomic policy negotiated with international financial institutions; (3) the deterioration of public health programs and epidemiological surveillance systems in the country; (4) lack of social responsibility and commitment to public health on the part of professionals and technical specialists as a result of changes in the regulations, including flexibilization of the workforce and the reduced size of public institutions; (5) managerial and operational difficulties with quality control (including oversight, integration of services, and continuity) in connection with the epidemiological and health care team approaches; and (6) administrative problems that hamper the system's operation, caused by mistakes made by the health authority, fragmentation and anarchy in the organizational structure, inadequate information systems, poor internal communication, complex legislation, and corruption, among other causes.

Health Sector Reform Strategies and Programs

Inspired by the Colombian Constitution, the objectives of national health service reform are centered around correcting present conceptual, structural, and procedural shortcomings of the system and casting the structure and functions of the SGSSS within a new doctrinary, methodological, and operational framework, with central participation of entrepreneurial and market mechanisms for the management of health. The system is guided by three key principles contained in the Constitution—namely, efficiency, universality, and solidarity—and the interpretation of these principles was spelled out in Law 100 (1993). Their significance in the context of the health system is reviewed briefly in the following paragraphs.

Efficiency means making the health sector more rational in its spending at the macroeconomic level (efficiency in the allocation of funds), so that the resources available can be used for providing certain needed services, which are defined by a mechanism of exclusion priorities and stipulated in the Mandatory Health Plan (POS). There is an expanded version of this list of services for beneficiaries under the contributory regime, and a more limited version for the poor (strata I and II of the beneficiary identification system, SISBEN). The law calls for universal coverage by the POS and provision of an equalized benefit package for all by 2001, though this goal is not likely to be achieved in the medium term. In the meantime, failure to comply is preventing Colombians from exercising their irrevocable right to health care. The law is also designed to make spending more efficient through an explicit process of identifying beneficiaries (SISBEN) based on the criteria of poverty or quality of life.

The concept of efficiency tied to competition among the different actors in the system has been introduced at the microeconomic level, especially in the insurance institutions, or health promotion enterprises, and the entities responsible for the delivery of services (service providers). It is hoped that separating these two actors, which were formerly combined in a single institution, introducing market mechanisms into their relationship with one another, and changing competitive criteria so that they are no longer based more on price than on quality of service will help provide more efficient service and furnish the public with the right to freely choose their insurers and providers.

Universality means guaranteeing all citizens membership in the new SGSSS, regardless of their past or present health status, their history of service use, or their socioeconomic situation. With this principle in mind, the Law specifies that all persons who have the capacity to pay, based on a minimum set by the Government, are required to contribute to the system. The premiums may be paid either through payroll deductions, with the employer contributing a corresponding share, or on an individual basis if the person is outside the formal workforce, in which case the independent worker is responsible for the full premium under the contributory regime.

In addition to the contributory regime, there is a subsidized regime that covers all citizens without enough income to pay premiums on their own, who are therefore subsidized by the State. The Government is required to guarantee sufficient resources in its annual budget to ensure that these persons, together with their family members, will receive the benefits they are entitled to under the Mandatory Health Plan (in its version for subsidized members). Equity will be achieved under the system when the benefits equal the capitation received through these two regimes.

Solidarity is sought mainly in the financial and vertical sense, through a scheme of cross-subsidies within the system, which is intended to ensure that a percentage point of the premiums paid into the contributory regime goes to pay for the coverage of the poor population. The monies would be handled through an intermediary fund. In addition, both the State and local governments help to finance the cost of local health care, the former from tax revenues and the latter from regional shares allocated in the national budget.

In performing its basic functions, the SGSSS reform has displayed weaknesses in meeting its social responsibility to strengthen the national health authority. These weaknesses can be seen in the deterioration of public health as a result of the changes that have been introduced and in the absence of an integrated health policy, inasmuch as the innovations have focused on organizational and institutional reforms, separation of functions, individual health insurance, and financing of the system. In fact, health sector reform has had to contend with a long list of logistic and administrative problems: excessive regulation; need for a useful information system for monitoring health and health management as well as a system of quality assurance; absence of,

or weak, administrative control and epidemiological surveillance; bureaucratization of the system, which limits public access and the timely flow of resources; a crisis in the economic model that is undermining financial support for the health and social security system; poverty, unemployment, and expansion of the informal sector of the economy, all of which hinder attainment of the system's objectives; and, finally, serious incapacity of the central entity to exercise its regulatory and moderating functions and articulate them through intermediate entities. Achieving the much-needed transformation of the health services requires stronger leadership on the part of the Ministry of Health, improvements in the management of national health funds, greater partnership with civil society, a health benefit portfolio that will guarantee resources for everyone, and a reexamination of the role of public and private insurers to ensure they take into account the country's regional and social diversity.

The Health System

Institutional Organization

Until 1993, the health care model in Colombia was dictated by the criteria for primary care. The national health system saw itself as basically a centralized health care system, and, accordingly, it proceeded to strengthen its institutional infrastructure and gear its training programs to provide various levels of coverage, with little concern for the prevention of disease. Creation of the SGSSS under Law 100 (1993) introduced a new scenario in which health service delivery is expected to operate within a regulated market in which the public and private sectors both participate. In theory, this would ensure free choice for users and promote competition among insurers and service providers. In short succession, a string of new entities emerged: health promotion enterprises, service provider institutions, subsidized regime administrators, and occupational risk administrators. In addition, new managerial functions were assigned to the National Council on Social Security, while inspection, monitoring, and regulation of the system (basically in terms of its juridical, contractual, administrative, and financial aspects) were delegated to the National Health Superintendency. The new scenario also encompasses public health programs, and the present system has been designed to ensure equitable coverage, improve the quality of services, and actively advance promotional and preventive plans for improving the health conditions of all Colombian citizens.

According to the Ministry of Health, the hospitals under its authority managed to improve their productivity by 5% between 1996 and 1997, while at the same time lowering their costs by the same percentage (since there was no increase in resources), but they experienced a moderate decline in overall production between 1997 and 1998: total hospital discharges fell from 1,079,747 to 1,073,918; outpatient consultations, from 5,173,703 to 5,123,393; surgeries, from 518,721 to 514,643; and deliveries, from 276,073 to 260,703. Nonetheless, visits for emergency care rose from 4,026,885 to 4,169,412. A study of 26 third-level public hospitals showed that, between 1997 and 1998, the number of hospital beds increased by 234, from 8,037 in 1997 to 8,271 in 1998. But there was a reduction in discharges from 430,032 to 429,616, bed turnover dropped from 53.51 to 51.94, and the average hospital stay was prolonged from 5.64 to 5.75 days, making for an overall reduction in hospital productivity, and hence a decline in the bed occupancy rate from 84.88% to 83.09%.

Developments in Health Legislation

The Constitution establishes that the nation shall be organized under a democratic, participatory, and pluralistic regime and that it shall be a unified but decentralized republic in which the territorial entities are autonomous. As a political process, decentralization is backed by the legal framework embodied in Law 60 (1993), Law 141 (1994), and Law 358 (1997), which regulate the procedures for transferring funds to the territorial entities. Law 60 (1993) provides that municipal participation in Colombia's current income will increase from 14% in 1994 to 22% in 2002. Distribution is to be based on the following minimum criteria: 40% in direct relation to the number of inhabitants with UBN, 20% in relation to the degree of poverty of each municipality, 6% depending on fiscal efficiency, 6% depending on administrative efficiency, and 6% according to demonstrable improvement in quality of life as measured by change in the UBN index during a specified period. Article 22 of this law sets basic priorities for municipal investment: 25% to health; 30% to education; 20% to potable water; 5% to physical education, recreation, culture, and sports; and the remaining 20% left to the discretion of the mayor or the community as long as the activities are provided for in Law 60.

Law 100 (1993) reformed the health policies that had been in effect up to that time and defined the health plans: the Basic Health Plan (PAB), both free and compulsory, run by the Government and directed toward the entire community, and the Mandatory Health Plan (POS), run by the health promotion enterprises and the subsidized regime administrators and available to subscribing members and their dependents. The law also sets forth the responsibilities of each party or authority in accordance with the regime that connects the person to the system: subscribers who are able to pay premiums under the contributory regime and are insured by the health promotion enterprises, and the poorest and most vulnerable members of the population, some covered by the subsidized regime and others who are taken care of by the subsidized regime administrators. The latter two groups are assisted by demand subsidies. There is yet another large group that does not enjoy the benefits of State subsidy but is assisted through supply subsidies at public hospitals, which themselves are in the process of being turned into social enterprises of the State.

Five years later, a review of the achievements of the period shows that 61.53% of the population with UBN is covered by the subsidized regime. However, this figure conceals serious inequities between and within Colombia's departments. Fifteen departments have high percentages of the population with UBN and low percentages of coverage by the subsidized regime, including Norte de Santander, Tolima, Córdoba, and Bolívar, each with a population of over 1 million. At the same time, seven departments have low percentages of UBN and high percentages of coverage by the subsidized regime, including Bogotá, Antioquia, and Valle, with populations of over 4 million each. The department of Antioquia, however, has 46 municipalities with high percentages of UBN and very low coverage by the subsidized regime.

The Basic Health Plan, to be financed with public resources, covers the principal public health services that are considered the exclusive responsibility of the State. These services include all activities involving the control of environmental risk factors that affect health, such as the campaigns against malaria, leishmaniasis, dengue, and yellow fever, as well as vaccination campaigns, health education, and activities related to the dissemination of information. In addition, the plan is expected to offer a food subsidy program for pregnant and nursing women and for infants under 1 year of age.

In 1999, the National Congress received the draft of Law 156 for its consideration. This is essentially a national public health law that will bring the National Health Code (Law 9 of 1979) up to date and fill in some of the gaps relating to public health in Law 100 (which created the SGSSS).

Organization of Regulatory Actions

Health Care Delivery

In the course of implementing the institutional reform of health services, it has been observed that institutions tend to operate in isolation, which makes it difficult to coordinate the network of strategies developed to fight the health problems of the community. The decentralization of local and intermediate-level health systems has been taken to mean that these regional and local systems were autonomous and self-sufficient, and it has not been accompanied by an adequate transfer of authority and technological and financial resources. One problem is the shortage of human resources with the knowledge and skills to steer and manage epidemiological networks and activities in accordance with the scientific principles of local health system administration. A serious defect in the social management of health care processes and the development of healthy municipalities and smaller urban settlements has been the lack of training in negotiating agreements that will ensure diligent performance. At the same time, failure on the part of national health authorities to meet basic public health responsibilities has caused decentralization to become a problem in the effective coordination of health systems.

In addition, decentralization of the health services market is not consistent with Colombia's political-administrative division. It has been difficult to harmonize the logical principles that underlie democracy and participation (based on laws governing the organization and responsibilities of municipalities and departments), epidemiology (based on populations and spaces defined geographically at a given point or period in time), and the delivery of services (based on levels of technological problem solving, expressed as attack strategies, and concerned with economies of scale) with the logic of the market, which is driven by profit and economic feasibility and does not necessarily have to take into account the characteristics of a particular population or geographic situation. Faced with this challenge, the health promotion enterprises have chosen to create new service delivery establishments to increase their market share, rather than to meet the need for health care access in underserved areas.

The local levels have responded to the new situation by attempting to strengthen their steering function at the departmental and municipal level by placing health care under the authority of departmental officials and mayors, respectively. In so doing, they hope to pursue local activities focusing on primary health care, supplementing the scarce resources available, active and dynamic surveillance of the health-disease process, development of systems for the referral and counter-referral of patients, integration of health care, and interaction between health care teams and the community based on active social participation.

Certification and Professional Health Practice

The certification required to practice the various health care professions is conferred, in principle, by the educational institutions that grant degrees attesting to the specific professional or technical competency of their graduates, or, in the case of the auxiliary occupations, corresponding certificates, which are then registered with the authorities (currently the respective departments in the Ministry of Health). In other words, there are no mechanisms for evaluating and verifying the competency of health workers. The system relies totally on the quality and relevance of educational programs.

The regulation and educational training of professionals and technical specialists should be distinguished from the training of auxiliary health workers. Until 1993, training of professional- and technical-level personnel was under the jurisdiction of the educational authorities. All programs had to be submitted for prior approval and monitoring by the Colombian Institute for the Promotion of Higher Education, which controlled which educational establishments could operate and regulated their curricula. Law 30, which reformed higher education, granted educational institutions the autonomy to create their own programs. Until 1992, the training of auxiliary personnel, known as nonformal education, was done in schools under the departmental

health services, which trained personnel for both the public and private sectors. A central agency, the General Council for Health Human Resources Development, was responsible for approving and monitoring programs, with the participation of the Ministry of Health and the support and advisory services of departmental health authorities. After passage of Law 100 (1993), which reformed the health system, departmental health secretariats were relieved of their educational responsibilities, and the training of auxiliary health personnel was turned over to the private sector. As a consequence of this move and restructuring of the Ministry of Health and the departmental secretariats, accomplished largely through the reorganization and downsizing of State institutions, which abolished the Human Resources Office in the Ministry of Health, control is no longer exercised on a regular basis. In short, recent years have seen a troubling proliferation of educational entities and programs that fail to guarantee the quality or pertinence of their professional curricula or, for that matter, relevance to the real human resource needs of the health sector.

Environmental Quality

One of the most serious effects of economic development has been the deterioration of natural resources, especially water, soil, and air. Poor water quality and variations in the water cycle are having a negative effect on health. The pollution of groundwater by domestic and industrial effluents and solid waste of all kinds is threatening not only the supply of water available for human consumption and production but also the nation's flora and fauna. One of the worst pollutants is oil, which has leaked into the soil and watercourses as a result of attacks on the country's petroleum infrastructure. In 1998, the Ministry of Health and other sources estimated that leakage of 2 million barrels of oil had affected 70 municipalities in 13 departments, including 2,600 km of rivers and streams, 6,000 ha of land with agricultural potential, 1,600 ha of marshes and wetlands, and transnational catchment areas such as the Catatumbo and Arauca river basins.

On average, Colombian households are made up of 4.2 persons. Almost four of five people (79%) live in houses and 19% live in apartments. The lowest levels of overcrowding are in the regions of Bogotá, Antioquia, and San Andrés. In towns and settlements with populations of fewer than 30,000 inhabitants, deficiencies in the infrastructure of basic services such as the provision of potable water and the disposal of excreta and liquid and solid waste are a constant threat to the health of the infant population. Furthermore, inadequate housing conditions, especially poor ventilation, provide favorable environments for diseases like tuberculosis, which is found especially in settlements with precarious infrastructures. Overcrowding in the large city centers also contributes to transmission of this disease.

In 1994, Colombia produced more than 28,000 tons of pesticides, while in 1996, it imported 9,500 tons and exported 31,689 tons; it also produced 720,000 tons of fertilizer in 1994, importing 478 tons and exporting 1,152 tons in 1996. In general, all the areas of agricultural production (3 million ha) have problems stemming from use of agrochemicals, which not only affect the health of workers but also figure among the principal pollutants of soil and water resources. The most critical situation is found near Montería, where in 2000, the Ministry of Health reported the presence of pesticides in drinking water at levels above the recognized standard. The Cauca and Magdalena river basins are also polluted by agrochemical waste. The effects of chemical agents used to eradicate illegal crops in the southeastern and southwestern departments have not been studied sufficiently. Another threat, still not adequately quantified, arises from the use of household pesticides without proper protective measures, especially in areas with large numbers of mosquitoes in squatter settlements and near open landfills.

Colombia's production of industrial chemicals, such as those derived from petroleum, is valued at Col$ 4,200 million per year. Chemicals for industrial use are the country's largest imports and exports (1,700,000 and 1,900,000 tons, respectively). The eight major industrial areas are responsible for 74% of all industrial waste in Colombia and produce very high levels of environmental pollution. Hazardous chemical and solid waste are generated particularly by mining and oil operations, plants that produce and distribute energy, and the manufacturing industry, as well as health establishments (laboratories as well as hospitals and health centers). The metals produced by mining and contained in leather tanning waste pose a threat on the Pacific Coast and in Antioquia, Boyacá, and Cundinamarca. Other hazardous chemical substances damage the environment and cause health emergencies, especially through improper waste disposal and incorrect handling of packaged food products. In 1997, the Chemical Safety Information Center reported 202 emergency calls related to the use of chemicals and 85 related to their transportation, storage, and production.

Food Quality

The increase in foodborne diseases throughout the world, and especially in the Americas, has spurred governments to prioritize activities aimed at preventing and controlling them. The problem assumes importance at the world level insofar as it concerns international trade in food and the standards set by the World Trade Organization, and it also affects the safety of domestic food products. In Colombia, the program for epidemiological surveillance of foodborne diseases and the corresponding information system initially met with certain difficulties in connection with decentralization standards and the division of responsibilities between the Ministry of Health and its decentralized agencies. Colombia has begun to set policies on food protection and to coordinate activities with international cooperation agencies, particularly with regard to the Codex Alimentarius.

Organization of Public Health Care Services

Health Promotion

In each municipality, the mayor is responsible for overseeing the management of health, guaranteeing the effective operation of the PAB, regulating health insurance, and monitoring health and health services. The program of the PAB calls for the development of health promotion activities and mandatory interventions to be carried out for and by communities in the various territorial jurisdictions. It stipulates, furthermore, that these activities should not entail any cost to the user or require affiliation with any organization, that they should supplement other plans, and that they should have a significant positive effect on the population, especially its most vulnerable groups. The PAB has given health promotion an important place in municipal health activities and provided local health authorities with an opportunity to address the challenges involved in formulating integrative strategies, fostering community action, solving the problems in their municipalities with the participation of various sectors, and mobilizing financial sources. The health promotion initiatives of the PAB are healthy municipalities; promotion of peaceful coexistence and prevention of domestic violence; healthy schools; information, education, and communication strategies; promotion of sexual and reproductive health; prevention of the use of psychoactive substances that are harmful to health; promotion of healthy eating habits; and prevention of problems stemming from malnutrition.

Every SGSSS benefits plan calls for sectoral resources to be assigned specifically to health promotion. PAB monies must be used for activities in the areas of health promotion, disease prevention, public health surveillance, and the control of risk factors. It is funded by budgetary allocations to departmental and municipal jurisdictions, current national income, resources earmarked for municipalities, and other sources.

Disease Prevention and Control Programs

The PAB component of SGSSS enables the mayor in each municipality to carry out his or her primary duty, which is to ensure the community's health. The activities undertaken should be integral to health matters and ongoing. They encompass all the disease prevention and control programs, including those for vector-borne, vaccine-preventable, and sexually transmitted diseases; tuberculosis; leprosy; rabies; and hepatitis B, C, and D.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

In 1990, when the central epidemiological team was broken up in order to incorporate this specialty into each of the agencies that use it as a tool, the results were not satisfactory. On the contrary, systems parallel to the traditional surveillance system were created or built up, while no changes were made in the flow of information or in the tools used to gather it. While these systems were overloaded with events to monitor, at the same time there was no clear definition of the scope of their responsibility to analyze and disseminate information; these problems were further aggravated by insufficient knowledge about advances in computer technology and bottlenecks in communicating with personnel at the central level trained in epidemiology. In short, there was no awareness of the importance, usefulness, and necessity of modernizing public health surveillance to bring it in line with the country's new political, administrative, and financial context. In Article 14, Law 60 sets forth the requirements for the autonomous administration of funds collection by the territorial jurisdictions, based on their epidemiological profile; it goes on to call for strengthening epidemiological surveillance teams for the collection, analysis, and utilization of information.

The enactment of Law 100 (1993) created a unified social security system that incorporates the private sector. In other provisions, the law maintains the validity of preceding regulations, sets the conditions for the accreditation of new service delivery institutions, and extends these conditions to new participants—namely, the health promotion enterprises. The law also provides for the development of a single national public health information and surveillance system, encompassing both the public and private sectors. This area is also important because decentralization requires the preparation of local health programs and, within them, basic health care plans that are tailored to specific needs and epidemiological profiles. For this purpose, strong surveillance is an indispensable tool for the territorial jurisdictions. Presumably, an epidemiological surveillance system would stand to benefit greatly from advanced technology to speed up the collection and transmission of information, as well as from linkage to a shared database for registration procedures and invoicing. However, the surveillance system has remained unchanged since it was set up for the 1996–2000 period. Even though the number of reporting units has almost quadrupled (from 1,179 to 4,100), bulletins are being produced by fewer information centers than in 1993–1996, and the information is mainly going to cities and the more advanced departments. Finally, it is also important to point out that efficient surveillance depends on having an adequate public health laboratory network.

Potable Water, Excreta Disposal, and Sewerage Services

According to the Ministry of Development, barely 5% of Colombia's 1,076 municipalities treat their wastewater before they dispose of it. This situation has turned the Cauca and Magdalena river basins essentially into sewers, as they receive more than 80% of the nation's wastewater. Recent proposals to ameliorate the problem have included reducing the volume of water used through the adoption of low-consumption technologies, education of users, and better management of the water pricing system. These approaches have led to some improve-

ments, as in the lower consumption levels officially reported for Bogotá and Cali. Recycling wastewater for productive purposes has begun to be studied and implemented in Colombia, mainly in research and demonstration projects. River basin protection still is not an integral part of programs and projects in all the sectors. According to the most recent estimates released by the Ministry of Development, water supply and sewerage services reach 77% and 60.2% of the population, respectively; more than 9.5 million people are without water service, and 15.5 million do not have sanitation systems. Most of these people live in rural and marginal urban areas, where they have no choice but to dispose of excreta and wastewater on their land or in streets and watercourses, thus contaminating their own homes, public spaces, the soil, and surface and groundwater. This egregious inequity makes it imperative to devote special attention to the countryside and marginal urban areas and strengthen support mechanisms for these populations. It should also be mentioned that the quality of water for human consumption continues to be largely unsatisfactory. According to the Ministry of Health, 60% of the inhabitants in the municipal seats run a medium to high risk of contracting diseases because of the poor quality of the water. The situation is most serious in squatter settlements, urban settlements with fewer than 30,000 inhabitants, and rural areas. Moreover, according to information provided by the departmental secretariats of health in 2000, 76% of municipalities did not have potable water. Therefore, it is clear that national priorities should include improved application of the National Health Code, with emphasis on the control and supervision of water quality and comprehensive management of watersheds through the use of appropriate and low-cost technologies for treatment of household and industrial effluents.

Solid Waste Services

Very few urban areas in Colombia have adequate facilities for the disposal of solid waste. In rural areas, this waste is usually dumped in open fields or burned or buried on household property. The use of organic solid waste for productive purposes has not been sufficiently studied, and recycling programs lack continuity. In Bogotá, Medellín, and Cali, the daily output of trash is more than 1 kg per person, whereas in rural areas it is no more than 0.2 kg. The volume of hospital solid waste has not been quantified, although preliminary studies indicate that the amounts may be between 2.6 and 3.8 kg per bed per day.

Pollution Prevention and Control

Industrial areas are the primary fixed source of atmospheric contamination, but the internal combustion engines of motor vehicles also cause an inordinate amount of air pollution (mainly with carbon monoxide, sulfur, and lead). All this contamination predisposes the population, especially children, to respiratory diseases and also generates harmful environmental phenomena like acid rain.

Organization of Individual Health Care Services

According to ENDS–2000, 67.4% of Colombia's population was considered to be in good or very good health and 32.6% in average or poor health. Of those affiliated with a health system, 13.1% were classified as being in very good health, compared with 9.5% of those without such affiliation. Of the former, 46% visited a physician or dentist for an annual check-up, and 8.4% were hospitalized, compared with 32.1% and 5.3%, respectively, of nonbeneficiaries. Furthermore, of those affiliated, 72.1% with chronic illnesses visited a physician on a regular basis, compared with 55.6% in the other group, and, finally, a higher proportion of affiliated beneficiaries (80.7%) visited health institutions than did those who were not members (66.9%).

Health Supplies

Drugs

The General Social Security and Health System guarantees access to essential drugs (from a list of some 350 medicines) through the Mandatory Health Plan (POS) for those insured under the contributory regime, with certain restrictions for those under the subsidized regime, and with no clearly defined criteria for those not affiliated with the system, although this last group receives prescribed medications for basic care. In any event, efforts are being made to create the necessary conditions for updating the standards, guaranteeing the quality of drugs, and promoting their rational use. In 1999, application of these criteria was tested in patients with diabetes mellitus in three cities, with the following results: 91.5% of diabetic patients were prescribed medication through the POS without any significant differences in terms of type of regime or city, and 43.8% of the prescribed drugs were dispensed at no cost to the patient. However, significant differences were observed between the contributory regime (77%), the subsidized regime (16.9%), and the "linked" system (4.6%). Also, significant differences were observed among cities: Medellín (37.7%), Manizales (70.1%), and Espinal (64.7%).

In the case of 56% of the patients, the prescribed medications had to be purchased, and differences were noted between the regimes and between the cities depending on where the patients acquired the drugs. The Public Defender's Office found that 32.7% of the beneficiaries and 34.9% of the paid subscribers under the contributory regime were not given their medications, nor were 43.9% of those under the subsidized regime or 44.3% of those under the "linked" system. The proportion of patients satisfied with the availability of drugs varied with level of education: 51.4% of those without any schooling were satisfied, compared with 78.6% of those with a graduate degree. Of those interviewed, 93.7% were told what the drugs were for and how to take them, with no notable differences in terms of geographic region, sex, or type of affiliation. The percentage of essential drugs prescribed is

rising; 70% of drugs prescribed in public hospitals in 1995 were essential drugs; 62% in health care centers in 1997; and 91.5% among the diabetic patients in the three cities and 89.6% at a first-level hospital in 1999. This indicates that the drugs being selected are appropriate for Colombia's needs and that those who prescribe the drugs are familiar with the regulations. Under current legislation, access to essential drugs is expected to increase in tandem with health system coverage. However, in the studies cited, inequities were found between the regimes and the cities, and it was also seen that co-payment systems and those based on moderated premiums make access more difficult. Finally, user dissatisfaction measured in terms of prescription drugs that were not dispensed varies from 10.4% to 56%.

The POS and the Expanded Program on Immunization cover vaccinations and other immunobiological supplies, which the Ministry of Health imports under various agreements for distribution to the different territorial jurisdictions.

Equipment

As a consequence of decentralization and health system reform, there have been some noteworthy advances in the area of biomedical technology. (1) The provision of maintenance services in public sector health institutions has been regulated so that 5% of the sector's total annual budget is invested in executing an institutional maintenance plan; this arrangement makes it possible to take care of infrastructure and equipment and ensure that they are always in good condition, thereby meeting the requirements for the delivery of improved services. (2) A detailed inventory of infrastructure resources in second- and third-level hospitals (170 institutions) was conducted under a program for health services improvement (the physical and functional inventory of hospitals project). Thanks to this program, the Ministry of Health and the institutions themselves are now aware of their strengths and weaknesses, and they are better prepared to make the investments required to strengthen the system. With regard to the distribution of equipment, the study showed that the functional clinical laboratory and surgery units are the ones that have the largest share (16% and 15.7%, respectively) of the 35,000 pieces of equipment inventoried. (3) The procurement of medical equipment increased in both the public and the private sectors, although advanced legislation is still needed to control the influx of countless pieces of equipment and devices that do not conform to international standards, do not have adequate representation in the country, or leave much to be desired in terms of quality. Currently, there is only basic legislation in this area, which controls the acquisition of second-class equipment, donations, experimental technologies, and certain high-cost equipment (tomography machines, gamma ray cameras, magnetic resonance imaging machines). The equipment procurement projects worthy of special mention are those promoted by the Ministry of Health, which utilizes its own resources as well as external credit, and some sizable donations such as the approximately US$ 7.5 million from the Government of Japan in 1998 to renovate equipment in 22 of the country's hospitals, and the US$ 4.5 million contribution in 2001 for four hospitals located in coffee-producing areas.

Human Resources

In Colombia, the inequitable distribution of human resources is more pronounced for professionals and, among physicians, specialists. Physicians are concentrated in large cities such as Barranquilla, Cali, Medellín, Bogotá, and the cities in the coffee-producing areas and in the department of Tolima. Within the cities, moreover, there is an inequitable distribution that leaves peripheral and socioeconomically depressed areas with little coverage. In addition, there are areas that have traditionally been underserved by physicians, including the Pacific Coast, the eastern plains region, and parts of the Caribbean Coast and middle Magdalena Valley. According to the database of the Colombian Association of Schools of Medicine and a 1999 study of specialized medicine, Colombia has 43,166 physicians, for a rate of 10.4 per 10,000 population—2.4 times higher than 30 years ago. Of this total, 24,717 (57.3%) are primary care physicians, and 26.4% of them practice in Bogotá. Of the specialists, 62% are located in Bogotá, Cali, Medellín, and Barranquilla, and almost 40% of them are concentrated in the capital. In Medellín and Bogotá there is 0.85 and 0.86 specialist, respectively, for each primary care physician. With the exception of obstetrician-gynecologists, the different specialties follow a similar pattern of uneven distribution—for example, Bogotá has a disproportionate concentration of psychiatrists and neurologists.

Health Research and Technology

In Colombia, no agency does a thorough compilation of national data on health research. Until two years ago, the former Science and Technology Office in the Ministry of Health gathered partial information on research topics and teams working in the health sector. The Colombian Institute for Science and Technology Development (COLCIENCIAS) has various programs that are responsible for strategic planning within the national science and technology system. One of these programs corresponds to the health sector and follows up on research conducted with official funds made available through the Institute. Since 1997, COLCIENCIAS has been analyzing trends in health research undertaken in Colombia, categorized in terms of topics or problems and the approaches taken. Of the problems studied between 1990 and 1997, 73.6% had to do with communicable, chronic, and degenerative diseases, with very little attention devoted to injuries caused by trauma and violence; 6.6% were concerned with health services; and 19.7% corresponded to topics in the basic sciences. The 1990s saw a strengthening of biomedical research (39.8%), a decline in clinical research (29.0%), and, in the case of public

health, a predominance of epidemiological research (22.9%) over studies related to health systems (8.3%). Infectious diseases and parasitoses, particularly tropical diseases, headed the list, followed by endocrinological diseases, except diabetes. In the area of health services, the problems of health care predominated, while research in the basic sciences concentrated on pharmacology, immunology and immunogenetics, biology, and cytogenetics. The research activities have contributed very little to knowledge about the diseases of greatest incidence and prevalence: only 4.39% of the projects have studied the leading causes of general mortality in the Colombian population.

From another standpoint, the body of research can be analyzed in terms of research units, investigators, and scientific output. Between 1996 and 1997, 73 research units participated in projects convened by COLCIENCIAS, almost 70% of them affiliated with centers or institutions of higher education. By geographical distribution, 52% were from Bogotá, 24.7% from the northwestern region, 13.7% from the Pacific region, 5.5% from the Caribbean region, and 4.1% from the central-eastern region. These 73 units employed 985 researchers, almost all of them with undergraduate degrees, but only 16% of them with doctorates. The majority had studied either basic (45%) or clinical (40%) sciences, 7% had been trained in public health, and the rest came from other disciplines such as the social and human sciences and business administration.

The scientific output mainly takes the form of articles published in journals (60%), most of them specialized and therefore limited in circulation to equally specialized readers. Individual research (59%) predominated over collaboration (18%) or affiliation with large research projects (23%). This trend reflects the degree of isolation within the scientific community, both in Colombia and in the rest of Latin America, as well as the incipient state of networking and interinstitutional cooperation. The most recent COLCIENCIAS plan for the health sector covers the 1999–2004 period and focuses on the problems the sector faces as it transitions in three areas (demographics, epidemiology, and the health system), all of which are closely interrelated and have a profound impact on the dynamics of health. The plan also takes into account the economic recession, deterioration of the environment, and the meager benefit Colombian society is deriving from technological and scientific advances in health.

Health Sector Expenditure and Financing

Under Law 100 (1993), in 1996, an estimated US$ 300,482,310 was spent on health in Colombia, or the equivalent of 10.1% of the GDP (estimated for that year at US$ 4,400 million); 4.1% corresponded to the public sector and 5.9% to private sources. In 1999, the nation's investment in health was estimated at 10% of the GDP, or approximately US$ 966 million. The 1997 expenditure on health promotion and disease prevention was estimated at US$ 46.77 million for the Basic Health Plan and US$ 201.86 million for the Mandatory Health Plan. In addition, there were taxes paid on ammunition and explosives under the Program for the Prevention of Violence and the Promotion of Peaceful Coexistence (US$ 605,500), for a total of US$ 294.24 million. To this amount must be added the budget of the National Health Institute, estimated at US$ 2.81 million for 1999, and that of the National Institute for Drug and Food Surveillance (founded in 1995), which was US$ 1.27 million for 1999. Of the total amount, spending on health promotion and disease prevention came to about 5% of all health expenditure. In 1997, 31 health promotion enterprises were assessed in terms of their activities devoted to health promotion and disease prevention, and it was learned that 5 of the 11 mandatory programs used 86.3% of the resources. The largest amount (30.2%) was spent on the oral health program, followed by the prevention of diseases related to pregnancy, childbirth, and the puerperium (18.5%); the Expanded Program on Immunization ranked seventh, with a 2% investment; and the smallest expenditure reported was for the prevention of sexually transmitted diseases and HIV/AIDS infection.

External Technical Cooperation and Financing

The international cooperation received by the Ministry of Health in 2000 was reflected in the execution of 13 agreements for multilateral cooperation, entered into with the following agencies and international programs: JICA; GTZ; the Hipólito Unanue Agreement; Partners in Population; the Andean Development Community; the Organization of Iberoamerican States for Education, Science, and Culture; the World Bank; the IDB; the IOM; and the Andrés Bello Agreement. Three of these arrangements were for nonreimbursable financial assistance, and 10 provided technical cooperation in the following areas: strengthening health systems, sexual and reproductive health, hospital consortia, a meeting of the health ministers of the Andean area, and health sector reforms and financing. Bilateral cooperation agreements were undertaken with various agencies and governments, including the International Cooperation and Assistance Fund and the governments of Canada, Jamaica, Mexico (Ministry of Health), Panama, and Spain (Ministry of Health and Consumer Affairs and the provincial government of Valencia [Generalitat de Valencia]).

FIGURE 1. Gross domestic product, annual growth (%), Colombia, 1994–2000.

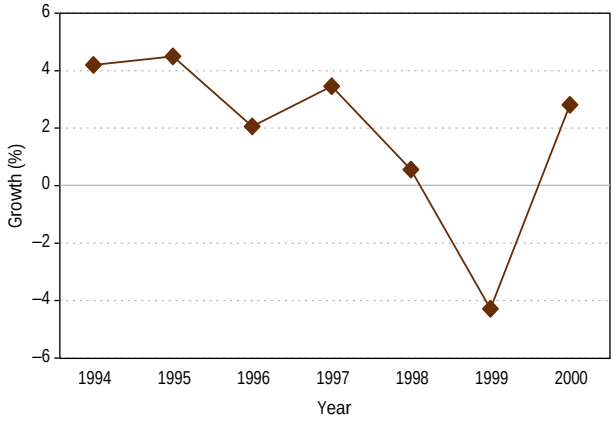


FIGURE 2. Population structure, by age and sex, Colombia, 2000.

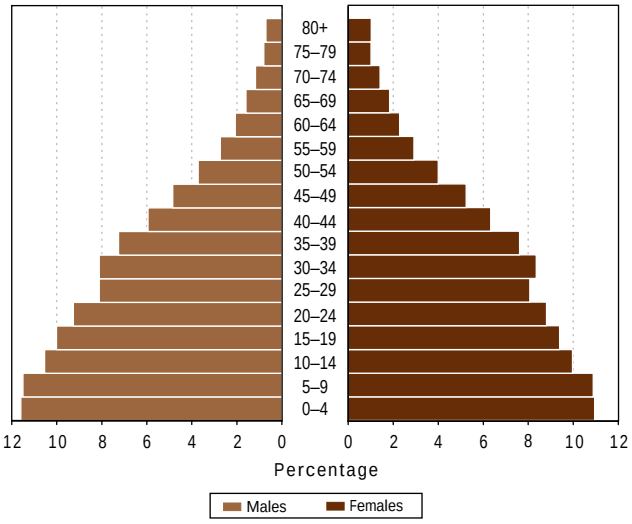


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Colombia, 1998.

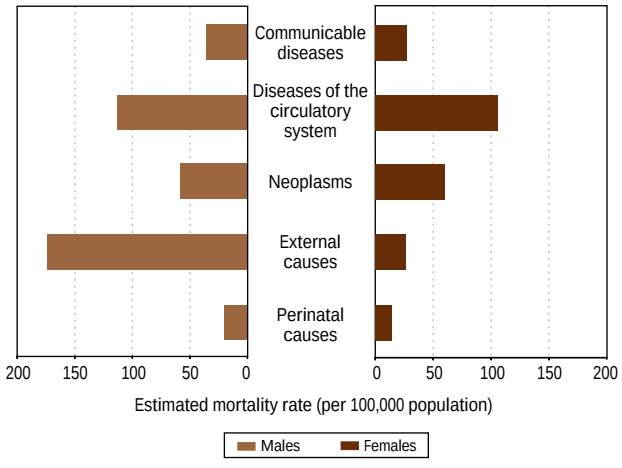


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage among pregnant women, Colombia, 2000.

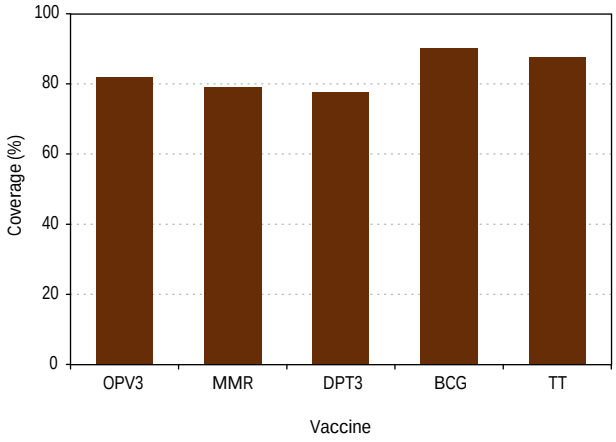
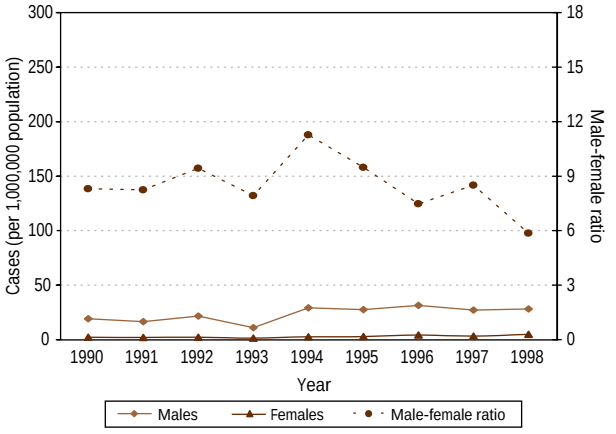


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Colombia, 1990–1998.



COSTA RICA

OVERVIEW

Costa Rica, a country with a deeply rooted democratic tradition, ended the 20th century with a stable political system in which transparent elections are held every four years and the work of the State is governed by a system of powers.

The last decade has seen a weakening of political power and more expressions of social discontent, such as the popular demonstrations in early 2000 against privatization of the Costa Rican Electricity Institute and questioning of the two-party system and its representativeness. The increase in voter abstentions, which reached 30% in the 1998 elections, has been an indicator of popular discontent with the political parties. The Public Defender's Office and the National Consumer Commission, established in the 1990s, are examples of initiatives to create greater opportunity for social participation. Other institutions that play an important part in overseeing public administration are the Office of the Controller General, the Fourth Constitutional Forum, the Public Service Regulatory Authority, and the controllers' offices in the public institutions. At the same time, amendments to the Municipal Code in 1998 have opened the way for progress in decentralization, although management at the local level continues to be weak.

In both 1998 and 1999, GDP rose by 8%, but in 2000 it increased only 1.5% (Figure 1). The slower growth was due in part to an 11% decline in the value of export goods, along with fluctuations in the electronics industry market, which affected the exports of Intel Corporation and other high-tech companies with operations in Costa Rica. This experience has highlighted the vulnerability of the Costa Rican economy. Also contributing to the reduced growth rate were declines in the primary and manufacturing sectors and a slowdown in the construction industry. The other sectors experienced an average growth of 4.3%. Agricultural production was down 3% because of lower prices on the international market, financial difficulties on the part of the growers, and adverse weather conditions.

Real salaries in the formal sector remained flat, and per capita income fell. Unemployment increased slightly, from 5.7% in 1997 to 6% in 1999; the situation was roughly the same in both urban and rural areas, but the rate was higher for women (8.2%) than for men (4.9%). The average income of economically active men was 29% higher than it was for women. Monetary policy, the low nominal devaluation of the exchange rate, and the reduced pace of productive activity all helped to hold inflation at 10%, despite pressure from rising prices for combustible fuels. The central government's investments declined by 20% in real terms, while the national debt rose to 23% of GDP.

The 1990s saw progress in three important social areas: infant mortality declined, work on health sector reform continued, and several education indicators improved. Even so, one-fifth of all Costa Ricans were still living in poverty in scattered parts of the country. In 1999, the proportion of people living in extreme poverty was 6.7%, up from 5.7% in 1997. In urban areas, extreme poverty increased from 3.2% in 1997 to 4.5% in 1999, while in rural areas, it rose from 7.6% to 8.5% during the same period. The percentages of extreme poverty were three times higher in the Brunca (14.8%) and Chorotega (13.2%) regions than in the central region (4.4%).

The distribution of household income remained stable during the 1990s, and the income ratio of the highest quintile to the lowest quintile was 12.6:1. The Gini coefficient, based on per capita family income, showed a slight increase, from 0.374 in 1990 to 0.400 in 1999.

The Gini coefficients corresponding to the differences in infant mortality between one province and another, calculated on the basis of cumulative live births and cumulative deaths in children under 1 year of age, came close to a situation of equity: 0.06 in 1990–1994 and 0.04 in 1995–1999 (Figure 2).

The literacy rate was 95.3% in 1999. Primary and secondary education coverage increased from 90.1% in 1990 to 91.8% in 1999, and coverage of diversified (upper intermediate) education and tertiary (higher) education increased from 39.5% in 1990 to 49% in 1999, with no overall differences in terms of sex. However, males predominated in the scientific and technical career programs. In 1999, the estimated rates of students in a given cohort completing their schooling were high: 31.2% at the primary level,

65.9% at the middle school level, and 72.4% at the end of the eleventh grade, with higher percentages for boys.

Costa Rica has a land area of 51,100 km^2, and in 2000, an estimated population of 3,824,593. Of this number, 51.9% lived in urban areas and 50.1% were males. The population density was 74 inhabitants per km^2, and the annual growth rate fell from 3.2% in 1994 to 2.6% in 1999. Life expectancy at birth in 1999 was 76.9 years (74.2 for men and 79.2 for women). In terms of age distribution, the largest single group is people 15–64 years (65%). The nation's principal demographic trends were: (a) a declining general mortality rate, mainly in the 0–4 years age group, between 1970 and 1980, followed by a leveling off thereafter, with a rate of 4.3 per 1,000 population in 1999; (b) a reduction in the general fertility rate, from 5.1 per 1,000 in 1970 to 2.7 in 1999; (c) a decrease in the crude birth rate, from 25.6 per 1,000 in 1992 to 20.5 in 2000; (d) increasing immigration, especially since 1990; (e) a steady rise in life expectancy, which reached 76.7 years in 1990 and remained at approximately that level until 1999, with a five-year difference between the sexes in favor of women; and (f) a 40% drop in the dependency ratio between 1970 and 1999, from 1:1 to 0.6:1. These trends have made for a rapid demographic transition between 1970 and 2000, creating a bulge in the age pyramid at middle age for both men and women (Figure 3).

The ninth population census and the fifth housing census were conducted in July 2000. Early results indicate that the number of inhabitants increased from 2,416,809 in 1984 to 3,824,593 in 2000. The average annual growth rate rose from 2.3% between the 1973 and 1984 censuses to 2.9% between 1984 and 2000. The province of San José continues to have more than one-third of the country's population, and during the intercensal period, it grew at an average annual rate of 2.7%. The province of Limón has experienced particularly rapid growth, with an average annual increase of 4.5%. The number of its inhabitants has doubled, and they now represent 8.9% of the national population.

Costa Rica receives a large and growing influx of immigrants, especially from Nicaragua. In 1975–1980, there were 2.9 Nicaraguans per 1,000 population; by 1990–1995, the figure had risen to 9.1 per 1,000. In 1999–2000, there was a sizable increase in immigration from Colombia.

Mortality and Morbidity

The general mortality rate for 1995–1999 was 3.9 per 1,000 population (with an adjusted rate of 5.6 per 1,000, based on the standard population established by WHO), or 4.4 per 1,000 for males (adjusted rate: 6.81 per 1,000) and 3.4 per 1,000 for females (adjusted rate: 4.5 per 1,000). The highest adjusted rates for the period were in the provinces of Limón (6.4 per 1,000), Puntarenas (5.7), and Alajuela (5.7), while the rate for San José was 5.5 per 1,000 population. Of the 15,052 deaths registered in 1999, 58.1% were in the population aged 65 or older, and 57.8% were in males. Signs, symptoms, and ill-defined conditions accounted for 1% of all deaths; 83.4% of deaths were certified by physicians.

Diseases of the circulatory system, which took 4,578 lives (1.3 per 1,000 population), were the leading cause of death in 1999, followed by neoplasms (3,129 deaths or 0.9 per 1,000 population) and external causes (1,798 deaths or 0.5 per 1,000 population). This last group of causes was responsible for the highest proportion of years of potential life lost (YPLL)—26.4% in males and 8.8% in females—and it also posed the greatest mortality risk for men, especially from transport accidents. The foregoing broad groups of causes followed a consistent pattern from 1996 through 1999.

In a comparison of adjusted mortality rates for 1995–1999 by province, diseases of the circulatory system were slightly higher in Limón, Alajuela, and Cartago. The highest rates for communicable diseases were in Limón (87 per 100,000 population), Alajuela (76 per 100,000), and Puntarenas (75 per 100,000). The provinces of Guanacaste and Puntarenas had the lowest rates of malignant neoplasms, while the rate for external causes (185 per 100,000) was twice as high in Limón as it was in any other province.

The most significant decline for any of the broad groups of causes was in communicable diseases, the rate for which fell from 310 per 100,000 population in 1970–1974 to 67 per 100,000 in 1985–1989 and remained stable thereafter for the next two five-year periods (1990–1994 and 1995–1999). Deaths due to certain conditions originating in the perinatal period declined from 45 per 100,000 population in 1970–1974 to 21 per 100,000 in 1995–1999, and diseases of the circulatory system dropped from 537 per 100,000 to 377 per 100,000. Neoplasms and external causes also decreased slightly during the same time span.

By sex, the crude death rate during 1995–1999 was 4.4 per 100,000 for males and 3.4 for females (adjusted rates: 6.81 per 100,000 and 4.53 per 100,000, respectively). Males had the highest rates in all the cause groups. In males, the mortality rate from communicable diseases fell from 163 per 100,000 in 1970–1974 to 40 per 100,000 in 1995–1999, and among females there was also a decline, from 147 per 100,000 to 27 per 100,000. External causes were down slightly—more so among males than females, with a male-female ratio of approximately 4:1 for the period 1970–1999. Mortality from diseases of the circulatory system decreased more in women (from 255 per 100,000 to 157 per 100,000) than in men (from 282 per 100,000 to 220 per 100,000) (Table 1).

Communicable diseases accounted for 6.7% of deaths during 1997–1999, with acute respiratory infections, diarrheas, and AIDS/HIV infection accounting for 80% of all deaths in this category. Approximately half of all deaths were due to cardiovascular diseases and neoplasms. Deaths associated with the reproductive process, including perinatal deaths and those due to congenital malformations, accounted for 5.8%.

In 1995–1999, there were 203,355 YPLL among males, and 139,253 YPLL among females, representing increases of 10.7%

TABLE 1. Adjusted mortality rates,[a] by broad groups of causes and sex, Costa Rica, 1970–1999.

	Five-year period																	
	1970–1974			1975–1979			1980–1984			1985–1990			1990–1994			1995–1999		
Broad groups of causes	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Communicable diseases	163	147	310	75	59	134	48	38	86	38	29	68	40	27	67	40	27	67
Certain conditions originating in the perinatal period	27	19	45	21	15	37	20	14	34	17	12	29	13	10	23	12	9	21
Malignant neoplasms	153	133	286	154	123	277	157	117	273	159	122	280	151	110	261	146	107	253
Diseases of the circulatory system	282	255	537	232	197	429	230	187	418	221	171	392	227	167	394	220	157	377
External causes	106	25	130	110	28	138	84	23	107	81	23	105	86	24	110	87	22	109
Residual causes	111	111	222	129	121	251	122	109	231	145	124	268	142	115	257	168	126	294
Signs, symptoms, and ill-defined conditions	60	48	108	32	26	58	24	18	41	8	6	14	11	6	18	8	4	12

[a] Rates per 100,000 population, according to the standard world population established by the World Health Organization, 1995.
M = males, F = females, T = total.

and 6.0%, respectively, over the figures for 1990–1994 (183,651 YPLL and 131,312 YPLL).

Infant mortality has fallen steadily over the last 30 years. The 1970 rate of 61.5 per 1,000 live births dropped to 11.8 per 1,000 in 1999 and 10.2 per 1,000 in 2000 (11.6 per 1,000 for males and 8.8 per 1,000 for females). Of the 798 deaths among infants under 1 year of age in 2000, 463 (58.02%) were males. Neonatal mortality in 1999 was 8.1 per 1,000 live births, and postneonatal mortality, 3.7 per 1,000. Conditions originating in the perinatal period represented 50.8% of all infant mortality, followed by congenital anomalies (28.5%) and pneumonias (8.4%). Infectious and parasitic diseases were responsible for 4.9% of infant mortality.

Data for 1996–1998 show that 15 of the country's 81 cantons had infant mortality rates above the national average. Stratification of infant mortality by quintiles and by geographic area yields clusters of cantons that had rates above 15 per 1,000 live births (the highest rate in any canton was 25.8 per 1,000 live births), largely in the province of Limón, including areas on the borders with Panama and Nicaragua and areas inhabited by the Talamanca indigenous group. By contrast, the rates in the urban cantons of the central valley (province of San José) were lower than 10.4 per 1,000 live births.

Maternal mortality was 20.2 per 100,000 live births in 1995 and 19.0 per 100,000 (15 deaths) in 1999. In 1996–1998, the leading causes of death were complications of abortion and eclampsia; in 1999, 85% of cases were classified as preventable.

The 1996–2000 period was characterized by an upswing in the morbidity rates for certain communicable diseases (dengue, malaria, leptospirosis, tuberculosis, AIDS, and gastrointestinal and respiratory infections) as well as a rising trend in accidents and violence, adolescent pregnancy, and suicide. During 1999–2000, there were outbreaks of nosocomial infection, pertussis, rubella, and food poisoning.

Respiratory diseases were the leading reason for consultations, followed by diseases of the genitourinary system, diseases of the musculoskeletal system, and hypertension. Women had twice as many checkups as men. The most frequent reasons for emergency consultations were diseases of the respiratory system (32.3%); external causes (14.7%); pregnancy, childbirth, and the puerperium (6.8%); and infectious and parasitic diseases (5.8%). The leading hospital discharge diagnoses were pregnancy, childbirth, and the puerperium; diseases of the digestive system; diseases of the genitourinary system; and external causes.

Among the factors contributing to this epidemiological situation were weak policies and strategies for disease prevention and control at a time when program responsibilities were in the process of being transferred from the Ministry of Health to the Costa Rican Social Security Fund (CCSS), emphasis on the individual curative approach, weak community participation in health, and the impact of migration. Other risks were posed by the poor quality of water for human consumption, inadequate road and highway infrastructure, and risk-prone behaviors and practices associated with lifestyle.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

In 1998, the population of children under 5 years of age was estimated at 404,032, or 10.7% of the total. The 925 deaths in this age group represented 6.1% of all deaths in the country. The most frequent reasons for emergency visits in children under 1 year in 1997 were acute respiratory infections (33.6%), gastrointestinal infections (4.7%), and asthma (5.2%). Hospital discharge diagnoses followed the same pattern, with higher rates for disorders associated

with length of gestation, acute respiratory infections, congenital anomalies, jaundice, and child abuse, and lower rates for intestinal infections and pneumonias. Infants under 1 year represented 2.5% of the total population and 8.7% of hospital discharges.

Children aged 1–4 years accounted for 10% of consultations and 5% of hospital discharges; the most frequent diagnoses were intestinal infection, asthma, and bronchopneumonia. In 1998, a total of 167 deaths were reported for this age group (1.1% of all deaths), for a mortality rate of 5.2 per 10,000. Accidents and violence were the leading cause of death (1.3 per 10,000), followed by congenital anomalies (1 per 10,000) and diseases of the nervous system. The most common reasons for emergency visits were acute respiratory infections (35.7%) and injuries due to external causes (10.7%). Child abuse accounted for 0.18% of all hospital discharge diagnoses in 1997, and the rate was higher for girls than for boys. Mortality from homicide and injuries not otherwise specified accounted for 1.1% of all deaths in this age group.

Schoolchildren (5–9 years) and Adolescents (10–14 and 15–19 years)

In 1998, children aged 5–9 years represented 11.7% of the total population; those 10–14 years, 10.9%; and youths 15–19 years, 9.8%. Children aged 5–9 years had the lowest mortality rate of the three groups (2.3 per 10,000), followed by those 10–14 years old (2.9 per 10,000), and the highest rate was in the group aged 15–19 years (5.9 per 10,000 population). Together, these three groups accounted for 3% of total mortality. The leading causes of death were external causes, followed by neoplasms and diseases of the nervous system.

The most frequent reasons for emergency visits were respiratory problems (26.6%), external causes (16%), and asthma (11.3%). In 1997, the group aged 5–9 years accounted for 8% of all consultations and 4% of all hospital discharges. Asthma was the leading reason for hospitalization, followed by injuries and appendicitis. There was a reduction in meningitis, but increases were seen in child abuse and leukemias.

The group aged 10–14 years made the least use of health services, accounting for only 6.3% of emergency room visits, 5% of consultations, and fewer than 3% of hospitalizations. In 1997, the leading reason for hospitalization among boys in this age group was injuries (16.7% of 5,414 discharges), and among girls the main reason was complications of pregnancy, childbirth, and the puerperium (18.1% of 4,573 discharges). Between 1990 and 2000, deliveries by adolescent mothers increased by almost 25%, and among those under 15 years old by 65%.

In the services provided by the CCSS, the group aged 15–19 years accounted for 9% of emergency visits, 6% of consultations, and 8% of hospitalizations. In all instances, injuries were the most frequent cause for boys, and for girls the leading cause was complications of pregnancy, childbirth, and the puerperium. Injuries accounted for 28.9% of the 4,306 male discharge diagnoses, and 80.7% of the 24,282 female discharges were associated with complications of pregnancy, childbirth, and the puerperium. The second leading discharge diagnosis was diseases of the digestive system (18.7% for males and 3.2% for females). In this age group, there has been an increase in the use of services by females.

Adults (20–59 years)

In 1998, the population aged 20–59 years was estimated at 1,893,968, or 50.3% of the country's total. This group accounted for 24.8% of all deaths. The mortality rate was 9.3 per 10,000 for 20–24-year-olds and 64 per 10,000 for the group aged 55–59. In 1998, the leading cause of death in the population aged 15–34 was traumatic injuries and poisoning for both sexes, followed by neoplasms in men and cardiovascular diseases in women. In the group aged 35–49, the leading cause of death in women was neoplasms (42%), followed by cardiovascular diseases and external causes. In men, external causes ranked first (34%), followed by cardiovascular diseases (15%). In those aged 50–69, cardiovascular diseases headed the list (31%) and external causes were in third place (11%).

Adults aged 20–44 years benefited from 36.8% of the emergency services provided, 40% of consultations, and 50% of hospital services. The most frequent reasons for the demand in all these services were injuries in males and reproduction-related conditions in women. In 1997, 83.4% of the 146,458 hospital discharges in this age group corresponded to women, and 67.58% of the cases were associated with pregnancy, delivery, and the puerperium. Abortion was the discharge diagnosis for 5.6% of adolescent girls 15–19 years old and for 6.5% of women in the 20–24 years age group. Adults aged 45–59 years accounted for 9.8% of emergency services, 14% of consultations, and 8.5% of hospitalizations. In 1997, 60% of the 29,081 discharges in this age group corresponded to women, and the leading groups of causes were diseases of the genitourinary system (19.7%), neoplasms (16.1%), and diseases of the digestive system (14.2%). In men, the leading reasons for hospitalization were diseases of the digestive system (18.0%) and the circulatory system.

In the area of reproductive health, fertility levels have fallen in recent decades. In 1999, the total fertility rate was 2.7 children per woman, with sizable differences between urban and rural areas. Women with little education had a higher average number of children (3.8) than those who had completed more years of schooling (2.2). Those at the lowest socioeconomic level had 5.2 children, or twice as many as those at the highest level. In 1999, the average desired number of children was 2.7, and 51.6% of women surveyed said they did not want more children. Of women living in stable unions, 96% indicated they had used contraception at some time, and the most popular methods were the pill and the condom. In 1999, more than 90% of all deliveries were attended in public hospital centers. The birth rate declined from 23.9 in 1995 to 22.6 per 1,000 population in 2000. Three regions had birth rates above the national average: Huetar Norte, Huetar Atlántica, and Brunca.

The Elderly (60 years and older)

In 1998, the population aged 60 years and older was estimated at 271,586 (46.8% men). This age group represented 7.2% of the total population and was the most rapidly growing segment. The mortality rate in 1998 was 34.9 deaths per 100,000 population (40.1 per 100,000 males and 31.1 per 100,000 females). For both sexes, the leading cause of death was cardiovascular diseases, followed by neoplasms and diseases of the respiratory system. In the services provided by the CCSS, this group accounted for 9.4% of emergency visits, 13.5% of outpatient consultations, and 13% of hospitalizations. In 1997, a total of 1,311,885 consultations were provided, and the leading complaints were hypertension, diabetes mellitus, and diseases of the nervous system. That same year the CCSS reported a total of 44,656 discharges, and the main reasons for hospitalization were diseases of the circulatory (21.6%), digestive (12.9%), genitourinary (12.5%), and respiratory (10.6%) systems, and neoplasms (10.6%). In women, the leading reasons were diseases of the circulatory (20.1%) and digestive (12.0%) systems, and eye diseases (9.9%).

Family Health

In 1999, 28% of Costa Rican women between the ages of 18 and 44 were living in a consensual union, with an even higher proportion among young couples. On average, the women were 20 years old when they began their first serious relationship. It was noted that 47.1% of all registered births were to unwed mothers and 2% to widows or women who were divorced or separated; moreover, 30% of the births were registered without a recognized father. A recent paternity law entitles a woman to register the name of her child's father.

Workers' Health

In 1999, Costa Rica had an economically active population of 1,383,452 (66.9% men), distributed fairly equally between urban and rural areas. By sector, 24.6% of this workforce was in services, 20.7% in commerce, 19.6% in agriculture, and 15.7% in manufacturing (15.7%). That same year, there were a total of 120,279 work-related accidents (87% in men and 13% in women). Of salaried employees, 78.4% were insured against occupational risks, and 17% of them were victims of accidents. Workers aged 20–25 years had the most accidents in both 1992–1995 and 1996–2000, with an annual average of 28,869 and 22,383, respectively. In 1996–2000, agriculture was the economic sector with the largest number of work-related accidents, followed by manufacturing, but by 2000, these two sectors showed declines of 17% and 20%, respectively, relative to 1996.

The Disabled

In 1998, it was estimated that 9.3% of the population was disabled. Of the 311,359 persons who suffered from some form of disability, only 29.7% were treated in the health establishments of the CCSS, and, of this proportion, 60% were from the province of San José. According to data compiled by the National Rehabilitation Center of the CCSS, which takes care of 55% of the national demand, the most frequent causes of disability in 1998 were postural disorders (22%), low back pain (11.5%), facial paralysis (3.6%), and fractures (3.5%). The number of persons affected with low back pain increased from 3,743 in 1996 to 5,584 in 1998, while the other causes remained unchanged over the period.

Disability has a significant impact on economic and productive activity. In 1999, there was an average of one day of incapacity for every insured person in the country, and this average has been gradually rising over the last five years. A similar pattern was observed in transportation and work-related accidents.

Indigenous Groups

Costa Rica's eight indigenous peoples—the Bruncas, Cabecars, Teribes, Bribris, Huetars, Malekus, Chorotegas, and Guayamis—together number approximately 40,000 and represent 1% of the total national population. The most numerous are the Bribis (34%) and the Cabecars (26%), who live in the Huetar Atlántica region, especially in the canton of Talamanca. Compared with the national averages, the indigenous areas have higher birth rates and higher infant and general mortality, as well as major deficiencies in housing and basic services (potable water and electricity). In 2000, 47% of the Cabecars were illiterate, and only 6% had completed the primary grades or higher. In 1999, of the 14 infant deaths in the canton of Turrialba, those in the indigenous communities represented 29% of the total even though they accounted for only 4% of the population. In the same canton, 73% of the pregnant women had no prenatal care and 70% of the babies were delivered at home. At the same time, 60% of the dwellings suffered from serious structural defects and had no latrines.

In 1995, measures were taken to extend social security coverage to indigenous groups and provide them with primary care. With a view to further improving care, the CCSS and the National Commission for Indigenous Affairs signed an agreement in 1998 for integrated health services development. Despite these efforts, however, political, geographical, and cultural barriers still limit this population's access to services.

By Type of Health Problem

Natural Disasters

Steps have been taken to identify geographic areas where the greater risk of flooding (on the Atlantic and Pacific slopes) is related to situations of social inequality. The country also has a history of earthquakes (in the provinces of Cartago, Alajuela, and Limón) and volcanic eruptions. Other threats have been created by inappropriate land use, such as deforestation, contamination with waste, and alterations of river basins. In recent years, there

have been increasing anthropic threats associated with the expansion of industrial installations and processes.

Vector-borne Diseases

Dengue reappeared in 1993 and has been on the rise since then, with epidemics in 1994 and 1997. A total of 6,041 cases were reported in 1999, and there were 4,889 in 2000, representing an incidence of 434.7 per 100,000 persons at risk (1,128,837 inhabitants). Fifty percent of the cases occurred in the Pacific Central region in 1999–2000, and 46.2% in the Huetar Atlántica and Chorotega regions.

One case of hemorrhagic dengue was reported in 1995, another in 1996, and 8 in 1997; then, in 1999, the number soared to a high of 117 (88.9% in the Huetar Atlántica region), but by 2000 it was back down to 5. Six deaths from hemorrhagic dengue were reported during 1996–2000. In addition, there was an increase in cases of classic dengue with hemorrhagic manifestations, from 214 in 1999 to 445 in 2000. Dengue type 1 circulated in 1993–1996, and type 3 in 1994–1999; the emergence of type 2 in 1999 coincided with the outbreak of hemorrhagic dengue. Dengue types 2 and 4 circulated simultaneously in 2000.

In 1999, the average index of *Aedes aegypti* infestation was 5.3%, and in 2000, it was 3.4%, with considerable variation by locality. A larger percentage of *A. aegypti* larvae were found in standing water deposits (63.1%) than in those that were for household use (35.8%). During the 2000 outbreak, high infestation indexes were found in collapsed pipes of the Puntarenas city sewer system. Although progress has been made, the continued presence of atypical deposits that are difficult to eliminate and the lack of adequate strategies for community participation have been obstacles to the adequate control of dengue outbreaks.

Malaria reemerged in 1991 in rural areas along the Atlantic coast that previously had been under control. This trend coincided with intense deforestation in connection with the development of banana plantations in the Huetar Atlántica region, which has created breeding grounds for *Anopheles albimanus*, the most important vector involved in malaria transmission, along with an influx of (mostly undocumented) workers coming from endemic areas. Malaria also increased in the Huetar Norte region with the immigration of temporary workers employed in the area's growing agroindustries. After 1992, when the number of cases peaked at 6,951 and the annual parasite index (API) reached 7.9 per 1,000, the incidence declined, but there were still large numbers of autochthonous cases. In 2000, a total of 1,879 cases were reported (API: 1.38 per 1,000), representing a reduction of 53.0% relative to the 3,998 cases in 1999. The Huetar Norte and Huetar Atlántica regions accounted for 67.5% of all cases in 2000. In Huetar Norte, transmission occurred in two cantons (San Carlos and Los Chiles), which reported 100% of the cases in that region in 1999 and 2000. The geographic area at risk covered 35,436 km^2 (69.5% of the national territory) and was home to an exposed population of 1,357,896 (35.2% of the total population). Of all the positive samples examined in 2000, 99.4% corresponded to *Plasmodium vivax* and 0.6% to *P. falciparum*.

Recent years have seen an increase in chloroquine-resistant cases of *P. falciparum* malaria in persons traveling to endemic areas of South America, and there is a potential risk of spread through migration. In 1998, an integrated malaria prevention and control project was begun in the Huetar Norte region, and the criteria for this project were later incorporated into the Roll Back Malaria initiative, which achieved a 32% reduction in incidence between 1998 and 2000.

Leptospirosis rose from 6 reported cases in 1992 to 192 in 2000, after having peaked at 283 in 1999. During 1996–2000, there were 559 cases, 74.0% of them in males and 93.0% in persons 15–44 years old. The Brunca (37.2%), the Pacific Central (24.6%), and Huetar Atlántica (13.6%) regions were the most seriously affected. Outbreaks after 1998 were related to intensified agricultural activity in risk areas, the increased flow of immigrants in connection with sugarcane processing, and a rise in the rodent population.

Diseases Preventable by Immunization

The incidence of diseases preventable by immunization has been falling since 1993, with the exception of acquired rubella, which reached epidemic proportions in 1998 and 1999. Reduction of the incidence of these diseases has been related to the maintenance of vaccine coverage at over 80%, with variations among geographic areas.

Immunization coverage against measles, mumps, and rubella (MMR vaccine) increased from 82.1% to 99.9% between 1996 and 2000. During this time, the incidence of measles declined: 24 cases were reported in 1996, 23 in 1999 (4 laboratory confirmed and 19 clinically diagnosed), and none in 2000. Over that period, a total of 1,387 rubella cases were reported, 82.9% of them in 1999. A comparison of age-specific incidence in 1987–1988, 1993–1994, and 1998–1999 shows that the disease has been shifting toward the 15–44 years age group, which coincides with the childbearing age of women. This pattern was especially evident in the outbreak that occurred in 1998–1999, when 79% of the cases occurred in this age group.

The last case of poliomyelitis in the country was recorded in 1973, and in 1994 the eradication of wild poliovirus was certified. Vaccination coverage of children under 1 year was 85% or higher throughout the country except in 2000.

Immunization coverage against diphtheria, pertussis, and tetanus with 3 doses of DPT vaccine increased from 85% in 1996 to 94% in 2000, and during the same period there were no reported cases of diphtheria or neonatal tetanus. However, pertussis averaged 23 cases a year (ranging from 11 to 29 cases), mainly affecting infants under 6 months of age and even those under 2 months. During the same period, the annual average of non-neonatal tetanus was 2 cases (ranging from 1 to 3).

The vaccine against diseases caused by *Haemophilus influenzae* type b (Hib) was introduced in 1998. During the prevaccination period (1994–1997), there had been an annual average of 16 cases of meningitis caused by Hib, whereas in 2000, when vaccination coverage reached 93.3%, there were only 2 cases.

Intestinal Infectious Diseases

Diarrheal and respiratory diseases are the two leading groups of reportable diseases, and they both increased between 1995 and 1999. The rates for acute diarrheal diseases rose from 2,903.2 per 100,000 population in 1996 to 3,632.9 per 100,000 in 1999; the Brunca, the Pacific Central, and Chorotega regions were most affected. General rates of mortality from this cause went from 1 to 3 deaths per 100,000 population in the period 1996–1998, while specific rates in the group under 1 year old and those 65 and over also increased. In 1999, the mortality rate was 2.8 per 100,000 population; the provinces of Limón and Puntarenas had the highest rates, each with 3.9 per 100,000 population. No cases of cholera were reported in 1996 or 2000.

Chronic Communicable Diseases

The incidence of all forms of tuberculosis increased by a factor of 2.2 between 1990 and 1999, from 9.3 to 21.0 per 100,000 population. During the same period, the incidence of pulmonary tuberculosis rose from 7.5 to 16.2 per 100,000. In 1999, the highest incidence rates were recorded in the urban and rural areas outside the central valley, where the average was 29.0 per 100,000, while in the urban areas of the central valley the rates averaged 6.9 per 100,000. The rates ranged from 9.4 per 100,000 in the North-Central region to 41.3 per 100,000 in Huetar Atlántica. Females accounted for 65% of the cases, and 90% were pulmonary. The incidence of tubercular meningitis is low, with only 2 cases reported in 1999.

Tuberculosis is the second leading cause of death among the infectious diseases, after AIDS, and in 1999, the death rate was 2.3 per 100,000 population. During 1997–1999, between 20% and 40% of tuberculosis patients abandoned treatment. At the same time, 42 cases of resistance to the treatment regimen were identified, signifying increased resistance of the mycobacteria in circulation to the drugs used to treat the disease. The directly observed treatment, short course (DOTS) strategy has been being executed since 1998 in two trial areas in the Pacific Central and Chorotega regions. Even though Costa Rica ranks among the low-prevalence countries (those with rates under 20 per 100,000), the rising trend in recent years, the high rates of patients abandoning treatment, and the increase in multidrug resistance raise concern for the future. In 1999, the CCSS took over prevention and control activities, as well as reorganization of the national tuberculosis program, including the updating of standards, the improvement of the diagnostic infrastructure, and the expansion of areas using the DOTS strategy, which in 2000 reached only 10% of the population.

In 1999, there were 157 registered cases of leprosy and 12 new cases were reported. All the cases were in persons over 15 years of age, and 76% were multibacillary. The endemic area encompassed the Pacific Central, Huetar Norte, and Huetar Atlántica regions.

Acute Respiratory Infections

Acute respiratory infections (ARIs) have been a major cause of morbidity, and the 1990s saw a rising trend. The 762,912 episodes recorded in 2000 represented an increase of 93.2% compared with the figure of 394,790 in 1996. In 1999, ARIs accounted for 33.6% of all emergency consultations by children under 1 year of age and 35.7% by those aged 1–4 years. In 2000, there were 36 deaths from this cause in children under 5 years (8.73 per 100,000), representing 33.8% of all deaths in this age group.

Meningococcal Meningitis

Reported cases of meningococcal meningitis declined from 37 in 1996 to 19 in 2000. Fifty percent of the cases were in children and adolescents, and 70% of those reported in 1999 and 2000 occurred in urban areas of the South-Central and East-Central regions.

Zoonoses

No cases of human rabies have been reported since 1970, but between 1996 and 1998, a total of 13 cases of bovine rabies were reported, one each year, in the Brunca region. The western part of the country is at greatest risk. Activities aimed at controlling the problem include a mapping project, epidemiological surveillance, vaccination of cattle, and reduction of the vampire bat population.

Five cases of human brucellosis were recorded between 1997 and 2000, and in cattle there were 70 foci (218 cases) of bovine brucellosis in 1998 and 10 foci (766 cases) in 2000. The Ministry of Agriculture has strengthened its surveillance system so that control measures can be targeted more precisely. Toxoplasmosis declined from 155 cases in 1996 to 114 cases in 2000.

HIV/AIDS

The first known cases of AIDS in Costa Rica were identified in the early 1980s among hemophiliacs exposed to contaminated blood. Sexually transmitted cases began to appear in men in 1985, and by the 1990s, the epidemic had spread to women and newborns. Between the start of the epidemic and November 2000, a total of 2,003 cases of AIDS had been registered in Costa Rica.

From 79 cases of AIDS reported in 1990, the figure rose to 214 in 1995 and then declined slightly to 181 in 1999. Men accounted for 90.5% of all cases in this period (Figure 4). Sexual transmission accounted for 61% of the cumulative cases for which the mode of transmission was known, followed by parenteral transmission in hemophiliacs (2.4%), in blood transfusions (1%), and

through intravenous drug use (1%). In another 1.5% of cases, the virus was transmitted perinatally. Since October 1985, all blood units have been screened for HIV, and this form of transmission has been interrupted. In April 1998, a general law on HIV/AIDS and its enabling regulations were enacted. This legislation specifies the rights and responsibilities of AIDS patients and defines a series of procedures related to this health problem. Since then, treatment has been give to all patients who have needed it.

Sexually Transmitted Infections

In 1999, there were 3,905 cases of sexually transmitted infection (excluding HIV), reflecting little change since 1996. Gonorrhea and syphilis represented 83.7% of these cases, and 30% of the cases occurred in two cantons: Central San José (26.2 per 100,000 population) and Central Puntarenas (317.6 per 100,000), both of which had rates far higher than the overall national incidence rate (7.6 per 100,000 population).

Nutritional and Metabolic Diseases

In 1996, the proportion of preschool children suffering from some degree of undernutrition was 5.1%, a considerable reduction from 8.6% in 1980. The 1996 National Nutrition Survey found that 0.4% of preschoolers were suffering from severe undernutrition; 0.4% had an acute weight-for-height deficit (wasting), and 1.9% had a severe height-for-age deficit (stunting). The percentage of stunting was higher (2.5%) in rural areas. Schoolchildren have experienced a steady increase in height, from 118.6 cm in 1981 to 120.6 cm in 1997. In the latter year, 1.8% of all schoolchildren were suffering from acute undernutrition, and 8.8% from moderate undernutrition.

Obesity was found in 6.2% of preschoolers and 8.4% of schoolchildren. The problem was greatest in the metropolitan area, and girls were most affected. Among women of reproductive age, 45.9% of those aged 20–44 years and 75% of those aged 45–59 years had a BMI over 25. Women in urban areas, especially the metropolitan area, contributed the most to these high percentages.

The prevalence of nutritional anemias in preschool children was 26%; in pregnant women, 27.9%; and in all women of reproductive age, 18.9%. The percentage of iron deficiency was similar for pregnant women (58.5%) and preschool children (58.3%). Folate deficiency, the number two cause of nutritional anemias, was greater in women aged 15–44 years than in children, and in both groups the prevalence was higher in rural areas.

In 1996, the prevalence of vitamin A deficiency in the preschool population was 8.7%, while the proportion with a "marginal" vitamin A deficiency was 31.4%. With regard to iodine deficiency, that same year the percentage of schoolchildren with urinary iodine excretion levels below 10 mg/dl was 8.9%; rural residents had a greater risk of suffering from iodine deficiency disorders, because 7.6% consume salt intended for industrial or animal use, which is not iodized. The average level of fluoride in children is optimum, both for the country as a whole (1.34 mg/l of urine), and in the rural (1.43 mg/l), urban (1.26 mg/l), and metropolitan (1.31 mg/l) areas.

In 1998, the prevalence of non–insulin-dependent diabetes mellitus, estimated on the basis of a household survey, was 2.2% for males and 3.4% for females, while the prevalence for persons over 40 years old was 9.4% (7.6% for men and 11.0% for women). Between 1990 and 1998, this disease accounted for a total of 36,852 hospitalizations of persons aged 40 and over who were discharged from CCSS institutions, with an annual average of 4,094. During the same period, the rate of hospital discharges associated with this diagnosis fell from 605.3 per 100,000 population to 424.6 per 100,000. In 1999, mortality from this cause in the group over 40 years of age was 26.7 per 100,000 population. Diabetes-related disabilities were found in 37.2% of the diabetic patients according to the 1996 Household Survey. Among persons over 40 with a diagnosis of diabetes, 26% either had impaired vision or had lost their sight, and 5% had had a limb amputated.

Diseases of the Circulatory System

Cardiovascular diseases have been the leading cause of death since 1971. The mortality rate for this group of causes has been declining gradually, and the levels for men have always been higher. However, the adjusted death rates for arterial hypertension show values rising over time, without notable differences between the sexes. Ischemic heart disease is the leading cause of death in this group of causes, especially in men. In 1999, 47% of all deaths from circulatory diseases were caused by ischemic coronary disease and 19% by cerebrovascular disease.

Malignant Neoplasms

Malignant neoplasms are the second leading cause of death after cardiovascular diseases. In 2000, there were 3,010 deaths from this cause, representing 20.3% of the national total—a percentage similar to the proportion in 1999. The relative increase for 1990–2000 was 27% in males and 44% in females. The crude death rate for this group of causes has been rising steadily in recent years, reaching 80.7 per 100,000 (85.8 in males and 75.6 in females) in the period 1995–1999. In 2000, however, it was down slightly, to 76.4 per 100,000 (81.2 in males and 71.5 in females). When these rates were adjusted for age to the world population, which eliminates the effect of population aging, the levels were 253 per 100,000 (146 in males and 107 in females) in 1995–1999. This result suggests that the higher mortality from cancer in women is explained by the fact that the female population is older. Indeed, life expectancy for women in 1999 was 79 years, compared with 74.2 years for men.

Since 1990, the leading causes of death from malignant neoplasms in men have been cancers of the stomach, prostate, lung,

and liver, and leukemias, while in women the principal sites have been the stomach, breast, uterine cervix, colon, and lung.

Accidents and Violence

External causes accounted for 11.6% of all deaths in 1998 (45.4 per 100,000 population). In terms of age distribution, the highest rate was in the over-60 group (143.9 per 100,000), followed by the population aged 20–29 (58.5 per 100,000). Among the most frequent causes were transport accidents (37%), suicides (13%), homicides (13%), and drownings (9%). Geographically, the highest rate was in the province of Limón (70.7 per 100,000), followed by the provinces of San José and Alajuela.

Mortality from transport accidents increased from 417 deaths in 1996, to 583 in 1997 and 630 in 1999. This type of accident mainly affected the adult age group and men. In 1998, the most frequent victims were pedestrians (37%) and motorcyclists and other cyclists (19%).

Homicides and intentionally inflicted injuries as the cause of death increased from 183 in 1994 to 214 in 1998. In the latter year, 89% of homicide victims were men. Assaults were mainly with a firearm (53%) or a blade or other sharp object (33%), and 33% were prompted by family or personal problems or were crimes of passion.

In 1998, there were 223 suicides—90% of them males—the most frequent methods being hanging (40%), pesticide poisoning (27%), and gunshot wounds (24%). In females, the principal methods were pesticide poisoning and hanging (83%). In 1999, there were 84 reported suicide attempts with pesticides, and the number increased to 110 in 2000. Adults aged 25–29 had the highest suicide rate (13.0 per 100,000 population).

In 1999, 26 women died as a result of domestic violence. A free telephone hotline run by the National Women's Institute received 11,346 calls in 1999, and 57% of these were from women aged 20–39 who had been battered by their spouses or sexual partners. There has been an important increase in the reporting of domestic violence. In 1999, the Women's Delegation of the Ministry of Justice reviewed 5,188 complaints. The number of cases brought before the courts rose from 15,336 in 1997 to 20,996 in 1998 and 26,437 in 1999, for an increase of 72% between 1997 and 1999.

Oral Health

According to the 1996 National Nutrition Survey, oral health in preschool and school-age children had improved since 1992. The national DMFT index in the preschool population was 3.8, with differences according to area of residence: San José metropolitan area, 3.0; all other urban areas, 2.7; and rural areas, 4.0. In the school-age population, 49.9% of the children had a history of caries in 1 to 4 teeth, for a DMFT index of 2.6 in the San José metropolitan area and 3.2 in rural areas.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

Costa Rica has developed two instruments to ensure direction and leadership of the sector in the short and medium term as well as continuity of the sectoral reform processes formally initiated in 1994: the National Health Policy 1998–2002, and the National Health Plan 1999–2004.

The Policy is based on the health needs and social policy guidelines set forth in the National Plan for Human Development, and it is consistent with the General Law on Health and the sectoral reform process. In the area of institutional strengthening, it identifies strategies for enhancing ministerial leadership, modernizing institutions, setting standards, developing human resources, advancing research and technology, and financing health. Under the heading of health care for individuals, the document defines strategies for health surveillance, health promotion, disease prevention, primary care, hospital treatment, care for the disabled, and rehabilitation. In environmental health, it sets forth strategies for protecting and improving the environment.

With regard to gender equity, the National Women's Institute (INAMU) was established in 1998; in addition, two entities have been created to specifically address women's health issues: the Commission on Gender Health within the Ministry of Health, and the Women's Health Section in the Department of Preventive Medicine of the CCSS. The National Plan for the Treatment and Prevention of Domestic Violence, elaborated in 1994, has been an interinstitutional and intersectoral response to this problem. Also, the Council on Domestic Violence functions in the health area with the participation of the Ministry of Health, the CCSS, and INAMU.

The National Council on Rehabilitation and Special Education, in coordination with the health sector institutions, sets policies on rehabilitation of the disabled. The care of this population is governed by its own legal framework, including a law on equal opportunity for the disabled, which was enacted in 1997.

Health Sector Reform Strategies and Programs

Reform of the health sector got under way at the beginning of the 1990s, and in 1994 the process was institutionalized on the basis of a formal proposal that specified the following four components: Ministry of Health leadership, restructuring of the care model, modification of the resource allocation system, and strengthening of the CCSS. Sectoral reform is already bringing about major changes in the Costa Rican public health system. Its main objectives have been to maintain universal health insurance coverage, create greater equity in access to services, guarantee the quality of care, and improve the efficiency of resource utilization.

As a first step within the framework of the reform, the Ministry of Health completed the revision of its functions and implemented its structural reorganization, which was approved in 1998. In the second stage, it adjusted its resources and adapted its processes to allow for sectoral management and performance of the essential public health functions that are within its competence, such as regulation of health services and health surveillance. These changes led to the transfer of 1,700 of its staff to the CCSS and the health care programs. Also, formation and training of personnel were strengthened during this stage. The third stage got under way in 2000, and the emphasis has been on institutional development, in connection with which the various organization manuals have been rewritten and functions have been deconcentrated to the regional and local levels. These steps have paved the way so that the necessary resources and authority can been transferred to them and they can begin to assume their leadership role.

As part of the reform process, an integrated care model has been proposed that incorporates prevention and health promotion activities, increased social participation, and a primary care strategy with integrated basic health care teams (EBAIS) consisting of a general physician, an auxiliary nurse, and a primary health care technician. The strategy calls for five health care programs, aimed at children, adolescents, women, adults, and the elderly, respectively, each of which is intended to cover a population of approximately 4,000. Although the EBAIS strategy is to be applied nationwide, the reform has given first priority to rural and marginal urban areas with a view to improving the availability of services and making access more equitable. The work of the EBAIS is backed by support teams located in 83 health areas. Through a network of second- and third-level health care establishments, the system is intended to guarantee continuous and comprehensive care. In terms of social participation, as of 2000, the CCSS had organized 105 Health Boards with oversight functions, made up of representatives of users, employers, and health workers.

In those areas of the country where it has been implemented, the EBAIS strategy has helped to reduce inequity in health. Between 1995 and 1998, the proportion of the population with insufficient and inequitable access to health services was reduced from 20% to 15%. However, an evaluation of 203 EBAIS conducted by the Ministry of Health in 2000 showed that the individual clinical orientation still prevails, to the detriment of prevention and health promotion activities. The number of EBAIS increased from 425 in 1998 to 670 in 2000.

Adjustments in the financing system were delayed in part for lack of a satellite health accounting system but mainly to await the political decision to review financing from a sectoral perspective. However, in the last five-year period, the CCSS has made progress toward improving the financing mechanisms for individual health insurance, and it has also developed new modalities of resource allocation aimed at encouraging increased productivity on the part of service providers and following up on expenditures. The year 2000 saw implementation of a deconcentrated version of the centralized collection system that provides incentives for ensuring the payment of employer-worker premiums and reducing evasion, which had been estimated at approximately 30%. With regard to new modalities for the allocation of resources, starting in 1998 funds have been being transferred to CCSS health areas and establishments under "managerial commitments."

The Health System

The national health system comprises the Ministry of Health, which provides leadership for the sector; the CCSS, which delivers care in the event of disease and maternity; the National Insurance Institute (INS), which offers protection against work-related and transportation accidents; and the Costa Rican Institute of Water and Sewerage Systems (AyA), which regulates the supply of water for human consumption and the management of wastewater. According to the General Law on Health, the system also includes the universities, the municipalities, and the private sector. The public institutions receive a budgetary allocation from the State treasury, and the CCSS is funded with contributions from employers, workers, and the State. Coordination and negotiation are the responsibility of the Sectoral Council on Health, which comes under the Ministry of Health.

In 1999, 11% of the population had no health insurance and 89% were insured through nine different insurance schemes. Approximately 12% of the latter population received care subsidized by the State. To broaden its health services coverage, the CCSS has begun to contract with third parties (cooperatives and private hospitals) for provision of services. In 2000, 10% of the population sought private care.

Organization of Regulatory Actions

Health Care Delivery

The Ministry of Health sets standards for the public health regulation system, which is composed of three subsystems covering the following areas: health services, basic health supplies, and the environment. Under the Ministry of Health, there is a national program for the qualification and accreditation of public and private health services, which endeavors to ensure that health services meet minimum infrastructure conditions and quality standards. Professional practice is regulated by the professional associations, and in 1999, the College of Physicians initiated a program of professional certification.

With regard to the regulation of medical technology, devices, and equipment, the Ministry of Health has drafted the relevant

regulations and the instruments for applying them. In the area of pharmaceutical regulation, the Ministry of Health maintains a list of proprietary and generic as well as over-the-counter drugs. Quality control is the responsibility of two official laboratories, which provide support for the regulation and purchase of drugs by conducting bioequivalence and bioavailability studies.

During the last decade, the number of pharmaceutical products sold in the country has consistently stood at around 5,000. There is a policy for partial control of drug prices in order to keep down point-of-sale profit margins, which remained under 30% during 1998–2000. The Ministry of Health controls the registration, production, and sale of drugs as well as importation and consumption of stupefacients and psychotropic substances. In addition, in 2000 it introduced its "800 Line" service, which offers information to the public about the therapeutic uses and cost of drugs. The CCSS has an official list of drugs that are required to be used in all its establishments, consisting of a total of 399 active substances classified into 54 therapeutic groups. The hospitals and clinics have standardized treatment protocols for the main diseases, and all the pharmacies in the country have a pharmacist on staff. Per capita expenditure on drugs was US$ 15.6, and the proportion of public health spending that went for drugs was 7.7%.

Environmental Quality

There continued to be problems related to water pollution, solid waste management, air pollution in some urban areas, soil erosion due to inappropriate use of the land, and deterioration of the forest reserve. The highest levels of pollution are found in the basin of the Tárcoles River, the main outlet from the Central Valley, which in turn contaminates the Gulf of Nicoya. In 1999, household wastewater represented 40% of the pollution in the basin, followed by industrial runoff (23%), animal waste (16%), and solid waste (14%). Industrial pollution from the processing of coffee, which in the early 1990s amounted to 21% of all pollution, was down to 5% in 1998.

Air pollution in the San José metropolitan area has declined since 1995, when suspended particulates peaked at 340 mg/m^3 (compared with the WHO maximum threshold of 100 mg/m^3) as a result of the massive uncontrolled influx of vehicles starting in 1994. The reduction of this level in subsequent years was due to introduction of required catalytic converters and, to a lesser extent, emission controls. It is estimated that 75% of all air pollution comes from the transportation sector and the remaining 25% from industrial activity and electric power generation.

Costa Rica ranks among the top users of pesticides in the Americas, with a per capita level more than four times higher than the world average of 0.5 kg/inhabitant/year. Use of these substances exposes the community, and agricultural workers in particular, to high risk. Acute pesticide poisonings have increased: 676 cases were reported in 1999 and 752 in 2000 (23% of them in children and youths).

Organization of Public Health Care Services

Health Promotion

Since 1995, the Ministry of Health has had a National Program for Health Promotion and Protection, which encourages social participation and ties this in with education and mass communication. Programs have been carried out in connection with the creation of "healthy spaces" in the cantons, at education centers, and in the workplace. A joint action program (CARMEN) has been launched to address the multiple factors that contribute to chronic diseases.

An intersectoral program, "Toward an Agenda for Childhood Beyond the Year 2000," has been started that envisages improvements in the health of children and adolescents, fulfillment of international commitments, and the defense of their rights as set forth in the "Code on Children and Adolescents" promulgated in February 1998.

The elderly have received greater attention since 1998, after creation of the National Council on Older Adults, chaired by the First Lady, and approval of the Comprehensive Law on Older Adults, which sets forth the rights and entitlements of persons over the age of 65.

Disaster Preparedness

The country is highly vulnerable to earthquakes and floods. In 1999, a law was enacted that expanded the functions of the National Emergency Commission (CNE), giving it authority to act in the face of imminent risks at times of disaster and to mobilize the nation for intervention based on municipal preparedness plans. The Ministry of Health plays an important role in policy making, planning, and taking actions at the different levels of the health system to reduce the vulnerability of the health infrastructure and safeguard it against the impact of disasters.

Vaccination Program

The Expanded Program on Immunization (EPI) is executed by the CCSS, while epidemiological surveillance and case finding are the responsibility of the Ministry of Health, with participation by the CCSS through interinstitutional boards. During 1996–2000, vaccination coverage was consistently 80% or higher, except for the vaccines against *Haemophilus influenzae* type b (Hib) and hepatitis B virus (HBV), more recently incorporated into the EPI. However, the national indicators do not reflect differences in coverage at the level of the cantons (Figure 5). In 1999, national vaccination coverage against measles in 1-year-olds was 89.3% for the country as a whole, with 86.4% of the cantons at levels of 80% or higher and 43.2% at 95% or better. That same year, national coverage with OPV3 was 85.5% in children under 1 year of age; 79% of the cantons had levels of 80% or higher, and 33.3% reached or exceeded the 95% mark.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

In 2000, the Ministry of Health created the Bureau of Epidemiology, while the CCSS inaugurated its Epidemiological Surveillance Unit. In addition, plans progressed toward implementing the public health epidemiological surveillance system, covering reportable diseases such as domestic violence, cervical and breast cancer, and accidents. Also, interinstitutional surveillance committees were established to improve coordination between the Ministry of Health, the CCSS, the AyA, and municipal governments. The Ministry of Health is responsible for vector surveillance and control.

The Public Health Laboratory Network comprises 85 CCSS and private laboratories, a national reference center, and the Costa Rican Institute for Research and Education in Nutrition and Health (INCIENSA). In 1996, the Institute began a restructuring process that emphasizes the role of laboratories, training, and research in the area of surveillance.

Surveillance of deaths in children under 1 year was initiated in 1996 with creation of the National Infant Mortality System, and the surveillance of maternal mortality began in 1997. In each case, standards have been set and research tools are available for investigating each death.

Potable Water, Excreta Disposal, and Sewerage Services

Water supply service attained a coverage of 97.5% in 1999, but only 75.7% of the population had potable water. By law, AyA is responsible for designing and building the country's water supply and sewerage systems. In 2000, AyA reached 46.9% of the population, although it supplied 96% of the potable water. Other entities are also responsible for water administration, such as the municipal governments and the committees that manage rural aqueducts.

Coverage with sanitary sewerage systems and *in situ* excreta disposal reached 96.1% of the population. However, sewage disposal via sanitary sewerage lines was 26%, and only 4% of the sewage received sanitary treatment. In 2000, AyA invested US$ 28 million in water supply and sewerage infrastructure specifically for the San José metropolitan area.

Solid Waste Services

Collection and final disposal of solid waste is handled by the municipal governments. Coverage with household solid waste collection was 69% in 2000. Of the country's 81 municipalities, 38 (47%) disposed of their refuse in sanitary landfills, and the remaining 43 (53%) used open dumps. Hospital waste is incinerated and disinfected and then discarded in sanitary landfills or controlled refuse dumps. Forty-five percent of all hospital waste is deemed hazardous. In 1999, the health authorities took steps to classify and manage hospital waste. The CCSS invested US$ 1 million in basic sanitation programs and in procuring specialized disinfection equipment.

Pollution Prevention and Control

The Ministry of Health, through its Human Environment Control Program, is responsible for monitoring and controlling air pollution. It coordinates an emissions monitoring network that includes the Ministry of the Environment and the Atmospheric Chemistry Laboratory at the National University. The Ministry of Public Works and Transportation controls pollution generated by automotive vehicles. The building code cites the need for ventilation to improve air quality in closed areas, and the regulations for worker safety and hygiene include guidelines on ventilation to prevent health problems.

Food Aid Programs

Three food aid programs have nationwide coverage: the Child Nutrition and Development Centers, which have been in operation since 1930, are directed toward mothers and children at risk; the School Cafeteria Program, established in 1912, serves preschool children, school-age children, and adolescents in the public education system; and the Community Households Program, created in 1992, assists the children of low-income working mothers.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

At the end of 2000, the CCSS had 670 EBAIS supported by teams from the 83 health areas; in addition, there are 120 EBAIS managed by cooperatives that do not come under the CCSS but carry out the same health care programs. The secondary level of care is made up of 10 clinics, 13 peripheral hospitals, and 7 regional hospitals. At the tertiary level, there are six specialized hospitals and three general hospitals that serve the entire country and offer highly specialized care.

The private health sector institutions are financed by direct payments from users. There is little connection between them except for patient referrals. Medical care for work-related accidents is provided by the National Insurance Institute; however, because its service network is limited, it often enters into service contracts with private providers and even the CCSS.

Auxiliary Diagnostic Services and Blood Banks

The health services are supported by a network of laboratories, some of which use very advanced technology. INCIENSA acts as a reference center. For the management of blood and blood products, there is a network of 25 public and 3 private blood banks strategically located throughout the country. The laboratories and the blood banks initiated quality assurance programs in 2000.

The Department of AIDS Control has a diagnostic and reference laboratory that provides support for the public and private laboratories that diagnose HIV as well as for the blood banks.

The quality of blood for transfusion is guaranteed, and serologic screening for all pregnant women is being promoted. A law on HIV/AIDS and its enabling regulations were enacted in April 1998, and this legislation defines the rights of patients and guarantees them access to comprehensive treatment without discrimination.

Specialized Services

The CCSS has the following specialized services: the National Psychiatric Hospital, the Dr. Roberto Chacón Paut Hospital for psychiatric care, the Blanco Cervantes National Hospital for geriatric care, and the National Women's Hospital. There is also the Institute on Alcoholism and Drug Dependence, which provides ambulatory care, and a model program that offers comprehensive care for domestic violence has been in operation since 1998 in the province of San José. For rehabilitative care, there is a national network of CCSS services consisting of three specialized and two general hospitals at the national level, plus five regional and two peripheral hospitals.

Health Supplies

The Ministry of Health has a Bureau of Registration and Control, which is responsible for regulating drugs, food, and other products for human use. There are two laboratories that provide drug quality control and have personnel trained in the surveillance of good manufacturing practices. The CCSS has a laboratory that produces generic drugs and parenteral solutions, but more than 90% of these products are obtained from private laboratories.

The official list of drugs is prepared by the Central Committee on Pharmacotherapy and includes six categories: drugs of general and specialized use; restricted drugs; radiodiagnostic contrast media; drugs used in dentistry; drugs used by obstetric nurses; and drugs used in coverage programs.

The public sector has 1.6 hospital beds per 10,000 population; four national hospitals offer tomography services and have transplant and hemodialysis units, and 11 hospitals have an intensive care unit. The CCSS sets aside 4.4% of its operating budget for maintenance, and 55% of its personnel in this area are technically trained. A study revealed that 87% of the equipment is in good condition and 6.4% in fair condition.

Human Resources

Information on the available supply of health personnel by category is not confirmed or compiled within the health sector institutions, nor is there an accessible register of employment for the private sector. The only information available for the country as a whole is the data from the National Institute of Statistics and Censuses (INEC). Another limitation has been the deconcentration of human resource management to the health service units, which have the authority to hire personnel under flexible arrangements and to contract for their needs with third parties.

The number of personnel in almost all categories has increased, but a percentage breakdown by professions in the CCSS shows that the proportion of physicians fell from 85% in 1990 to 51.9% in 1999 (Table 2). This drop is accounted for in part by the increase in other professional categories in connection with the EBAIS strategy.

Fifteen private universities joined the ranks of Costa Rica's academic institutions during 1996–2000, for a total of 54 universities. With no policy regulating the formation and training of human resources in the health sector, there is a risk that in the medium term the increased number of professionals in the health sciences may exceed the availability of jobs.

The Ministry of Health has set forth its training priorities in the Institutional Training Plan, which is being executed with funds from cooperation agencies. Training is offered by the CCSS through its Social Development Center and also its National Strategic Development Center. The decentralized establishments, according to their management agreements, can organize and finance their own training activities.

The proportion of private sector workers in the health labor market has grown from 9.9% in 1990 to 24% in 1999. At the same time, however, data from INEC show that unemployment in the health sector increased from 0.4% in 1998 to 1.2% in 1999.

Health Research and Technology

In Costa Rica, the Ministry of Health is responsible for guiding health research, which is primarily carried out at the Health Research Institute and the Clodomiro Picado Institute, which is part of the University of Costa Rica. Research in public health is conducted mainly at the University of Costa Rica School of Public Health and includes thesis research undertaken by candidates for the master's degree. The National University conducts research on topics related to the environment and health. The Latin American Institute of Prevention and Health Education and the Costa Rican Demographic Association are nongovernmental agencies that also conduct research.

The last five years saw an increase in private research carried out at CCSS installations by foreign organizations, which usually included research with human subjects. This situation raised concern among the institution's authorities, which led to an evaluation of compliance with institutional and international standards for research on human subjects.

Health Sector Expenditure and Financing

The country's expenditure on health as a percentage of GDP declined from 7.6% in 1996 to 5.7% in 2000. Health expenditure included spending by the Ministry of Health, CCSS, AyA, INS, and municipal governments. The decrease in spending by the

TABLE 2. Human resources in the health services, by category, Costa Rica, 1995–1999.

Health professionals	1995	1996	1997	1998	1999
Total					
Physicians[a]	3,820	5,157	5,518	5,998	6,422
Dentists	1,325	1,356	1,404	1,416	1,543
Pharmacists	1,187	1,233	1,258	1,327	1,452
Microbiologists[b]	929	964	1,002	1,042	1,112
Population per physician[c]	883	668	636	596	567
Personnel working in the health sector					
Physicians	2,845	2,937	3,021	3,178	3,330
Dentists	202	198	211	254	286
Pharmacists	219	222	249	241	260
Microbiologists	356	369	379	400	428
Nurses	1,747	1,825	1,817	1,159	1,204
All professionals	5,396	5,551	5,677	5,232	5,508
Other professionals	25	27	27	730	732
Others					
Technicians and aides	9,224	9,559	9,948	10,942	11,307
General services and administrative personnel[d]	13,066	13,100	13,087	13,434	13,515

[a]In 1995, this included practicing physicians, resident aliens, and those in the social services. In 1996, the College of Physicians modified its database and since then only registers practicing physicians, thus these two periods are not comparable.

[b]Excludes members who are retired or live abroad.

[c]Based on population figures from DGEC, MIDEPLAN, and CELADE. Population estimates and projections for 1950–2025 (recommended hypothesis). In 1996, the College of Physicians modified its database and since then only registers practicing physicians, thus these periods are not comparable.

[d]Includes industrial production personnel.

Ministry of Health may be attributable to personnel and budgetary cutbacks within the context of health sector reform. Compared with the monies allocated to the Ministry of Health (0.3%), AyA (0.4%), INS (0.2%), and the municipalities (0.2%), the largest share of health spending in 2000 went for individual care provided by the CCSS (4.6%)—in other words, to cover disease and maternity.

In 1999, the CCSS contributed 95.5% of the health sector's income, while the remaining 4.5% came from other institutions (Ministry of Health, INCIENSA, National Drug Commission, Institute on Alcoholism and Drug Dependence, Technical Council on Social Medical Care, and Office of International Cooperation in Health). CCSS insurance financing was contributed on a tripartite basis by employers, workers, and the State (9.25%, 5.5%, and 0.25%, respectively).

External Technical Cooperation and Financing

Technical cooperation for Costa Rica fell 17.6% between 1990 and 1999, while nonreimbursable technical cooperation dropped 12.6% in the same period. The United Nations system, USAID, and cooperation from Sweden funded most of the technical cooperation projects at the beginning of the decade. Currently, the largest amounts come from Taiwan and the United Nations system. Support from the IDB accounted for 35.7% of all cooperation during 1990–1999, and in 1999, it accounted for 52.4%.

FIGURE 1. Gross domestic product, annual growth (%), Costa Rica, 1990–2000.

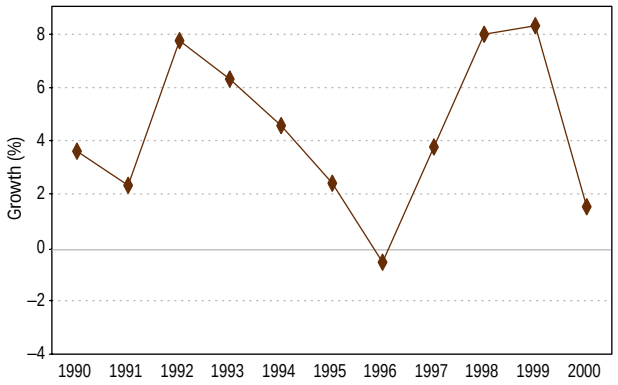


FIGURE 2. Distribution of infant mortality, by province, Costa Rica, 1995–1999.

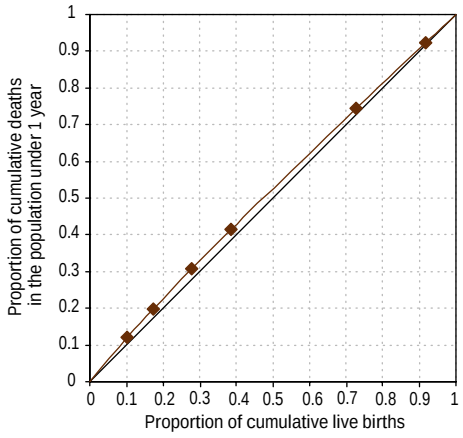


FIGURE 3. Population structure, by age and sex, Costa Rica, 2000.

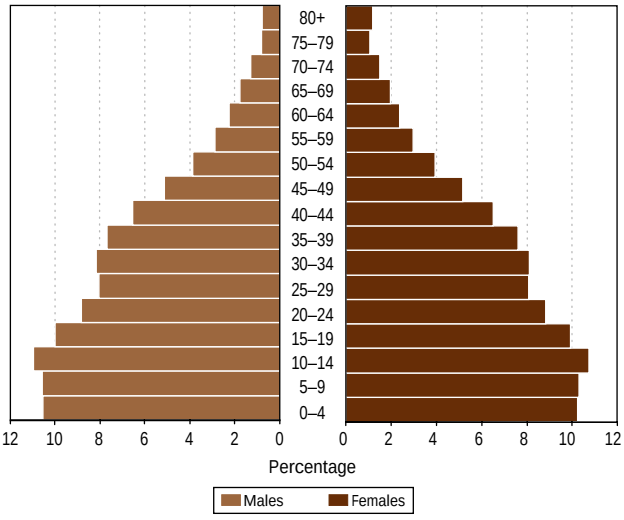


FIGURE 4. AIDS incidence, by sex, with male-female ratio, Costa Rica, 1990–2000.

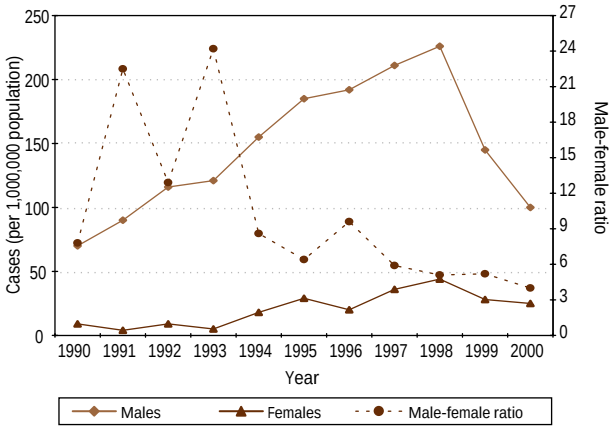
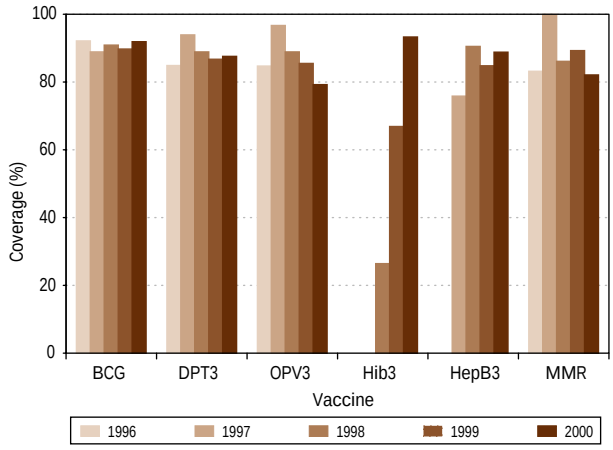


FIGURE 5. Vaccination coverage among the population under 1 year of age, by vaccine, Costa Rica, 1996–2000.



CUBA

OVERVIEW

The Republic of Cuba is an archipelago consisting of two major islands—Isla de Cuba and Isla de la Juventud—and around 4,190 keys and islets. The country is located in the Caribbean Sea, at the entrance to the Gulf of Mexico, and has a total surface area of 110,860 km^2. Politically and administratively, Cuba is divided into 14 provinces and one special municipality.

Despite the economic constraints and socioeconomic adjustments that followed the crisis of the 1990s, which is known as the "special period," Cuba's development strategy has remained focused on achieving the essential objective of social equity by ensuring universal availability of free social services, such as education, health care, and social assistance. A basic level of food intake and provision of essential goods are also assured, with differential treatment for children, pregnant women, the elderly, the sick, and other vulnerable groups.

The lowest point in the economic crisis came in 1994. The recovery began the following year, and the economy has registered growth every year since then. The GDP grew steadily at an annual average rate of 4.8% between 1994 and 2000, rising to 5.6% in the period 1999–2000. The increase in income per capita averaged 3% a year between 1994 and 2000. This economic turnaround has enabled sustained growth in expenditures for health, education, social assistance, and social security. It is estimated that GDP per capita (at constant 1981 prices) in the country increased from US $1,290 in 1996 to US $1,475 in 2000; of those amounts, between 8% and 10% annually was spent for health.

The key sectors of the economy have recovered, but globalization has had a negative impact on import and export prices. For example, sugar exports in 2000 suffered as a result of low prices on the world market, even though production increased 7.3% in comparison to 1999. At the same time, rising petroleum prices have increased the price of imports.

Tourism revenues have become a mainstay of the national economy. In 2000, 1.8 million tourists visited Cuba—a 10% increase over 1999 and five times more than 11 years earlier.

At the start of the "special period," unemployment and underemployment rose to 7.5%, and between 1990 and 1998 more than 155,000 workers lost their jobs (although they continued to receive 60% of their wages). Most of these workers eventually found new employment, and by the end of 1998 only 3,044 remained jobless.

The agricultural sector comprises a cooperative subsector (the largest), a private subsector, and a State subsector. In the last six years, the Cuban government has turned over, free of charge, 100,000 hectares of state-owned land for use by farmers in order to stimulate the production of coffee and fruit crops, as well as other crops to meet family needs. There is also a sector of workers who engage in private activities, producing a wide range of goods and services, and a corporate sector, in which foreign investors play a role through various forms of partnership.

The country's domestic financial situation is in balance, and liquidity has been maintained at levels considered appropriate since 1995. The budget deficit has fallen to under 3% of GDP, thanks to the stabilization and structural adjustment policy introduced in 1993. This policy has been largely successful, as evidenced by the correction of the fiscal and external deficits, reduction of monetary pressures, and the evolution of the parallel exchange rate. Moreover, the risk of hyperinflation has abated and productive activity has recovered.

With regard to external finances, Cuba remains without access to the principal sources of financing and credit. In 1999, the country negotiated favorable agreements on the foreign debt with Japan and some European countries, which has enabled it to fulfill its commitments and increase trade and investment.

Although the macroeconomic situation is relatively good, the population does not enjoy the same standard of living as before 1989 with regard to availability of foods, manufactured goods, and domestic appliances at affordable prices. Transportation—both short- and long-distance—remains a problem, as does housing, both in terms of construction of new dwellings and lack of the means to repair existing ones. Production of eggs, milk, poultry, beef, and pork is 5% lower than before the start of the "special period" in the early 1990s.

The demographic transition process, coupled with a sustained decline in fertility and mortality rates over the last two decades, has led to low levels of population growth and a shift in the age structure of the population, with an increasing proportion of older persons. In 2000, the group aged 60 and over made up 12.9% of the total population (Figure 1). Persons under 15 years of age constituted 22.0% of the population in 1996 and 22.2% in 2000.

As of 30 June 2000, the total population was estimated at 11,187,673 (population density of 100.9 persons per km^2), and 75.2% lived in urban areas. The crude birth rate decreased from 17.6 births per 1,000 population in 1990 to 12.7 in 1996; in 2000 the crude rate increased, but only to 12.8. The average annual population growth rate fell from 0.36% in 1996 to 0.30% in the year 2000, with no noteworthy changes in the interim.

The fertility rate increased from 46.2 per 1,000 women aged 15 to 49 in 1996 to 47.3 in 2000. At the same time, total fertility rose from an average rate of 1.49 children per woman to 1.55. The crude reproduction rate in 1996 was 0.76, and it remained stable over the next four years, indicating a low population replacement level. In 2000, the age-specific fertility rate decreased from 54.3 to 52.3 among the youngest group (15–19 years), while the rate among the group aged 20–39 increased, with a more marked rise in the group aged 20–24 (Figure 2).

The crude death rate was 7.2 per 1,000 population in 1996 and 6.8 in 2000. Sex-specific mortality was slightly higher among males (55.1%). Life expectancy at birth for the period 1994–1995 was 74.8 years for both sexes: 72.9 for males and 76.9 for females. The differences between provinces are minimal: the figures range from 73.9 in Havana to 76.6 in Holguín.

Table 1 shows death rates from six broad groups of causes by age groups for 1996 and 2000. Diseases of the circulatory system are the leading cause of death, with a crude mortality rate in 2000 of 288.7 deaths per 100,000 population and a male-female ratio of 1.11 (Figure 3). In comparison with 1996, the age- and sex-adjusted death rates from diseases of the circulatory system and external causes decreased 9.7% and 14.5%, respectively, in 2000, while deaths from malignant neoplasms increased 4.6% (Table 1). In terms of age, the group aged 5 to 14 had the lowest death rates (27.3 deaths per 100,000 population), and the group 65 and over had the highest rates. During the four-year period, the risk of dying for these age groups fell 17.3% and 9.1%, respectively.

Mortality from communicable diseases declined in all age groups, except those over the age of 65. Mortality from the six broad groups of causes differed only slightly for urban and rural population strata in 2000: 754.8 per 100,000 population in urban areas, 633.1 in rural-urban areas, and 552.5 in rural areas. The urban-rural mortality ratio was 1.37.

The leading causes of death in the country are chronic non-communicable diseases. Diseases of the heart, malignant neoplasms, and cerebrovascular diseases are the first three causes and account for 60% of all deaths. Between 1996 and 2000, the risk of dying from heart disease decreased from 206.3 deaths per 100,000 population to 180.3, while the risk of dying from malig-

TABLE 1. Mortality[a] by broad groups of causes[b] and age, Cuba, 1996 and 2000.

	Age groups										Total			
	0–4		5–14		15–39		40–64		65 and older		Crude		Ajusted	
Broad group of causes	1996	2000	1996	2000	1996	2000	1996	2000	1996	2000	1996	2000	1996	2000
Diseases of the circulatory system (390–459)	3.8	3.2	1.4	1.0	11.5	12.0	205.5	211.6	2,776.6	2,429.2	311.4	288.7	260.2	235.0
Malignant neoplasms (140–239)	6.4	7.5	5.6	5.2	15.8	15.6	166.4	189.9	985.5	992.7	141.0	150.3	118.2	123.6
External causes (E800–E999)	22.9	15.1	15.7	12.7	63.1	49.4	72.0	66.4	324.2	294.7	79.3	68.9	71.0	60.7
Communicable diseases (001–139, 320–322, 460–466, 480–487)	31.0	26.5	2.1	1.5	4.6	4.2	28.5	26.1	453.8	460.7	53.2	53.9	45.1	44.6
Certain conditions originating in the perinatal period (760–779)	57.7	61.7	0.2	–	0.1	0.0	–	–	–	0.1	4.2	4.2	4.3	4.5
Other causes (remaining 001–E999)	68.0	60.9	8.1	6.9	27.9	24.1	116.6	110.8	947.8	809.2	134.6	120.2	114.2	100.9
Total	189.8	174.9	33.0	27.3	123.0	105.4	589.1	604.8	5,487.9	4,986.5	723.7	686.1	614.1	569.4

[a]Rates per 100,000 population.

[b]Causes of death coded according to the International Classification of Diseases, 9th Revision (ICD-9).

Source: Dirección Nacional de Estadística, Ministerio de Salud Pública.

nant neoplasms and cerebrovascular diseases increased 6.6% and 0.9%, respectively. In contrast, the death rate from diabetes mellitus decreased 46% over the last five years (Table 2). When mortality rates from the principal causes of death are adjusted for age, a decrease is observed for all causes except influenza and pneumonia (Figure 4). Geographic differences in adjusted mortality rates for the 10 leading causes of death (highest value/lowest value for each cause) are minimal. As for sex differences in death rates, male deaths exceeded female deaths from all causes except cerebrovascular disease (0.9) and diabetes mellitus (0.5). In 2000, malignant neoplasms and heart disease accounted for the largest number of years of potential life lost: 15.5 and 11.5 years per 1,000 population aged 1–74 years, respectively (Figure 5).

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

In 1997, the United Nations Committee on the Rights of the Child recognized Cuba for having achieved the majority of the goals of the World Summit for Children. The country is also very close to reaching other goals in regard to maternal deaths, low birthweight, nutrition, and breast-feeding.

Infant mortality has shown a downward trend, dropping from 7.9 per 1,000 live births to 7.2 in 2000, with some yearly variations. In 2000, 62.8% of infant deaths occurred in the neonatal period, including both early and late neonatal deaths (overall rate of 4.5 per 1,000 live births; early neonatal mortality was 3.1 per 1,000 and late neonatal mortality was 1.4). The differences in neonatal mortality rates among the three regions of the country were relatively slight, ranging from 5.0 to 8.1 per 1,000 live births for the central provinces and between 7.0 and 9.1 for the eastern provinces. The western provinces had the lowest rates: 4.9 to 7.6 per 1,000. Over the last decade, infant mortality has declined in all provinces (Figure 6), and the differences between provinces have lessened.

Since 1980, the first five causes of death among children under 1 year of age have been conditions originating in the perinatal period, congenital anomalies, sepsis, influenza and pneumonia, and accidents, which together account for more than 80% of all deaths in this age group. In the period 1996–2000, the risk of dying decreased for all causes, except conditions originating in the perinatal period (Table 3). Between 1996 and 2000, perinatal mortality ranged from 12.4 to 12.7 per 1,000 live-born infants aged under 7 days and fetuses weighing 1,000 g or more. The percentage of children with low birthweight fell from 7.3% in 1996 to 6.1% in 2000. This percentage was lower for all provinces with respect to the previous quadrennium, but there were differences between provinces, which in 2000 ranged from 3.8% to 7.2%.

Mortality from all causes among children aged 1 to 4 decreased from 0.6 per 1,000 in 1996 to 0.4 in the year 2000. Table 4 shows the five leading causes of death in this age group in 1996 and 2000. Deaths among children under 5 years of age constituted 1.7% of all deaths in 2000. Mortality among children under age 5 decreased from 10.7 per 1,000 live births in 1996 to 9.1 in 2000. The child survival rate at 5 years of age was 99.1% in 2000—0.2% more than in 1996.

Schoolchildren (5–9 years)

Deaths in this age group represented 0.3% of total deaths in 2000, with a mortality rate of 0.3 deaths per 1,000 population (0.3 for males and 0.2 for females). In 2000, the five leading causes of death accounted for 73.2% of all deaths in this age group. The first cause was accidents, at a rate of 9.6 per 100,000 population (12.0 among males and 7.0 among females), followed by malignant neoplasms (4.1 per 100,000, similar rates for both sexes),

TABLE 2. Leading causes of death[a,b], all age groups, Cuba, 1996, 1999, and 2000.

Causes	1996	1999	2000
Cardiovascular diseases (393–429)	206.3	193.2	180.3
Malignant neoplasms (140–208)	137.4	147.4	146.5
Cerebrovascular diseases (430–438)	72.2	74.9	72.9
Influenza and pneumonia (480–487)	40.4	47.3	46.2
Accidents (E800–E949)	51.6	46.9	44.5
Diseases of arteries, arterioles, and capillaries (440–448)	31.9	33.7	32.6
Suicide and self-inflicted injuries (E950–E959)	18.3	18.4	16.4
Diabetes mellitus (250)	23.5	14.3	13.1
Cirrhosis and other chronic liver disease (571)	8.4	10.1	8.9
Homicide (E960–E969)	6.6	5.5	5.3

[a]Crude rate per 100,000 population.
[b]Causes of death coded according to the International Classification of Diseases 9th Revision (ICD-9).
Source: Dirección Nacional de Estadística, Ministerio de Salud Pública.

TABLE 3. Leading causes of death[a,b] in the population under 1 year of age, Cuba, 1996, 1998, 1999, and 2000.

Causes	1996	1998	1999	2000
Certain conditions originating in the perinatal period (760–779)	3.2	3.0	2.8	3.2
Congenital anomalies (740–759)	2.2	2.0	1.9	1.9
Sepsis (038)	0.6	0.4	0.3	0.3
Influenza and pneumonia (480–487)	0.4	0.4	0.2	0.3
Accidents (E800–E949)	0.3	0.3	0.3	0.2

[a]Rates per 1,000 live births.

[b]Causes of death coded according to the International Classification of Diseases, 9th Revision (ICD-9).

Source: Ministerio de Salud Pública, Dirección Nacional de Estadística.

TABLE 4. Leading causes of death[a,b] among children aged 1–4 years, Cuba, 1996 and 2000.

Causes	1996	2000
Accidents (E800–E949)	1.9	1.1
Congenital anomalies (740–759)	0.8	0.5
Malignant neoplasms (140–208)	0.6	0.5
Influenza and pneumonia (480–487)	0.6	0.4
Meningitis (320–322)	0.2	0.2

[a]Rates per 10,000 population.

[b]Causes of death coded according to the International Classification of Diseases, 9th Revision (ICD-9).

Source: Dirección Nacional de Estadística, Ministerio de Salud Pública.

congenital anomalies (2.1), homicide (0.7), and influenza and pneumonia (0.4). The most frequent communicable diseases in this age group are acute respiratory infections and acute diarrheal diseases.

Adolescents (10–14 years and 15–19 years)

Health of adolescents is the focus of a specific program of health and development. In 1996, this population group constituted 14% of the total population and in 2000, 13.8%. Slightly over 70% of adolescents reside in urban areas, with no significant differences by sex or age subgroup. The fertility rate among adolescents decreased from 54.3 per 1,000 women in this age group in 1996 to 52.3 in 2000.

Adolescent deaths between 1996 and 2000 accounted for less than 1% of all deaths in the country. The mortality rate for all causes among adolescents was 0.56 per 1,000 population in 1996 and 0.48 in 2000. Particularly worthy of note is the 27% reduction in mortality from accidents during the last four years.

Adults (20–59 years)

The adult population in 2000 was estimated at 5,572,066, and 50.4% were females. The largest proportion of the adult population (53.2%) resides in urban areas; 28.8% of adults live in intermediate or urban-rural areas, and the rest live in rural areas.

Around 20% of all deaths in the country occur in this age group. Males account for 12.0% of that proportion and females for 8.0%. The crude death rate from all causes was 2.9 per 1,000 population in 1996 and 2.8 in the year 2000 (3.5 among males and 2.2 among females). The five leading causes of death were malignant neoplasms (75.1 per 100,000), heart disease (55.3), accidents (31.1), cerebrovascular disease (20.9), and suicide (19.0). The first three causes were responsible for 56.5% of all deaths in this age group. Excess male mortality was observed for all causes except malignant neoplasms (the risk of dying was 2.22, 4.43, 1.17, and 2.37 times higher among men for the other four causes, respectively).

The most frequent communicable diseases in this population are acute respiratory infections (which accounted for 222.5 medical visits per 1,000 population in this age group) and acute diarrheal diseases (40.7).

Almost all mothers (99.9%) give birth in a health institution. The largest number of births occurred among women aged 25 to 29. With respect to schooling, a higher proportion of births in urban areas occur among women who have completed 12 years of schooling (48.1%), while in rural areas women who have completed nine years of education account for the largest proportion (45.8%). The average number of prenatal visits exceeds 10 per birth, and 95% of first visits occur before the 14th week of pregnancy. The country has 258 maternity homes that provide special care for women who require it, whether for geographic or other reasons. The direct maternal mortality rate was 24.2 per 100,000 live births in 1996. In 2000, the rate was higher (34.1), due mainly to an increase in deaths from other complications of pregnancy, childbirth, and the puerperium.

The Elderly (60 years and older)

Health care for older adults is provided through a comprehensive program that encompasses both the community level and the institutional/hospital level. Community services under this program are oriented basically towards health promotion through "grandparents' circles," of which there are currently 13,894 in the country, with a total of 468,584 participants. There are also 129 "grandparents' homes," with 3,699 residents, and 865 recreational and educational groups for older adults. The home health care system for older adults serves more than 60,100 older persons who live alone, providing them with comprehensive, intersectoral care. Care is provided by 447 multidisciplinary primary health care teams. The Ministry of Labor and Social Security and the Ministry of Public Health have principal responsibility for the social programs that serve older adults who live alone or have no family support.

Mortality among older adults has shown an upward trend in recent years. This population group accounted for 75.4% of all deaths in the year 2000 (53.2% men and 46.8% women). The main causes of death in 2000 were heart diseases (rate of 1,174.8 per 100,000 population aged 60 and over), malignant neoplasms

(827.8), and cerebrovascular diseases (481.5), which were responsible for 63% of the total number of deaths in this age group. The risks of dying from heart and cerebrovascular diseases in 2000 decreased 16% and 1.2%, respectively, in comparison with 1996; mortality from these two causes was 1.36 and 1.62 times higher among men than women, whereas the male-female ratio was lower (0.91) in the case of cerebrovascular disease.

The most frequent communicable diseases in the older population are acute diarrheal diseases and acute respiratory infections, which accounted, respectively, for 56.7 and 296.2 per 1,000 medical visits among older adults in the year 2000.

Workers' Health

Workers' health is organized nationally as part of the occupational health and safety strategy. Responsibility for this area is shared by the Ministry of Public Health, Ministry of Labor and Social Security, and Ministry of the Interior. In the labor context, women enjoy equal rights with men in all spheres. In addition, women are entitled to paid maternity leave before and after childbirth (up to one year), and their children receive care and education in state institutions. Workers have guaranteed access to primary health care services in the community and, in some cases, in their workplaces. In 2000, 4,722 workplaces offered health care services for their workers.

Since 1998, reporting of occupational diseases has been mandatory, and 53 specialized facilities have been exclusively authorized to diagnose such diseases. In that year, 668 cases of occupational disease were diagnosed. The number for 2000 was 436. Of those cases, 70% occurred in male laborers aged 40–50 who had more than 15 years of exposure. The main diseases were dermatosis caused by exposure to petroleum products, chronic nodular laryngitis among teachers, and chronic chemical poisoning. The annual average number of occupational accidents is 13,000. Disability due to such accidents has increased from 7 to 10 days per case in the last five years. The total days of temporary disability due to disease or accidents decreased 25% during the same period.

Special Groups

Cuba has a special government program known as the Turquino-Manatí Plan, which is aimed at promoting sustainable development among populations residing in mountainous areas. In addition to other social benefits, the 726,605 inhabitants of these regions have access to an extensive network of health services, including 1,387 primary health care teams (family doctors and nurses), who work in 1,137 health care facilities distributed among the rural communities, which are linked to 19 polyclinics. This population is also served by 43 rural hospitals, 107 pharmacies, 31 laboratories that produce phytopharmaceuticals and apitherapy products (derived from honey bees), and 273 oral health care posts. In 2000, there were 2,445,744 medical visits (3.9 per person), 983,898 dental visits (2.1 per person), and 26,561 home health care visits. During the same period, infant mortality in these areas was 7.6 per 1,000 live births. Of the 48 municipalities targeted by the Turquino-Manatí Plan, 46 are served by the Integrated Emergency Care System and 24 belong to the healthy municipalities network.

By Type of Health Problem

Natural Disasters

Between 1997 and 1999, the country suffered the effects of a prolonged drought and two hurricanes, Georges and Irene, which caused considerable property damage in the eastern and central provinces. Timely preventive measures prevented more serious consequences, although six human lives were lost. The absence of outbreaks of communicable disease reflects the high level of organization and control achieved by the respective programs.

In 1996, the Public Health Ministry created the Latin American Center for Disaster Medicine for the purpose of coordinating the national scientific and technical resources available in 12 research institutes and other prevention, care, education, and scientific-technical information centers. Updating and execution of annual plans and regular training for medical and paramedical personnel and for the general public help ensure that the country is prepared to cope with disasters.

Vector-borne Diseases

Cuba has a program aimed at eradicating the *Aedes aegypti* mosquito, with an entomological and epidemiological surveillance system that permits detection of the vector and of cases imported from other countries. A dengue outbreak in Santiago de Cuba in 1997 was caused by a serotype 2 virus. This epidemic produced 3,012 confirmed cases (although the actual number of people who contracted the disease is estimated at over 5,000), with 205 cases of hemorrhagic dengue and 12 deaths, all of adults. The onset of the epidemic was confirmed in late December 1996, but it was halted before it spread to all 35 municipalities in the country that were infested with *A. aegypti*. In the second half of September 2000, the Pedro Kourí Institute of Tropical Medicine confirmed the circulation of serotypes 3 and 4 of the dengue virus in three municipalities in Havana province; 138 cases of dengue fever were reported.

Malaria was eradicated in 1967, following a campaign to eliminate the vector and control foci of diagnosed cases. Since that year, imported cases and isolated outbreaks of locally transmitted cases have been reported, the majority associated with influxes of population from Nicaragua and countries of Africa. In the period 1996–2000, Cuba had 75 imported cases.

Diseases Preventable by Immunization

The National Immunization Program protects the population against 13 diseases. The Program achieved the elimination of poliomyelitis in 1962 (although annual vaccination campaigns con-

tinue to be conducted among children under 3 years of age), neonatal tetanus in 1972, diphtheria in 1979, measles in 1993, and pertussis, rubella, and mumps in 1995.

Vaccination coverage among children under 2 years, schoolchildren, and adults is over 95%. Only five cases of tetanus were reported in 1995 and only one in 2000. In 1999, the vaccine against *Haemophilus influenzae* type b was introduced for all children under 1 year of age. As a result, in 2000 only 35 cases of illness due to this pathogen were reported, as compared to 128 cases in 1995 (a 72% reduction). The impact of vaccination against meningococcus groups B and C is evident from the ongoing decline in morbidity, which dropped from 64 cases in 1995 to 56 in 2000.

Intestinal Infectious Diseases

The incidence of intestinal infectious diseases in 2000 was 77.1 per 1,000 population, which is 25.7% lower than in 1994. Typhoid fever exhibited an endemo-epidemic pattern, with the occurrence of localized outbreaks in some high-risk areas. The number of reported cases per 100,000 population fell from 0.7 in 1996 to 0.3 in 2000. The disease had the greatest impact on the population aged 1 to 14 years. No clinical or subclinical cases of cholera have been reported since the early 1900s, but the country maintains a national cholera program and surveillance system.

Foodborne Diseases

Cuba has a program for surveillance of food and water contaminants. The highest number of cases occurred in 1996, when 716 outbreaks of disease due to contaminated water and food (especially ciguatera fish poisoning) were reported; in 2000, only 306 outbreaks were reported.

Chronic Communicable Diseases

From 1972 to 1992 the incidence of tuberculosis showed a downward trend, with an annual average reduction of 5%. In subsequent years, the rate rose by almost two and half times before beginning to decline again in 1995 (Figure 7). The incidence of reported cases in 1996 was 13.5 per 100,000 population and 10.1 in 2000. The reduction occurred mainly in the group aged under 1 year, in which no cases were reported (BCG vaccination coverage among newborns is over 99%), and the group aged 15 and over, in which the rate decreased from 15.4 in 1996 to 12.8 per 100,000 in 2000. Mortality in the last five years remained below 1 per 100,000 population, falling from 0.8 in 1996 to 0.3 in 2000. Nationwide, the cure rate is 92%.

The association of HIV infection and tuberculosis is not a public health problem in Cuba: the two diseases occurred together in only 6.9% of cases during the period 1986–1999. Similarly, drug resistance is not a significant problem, as only 0.7% of cases are multidrug resistant.

Leprosy was deemed to have been eliminated as a health problem when the prevalence dropped to 0.79 per 10,000 population in 1993. In 2000, the prevalence was 0.5 per 10,000 population and the incidence was 2.5 per 100,000 (278 new cases), which signified a reduction of 16.5% with respect to the previous year. The population under 15 years of age accounted for between 1.1% and 3.0% of new cases of leprosy in the last 20 years.

Acute Respiratory Infections

Influenza and pneumonia remain among the five leading causes of death in the child population under 5 years of age and constitute the fourth leading cause in the general population.

Acute respiratory infections (ARIs) are responsible for an average of 4,000,000 health care visits each year and account for 25% to 30% of outpatient visits and around 30% of hospitalizations. Most ARI cases are mild and self-limiting. In 1999, epidemics of acute respiratory infection occurred in all provinces and all age groups.

The influenza A/Sidney (H3N2) virus was the predominant causal agent. In 2000, influenza accounted for a total of 4,823,831 medical visits, the largest proportion occurring in the central and western provinces. Since 1997, the flu vaccine has been administered to all older persons residing full or part time in institutions or in the "grandparents' homes," as well as to patients undergoing dialysis and hemodialysis.

Infectious Neurological Syndromes

The main etiologic agents of bacterial meningoencephalitis in the last four years were *Streptococcus pneumoniae*, *Haemophilus influenzae* type b, and *Neisseria meningitidis*. With the introduction of the *H. influenzae* vaccine, the number of cases among children under 4 has decreased more than 70%. The incidence of pneumococcal infection rose in 2000, when there was an epidemic outbreak of viral meningoencephalitis due to echovirus 16, which was controlled completely.

Zoonoses

Since 1976 no human cases of rabies transmitted by dogs have been reported; however, human rabies reemerged in 1988, mainly as a result of transmission by bats. Since then, 8 cases have been reported (7 due to non-hematophagous bats). Four of those cases occurred between 1995 and 2000. Canine rabies is confined to a few suburban and rural areas and is almost always associated with mongoose attacks.

Leptospirosis, which has exhibited both endemic and epidemic behavior, increased markedly in the first half of the 1990s, when incidence rose to more than 20 per 100,000 population. Between 1995 and 2000, mortality decreased 66.7%, while morbidity fell 75.5%. As of the end of the period, 553 cases had been reported, with a rate of 4.9 per 100,000 population. The most frequently affected groups were males and persons between the ages of 15 and 44 years. Cuba's development of a vaccine against leptospirosis has enabled it to apply an intervention strategy in the areas at highest risk for the disease. A total of 1,026,106 people have received the vaccine since 1994.

HIV/AIDS and Sexually Transmitted Infections

Between 1986, when the national AIDS program was launched, and the end of the year 2000, 3,231 HIV-positive individuals had been detected nationwide; of those individuals, 1,194 went on to develop AIDS and 840 died. Between 1995 and 2000, 839 cases of AIDS were reported, 49.7% of them in Havana, which has the highest rates in the country. The annual incidence of AIDS increased from 8.9 per million population in 1996 to 15.1 in 2000; 75.8% (636) of the cases during the period occurred in males (Figure 8). The most frequent route of transmission was sexual (98% of cases). The epidemic remains concentrated in certain groups and the transmission rate is considered low. HIV antibody screening carried out in 2000 found 8 positives among 189,963 pregnant women (0.004%); 54 among 581,421 blood donors (0.009%); and 55 among 164,843 persons with other sexually transmitted infections and their identified sexual contacts (0.033%). It is estimated that 0.03% of the Cuban population between 15 and 49 years of age is infected. All patients diagnosed with HIV infection and AIDS who require antiretroviral treatment or medication to control opportunistic infections receive these drugs free of charge, including the combination therapy for AIDS.

The creation of the Government Operational Group has facilitated the application of an intersectoral strategy for the control of sexually transmitted infections, in particular AIDS. This strategy has helped strengthen health education and promotion efforts, the introduction of therapeutic approaches, and care for patients and people at risk throughout the country. The National Center for Prevention of AIDS and Sexually Transmitted Infections, created in 1995, has targeted mainly high-risk groups, especially men who have sex with men. Condom distribution has also increased, from some 6 million before 1996 to more than 30 million in 2000, although even that number is insufficient.

Syphilis and gonorrhea are the other two sexually transmitted infections of importance in the country. Between 1996 and 2000, reported cases of gonorrhea declined steadily, falling to a rate of 170.4 per 100,000, whereas syphilis showed an upward trend until 1997, when the incidence was 143.3 per 100,000. It decreased thereafter, reaching 82.2 in 2000.

As part of the Program for Prevention and Control of Viral Hepatitis, launched in 1987, all patients who show clinical evidence of acute viral hepatitis are tested for hepatitis B surface antigen (HbsAg). In 1992 a strategy was implemented to eliminate the disease through universal vaccination of newborns, coupled with vaccination of the population cohort aged under 20 years (completed in 2000) and the principal risk groups. The strategy also includes vaccination of contacts of infected people and case-finding among pregnant women and people with sexually transmitted infections. The impact of this vaccination strategy is clear: since its introduction, morbidity from hepatitis B has declined 79.5%, dropping to 4 per 100,000 in 2000. The incidence in the population under 15 years of age dropped 98%. Mortality from the disease is low, averaging 15 deaths a year in the last five-year period, all of persons over the age of 20. The principal routes of transmission are sexual, and the sexually active age group has the highest rates. The prevalence of hepatitis B among blood donors was 0.8% in 2000.

The country began blood testing for hepatitis C in 1995 and all donated blood is now tested. Since 1998, Cuban-made third-generation techniques of high quality have been used. All persons with acute hepatitis who have been exposed to blood or blood products in the last six months are also tested. The annual number of cases averaged 96 in the five-year period 1995–2000, with an incidence of 0.4 per 100,000 population in 2000. Those at highest risk for hepatitis C infection are hemodialysis patients, who are screened regularly. The average prevalence in this group is 30%. The prevalence of hepatitis C infection among blood donors is 0.8%.

Nutritional and Metabolic Disorders

In 2000, 7,263 households were surveyed to determine the prevalence of protein-energy malnutrition among children under 5 years of age, based on the standards established by the U.S. National Center for Health Statistics. As measured by weight-for-age, the prevalence of moderate malnutrition (2 or more standard deviations [SDs] below the median) was 4.1%, while the prevalence of severe malnutrition (3 or more SDs below the median) was 0.4%. Based on height-for-age, 4.6% of the children surveyed suffered from moderate malnutrition and 1.1% from severe malnutrition. As measured by weight-for-height, 2% of the children suffered from moderate malnutrition and 0.4% from severe malnutrition.

Iron-deficiency anemia is the most frequent nutritional problem in Cuba. It affects 22.5% of women in the third trimester of pregnancy, according to data from the maternal and child health surveillance system for sentinel sites in 2000. A study conducted in 1999–2000 among a national sample of 1,987 children aged 6 months to 2 years found an anemia prevalence rate of 46% (53.1% in the group aged 6–12 months and 42.1% among those aged 13–24 months). Of all anemic children, the disorder was severe in 0.1%, moderate in 18.6%, and mild in 27.3%. The national plan for prevention and control of iron deficiency and anemia in the Cuban population provides for fortification of foods, a program of nutritional supplementation for pregnant women, dietary diversification, and nutritional surveillance activities.

A study conducted in 1999 measured vitamin A levels in a national sample of 2,579 children aged 6 months to 2 years. Only 85 samples (3.6% of the 2,371 analyzed) had levels of under 20 mg/dL. No cases of clinical vitamin A deficiency have been reported in the country.

In cooperation with the Ministry of Basic Industry and with financial support from UNICEF, a project was carried out for the iodization of table salt. In 2000, salt iodization plants were established at Las Tunas and Camagüey, with financing from the Cuban Government and a nongovernmental organization, Kiwanis International.

Diabetes is the eighth leading cause of death. The mortality rate decreased from 23.5 per 100,000 population in 1996 to 13.1 in 2000—a reduction of 44.2%. In contrast, the prevalence continues to rise, and in 2000 it reached 23.6 per 1,000 population. Mortality is higher among women than men (masculinity ratio of 0.6). In-hospital mortality is as high as 1.2 deaths per 100 admissions. The National Diabetes Mellitus Program is carrying out a variety of control activities, including a major training initiative, and is working to increase detection of the disease and improve the availability of effective medications.

Diseases of the Circulatory System

For more than 40 years, heart disease has been the leading causes of death in all age groups. Between 1980 and 2000, the death rate from this cause increased from 166.7 per 100,000 population to 180.3, with a slight decline in the late 1990s (Figure 9). Nevertheless, adjusted mortality from these diseases has shown a downward trend. In the four-year period 1997–2000, ischemic heart disease was the leading cause of death in this group (80%) and was responsible for one out of every four deaths. By sex, excess male mortality is most evident in the case of acute ischemic heart disease (masculinity ratio 1.3). The largest number of deaths occur among people over 65 years of age, who account for 77% of all deaths from these diseases. A national risk factor survey in 1997 found the prevalence of acute myocardial infarction to be 7 per 1,000 population among persons over 15 years of age. The incidence in 2000 reached 1.8 per 1,000 in that same population, with a case fatality rate of 65.2%.

The risk of dying from arterial hypertension increased from 8.9 per 100,000 population in 1996 to 11.5 in 2000, with no sex differences. A national risk factors survey found 30% prevalence of high blood pressure in the population over 15 years of age in urban areas. The prevalence increased from 9.9% in 1997 to 20% in 2000.

Since the late 1970s, Cuba has seen a progressive rise in mortality from cerebrovascular diseases. In 2000, the crude reported death rate was 72.9 per 100,000 population. However, the adjusted rates have declined in recent years, dropping from 56.1 per 100,000 population in 1996 to 53.8 in the year 2000. In the last five years, an average of 7,900 people died from this cause each year; 85% were 60 years of age or older. The risk of dying from cerebrovascular diseases was higher among men up to 1992, when the pattern reversed, and now the death rate among women is higher (masculinity ratio 0.93). These diseases are responsible for the highest in-hospital mortality and are the leading cause of hospital admission for neurological disease in the acute phase. Arterial hypertension is the most important risk factor for this disease.

Malignant Neoplasms

Between 1990 and 2000, crude death rates from malignant neoplasms showed an upward trend, rising 13.7%. The adjusted rates, however, remained stable, ranging from 108 to 112 per 100,000 population in the period 1990–2000 (Figure 10). Rates among males are higher than those among females (masculinity ratio of 1.31), and more than 60% of the deaths from this cause occur in the population aged over 65. The 10 most frequent cancer sites include trachea, bronchus, and lung (22%) and colon and rectum (9%). Among males, next most frequent is prostate cancer (19%), and among females, breast cancer (15%) and uterine cancer (6%). In 1997, breast, lung, skin, cervical, and colon cancer accounted for more than 50% of the incidence of cancer in women, while among men, malignant neoplasms of the lung, prostate, skin, colon, and larynx were most frequent. In the last 10 years, mortality from lung cancer among men increased less than 1% a year, compared to 2.3% among women; in the case of cancer of the larynx, the risk of dying increased 2.7% among women and 4% among men. In the population under 15 years of age, the principal neoplasms are leukemia, lymphomas, and kidney cancer. Only 1% of cancer cases and deaths occur among children.

Bronchial Asthma

The prevalence of detected cases of asthma increased from 5.9% in 1996 to 7.7% in 2000. This rise is attributed to improvements in active surveillance by the health system. Mortality from this disease has decreased in recent years, dropping from a crude rate of 5.2 per 100,000 population in 1996 to 1.9 in 2000 (masculinity ratio of 1.6). The activities of the health services are geared basically towards preventing and controlling the disease and strengthening training for all personnel.

Accidents and Violence

Mortality from external causes (accidents, suicide, and homicide) decreased from 79.3 per 100,000 population in 1996 to 68.9 in the year 2000. This reduction occurred in all age groups, although the risk of dying increased after 40 years of age.

Accidents were the fourth leading cause of death overall until 1998; they were the fifth cause of death among children under 1, the first among children aged 1 to 14, the second in the population aged 15 to 49, and the fourth in the group aged 50 to 64. The death rate from accidents was 51.6 per 100,000 population in 1996 and 44.5 in 2000. The most frequent causes of death within this group are accidental falls (16.5) and transport accidents (16.3), which account for almost 70% of all deaths from external causes. Male mortality is higher for all types of accidents, except accidental falls and burns from exposure to fire.

Suicide deaths decreased from 18.3 per 100,000 population in 1996 to 16.4 in 2000. Cuba's national suicide prevention and control program emphasizes control of risks for suicidal behavior.

Oral Health

Mortality from oral cancer, which includes cancer of the lips, oral cavity, and pharynx, fell from 4.8 per 100,000 population in 1999 to 4.4 in 2000. The rates in 2000 were 6.6 among males and

2.1 among females. Oral health is one of the priorities of the Ministry of Public Health. Of a total of 26,434,231 consultations in 2000, 51.4% occurred in primary care facilities and 54.2% were by persons under the age of 18. The Network for Facial Restoration and Buccomaxillary and Facial Prostheses, created during this period, provided 4,577 consultations and rehabilitated 707 patients.

RESPONSE OF THE HEALTH SYSTEM

Health Sector Policies and Plans

In response to emerging and reemerging problems, the Ministry of Public Health has formulated a policy aimed at enhancing the efficiency and quality of health services, ensuring the sustainability of the system, and eliminating the health inequalities between regions and population groups. The policy prioritizes health promotion and disease prevention activities as components of primary care and family medicine. It also emphasizes decentralization, intersectoral action, and community participation, as well as strengthening of services at the secondary and tertiary care levels.

In 1995, the Ministry of Public Health launched a process of health sector reform and formulated a strategic development plan for the period 1995–2000. The process included a sectoral analysis that identified the existing problems and served as a basis for the development of a normative document known as the "methodological toolkit." In addition to methodological guidelines, this document sets out five strategies: reorientation of the health system towards primary care; improvement of hospital care; promotion of high-technology programs and research institutes; development of the program of natural and traditional medicine and drugs; and prioritization of dental, eye, and emergency care. In addition, it identifies four high-priority programs for the sector: maternal and child health, noncommunicable diseases, communicable diseases, and health of older persons.

The Health System

Institutional Organization

The health system is structured in three levels, which correspond to the political and administrative subdivisions of the country: national, provincial, and municipal. The national level is overseen by the Ministry of Public Health, which plays a steering role and carries out methodological, regulatory, coordination, and control functions. The provincial level comprises the provincial departments of public health, which are subject to the administrative and financial authority of the provincial people's councils. The municipal level consists of the municipal departments of public health, which are subject to the authority of municipal people's councils; polyclinics (basic geographic administrative units); and health areas. The strategic development plan for the five-year period establishes participatory bodies such as the national, provincial, and municipal health councils, and health areas within the citizen councils, which serve as links for intersectoral coordination.

Developments in Health Legislation

Law 41, which took effect in August 1983, lays out the basic principles for the regulation of social relationships in the field of public health. New legislation has reorganized the medical ethics commissions at all levels, established regulations for Ministry of Public Health managerial staff, addressed the issue of organ and tissue transplant, and regulated the dismissal and transfer of upper- and mid-level technicians in the health sector. New health legislation was drafted in the period 2000–2001, including laws on drugs, regulations for medical equipment and issue and control of medical certificates, a resolution on encephalitis deaths, and legislation on the human genome.

Organization of Regulatory Actions

The Regulatory Bureau of the Ministry of Public Health is responsible for enforcing state and government policies on the protection of human health. It establishes and ensures compliance with regulatory policies on research, introduction of health technologies, and regulation and quality control of pharmaceutical products (for human and veterinary use), cosmetics, foods, chemical products potentially harmful to health, and medical equipment and devices.

Health inspection functions are overseen by the Ministry of Public Health and executed at all levels of the national health system, under the supervision of the public health and epidemiology centers and units. These centers monitor compliance with established health regulations for the entire native and foreign population in Cuba.

Pharmaceutical products are subject to a state system of quality control based on good manufacturing practices. Quality control functions are carried out by the Center for Drug Development, which is responsible for evaluating and certifying drugs and diagnostic materials for registration, setting standards and regulations, conducting inspections to verify the use of good manufacturing practices, and certifying drug manufacturing laboratories that are in compliance with established regulations. The Center also grants authorization for clinical trials, which are conducted by the National Center for Clinical Trials.

Environmental Quality

The Standards Review Committee of the Ministry of Science, Technology, and Environment encompasses the state agencies and institutions responsible for updating and enforcing health and environmental regulations. Cuba participates in the Regional Plan on Air Quality and Health in the Americas, 2000–2009. The country has health and air quality diagnostic units and a statistical in-

formation and surveillance system for monitoring concentrations of pollutants and measuring their effect on human health.

Organization of Public Health Care Services

Health Promotion

The health promotion strategy has been strengthened as a consequence of the process of decentralizing the national health system and prioritizing programs aimed at improving the population's quality of life. The result has been increased social and community participation, development of primary health care, reorientation of health services, and decentralization and development of local administrative capacity (especially through the institutionalization of the popular health councils).

The National Network of Healthy Municipalities, which includes 46.7% of the country's 169 municipalities, encourages activities in educational institutions, workplaces, cooperative centers, markets, and penitentiaries. Through decentralized technical cooperation activities, PAHO has collaborated in 44 municipal development projects aimed at promoting health and improving quality of life. Other projects, such as the productive municipalities project, are being carried out by 54 municipalities and 120 popular councils. These projects link health promotion with nutrition and involve several sectors. Social participation has been used in various ways to improve the control of noncommunicable diseases and sexually transmitted infections and HIV/AIDS. Social participation has also been an important component of the Program for Prevention and Control of Tobacco Use, launched in 1995.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Epidemiological surveillance is carried out at all levels of the national health system by trend analysis units created in 1993. The functions of these units are tactical surveillance to detect and immediately report the occurrence of acute events; strategic surveillance, including long- and medium-term behavioral studies; health situation analysis; and evaluation of user satisfaction with health services.

The country has a national network of microbiology laboratories, which are part of the diagnostic system that serves health care units throughout the country. The system comprises one national reference unit (at the Pedro Kourí Institute of Tropical Medicine), 145 local units, and 14 regional units.

Potable Water and Sewerage Services

The capacity of the country's water supply system is sufficient to meet domestic, agricultural, and industrial needs; 72% of the water supplied to the population is extracted from underground sources and the rest comes from surface sources. In 2000, the volume of water supplied increased 57.1 hm^3 with respect to 1999. Of the water supplied, 150.3 hm^3 (93.6%) received treatment, and continuity of chlorination reached 96.5%. In 1999, 95% of the population was being supplied with drinking water and 73.8% had house connections (85% in urban areas and 40% in rural areas).

Public sewerage systems and septic tanks are the predominant means of wastewater disposal in cities, although latrines are common in the peripheral areas around the cities. During 2000, sewer systems carried 577.3 hm^3 of sewage, 33% of which was treated prior to final disposal (22% more than the previous year). The number of communities with sewer systems grew from 529 to 541. It is estimated that 10.4 million people (93% of the population) have wastewater disposal systems of some type (38% sewer systems and 55% septic tanks and latrines). Between 1996 and 2000, new sewer systems were built to serve 109,450 people.

Solid Waste Services

In 1997 a study of the solid waste sector in Cuba was conducted with support from PAHO. Based on that analysis, Cuban authorities established a development strategy for the short, medium, and long term. As a result, 11 provinces had solid waste management plans in 2000, and the country was addressing the problem of final disposal of urban solid waste through the construction of 166 manual sanitary landfills, a technology that has worked extremely well in cities of up to 20,000 inhabitants. Urban solid waste collection services have improved significantly in recent years in cities throughout the country, with the exception of the national capital. A system for handling hazardous hospital waste is currently being implemented.

Food Safety

Cuba has developed a new food safety program that includes seven components: surveillance, inspection, education and training, standardization, food laboratory network, risk reporting, and investigation of outbreaks. A system of health standards for foods was developed as part of a project conducted by the Pan American Institute for Food Protection and Zoonoses (INPPAZ). Some modifications were introduced in the system for surveillance of chemical, biological, and toxic contaminants, which comprises a network of 52 laboratories, including the provincial and municipal public health and epidemiology centers. The Center for Radiation Protection and Safety collaborated in the development of a program for surveillance for radionuclides in foods, which will be implemented in the country during the second quarter of 2001. In accordance with the Program of Food Imports and Exports, all imported foods and cosmetics must be registered.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

The strategy for strengthening primary health care (PHC) seeks to improve the system of family medicine and bolster the

response capacity of family medicine clinics and polyclinics with respect to organization, implementation, and evaluation of health care for the population. The PHC system comprises 31,000 doctors and nurses, organized in a network that encompasses 442 polyclinics, 64 rural hospitals, and some 22,000 family medicine clinics. Of the total number of family doctors, 16,730 are specialists in comprehensive general medicine.

The basic health care team is composed of one physician and one nurse, who provide medical care to a population of between 600 and 800 individuals. For every 15 to 20 basic health care teams, there is a basic provider group (of which there are 969 nationwide), formed by specialists in internal medicine, pediatrics, gynecology and obstetrics, and psychology, in addition to technical experts in public health and epidemiology, statistics, and social work. As of the end of 2000, 99.1% of the Cuban population was covered by the health care system. This model of care addresses the needs of individuals and families throughout the lifecycle, using health situation analysis as an instrument for assessing the health of the community and designing appropriate interventions.

In 2000, 84.8% of the total 51,490,506 outpatient visits were provided at the primary care level and 668,566 individuals and families benefited (the number of beneficiaries in the last four years is over 1,500,000). This, coupled with improvements in the quality of the comprehensive medical care provided, has led to a decline in the number of hospital admissions (300,000 fewer in the year 2000) and the number of patients seen at the secondary level of care (1 million fewer in the year 2000). With the development of the Integrated Emergency Care System (known by its Spanish acronym: SIUM), emergency care—provided by the family doctors and nurses—has been made available at the primary care level. All 169 municipalities are served by the SIUM and by a maternity home for women with high-risk pregnancies. In addition, 167 municipalities have "grandparents' homes," 145 have multidisciplinary gerontology care teams, 62 have the capacity for minor outpatient surgery, and 87 have community mental health centers.

The country's 270 hospitals form a hospital network that provides preventive, curative, and rehabilitation services. Sixty percent are general hospitals, clinical-surgical hospitals, pediatric hospitals, and obstetrics and gynecology hospitals. In addition to medical care, they carry out teaching and research activities. To serve the rural population, the country has 62 hospitals, which offer care in the basic specialties as well as primary health care services.

An effort has been made to adapt the hospital network to the care needs in each geographic area. This process has been linked to the introduction of technological changes in hospital care and the sustained growth and strengthening of PHC. Between 1996 and 2000, some 10,000 low-use hospital beds were eliminated as a result of the increase in outpatient care (for surgical operations and other diagnostic and therapeutic procedures) and home health care. This process has also been accompanied by reorganization of existing services, with the addition of some services not previously available in some areas, such as geriatrics, rehabilitation, nephrology, and others.

Since 1996, emergency medical care services have been reorganized under the SIUM, whose purpose is to organize the delivery of medical emergency care at all levels, from polyclinics, physician's offices, and communities to hospitals. The SIUM comprises four care delivery subsystems (first aid, emergency care at the PHC level, mobile emergency services, and hospital emergency services) and five non-care subsystems (teaching, ambulances, communication, finances, and services).

Blood Banks

Twenty-four institutions in Cuba have blood banks. Annually, 575,000 blood donations are made (one per 18 population). One hundred percent of donated blood is screened for syphilis, HIV-1, HIV-2, and hepatitis B and C.

Specialized Services

The country has a network of 1,308 oral health services, which are provided through 168 dental clinics, polyclinics, hospitals, and other primary and secondary care facilities. In addition, tertiary multidisciplinary services are provided by provincial clinical-surgical hospitals and the Network for Facial and Buccomaxillary-Facial Prostheses. At the PHC level, a comprehensive oral health care model is being applied by 46% of professionals, and in 1998 a specialized training program in comprehensive oral health care was introduced. In all services, oral health professionals, working with the family doctors, provide promotion, prevention, cure, and rehabilitation services for the population covered by a certain number of clinics. During the period 1997–2000, an oral health surveillance program began collecting information on 13 events at sentinel sites; the coverage of the preventive fluoride mouthwash program was extended to adolescents; an oral health advisory board was created; an oral health component was incorporated into the healthy municipalities movement; and a project to institute salt fluoridation in 2001 was completed.

Family planning services are provided under the programs for comprehensive maternal and child health, reproductive health, and women's health. In addition, a growing network of family planning services is available through the family doctor and nurse system, and the provider groups in the polyclinics of 192 health areas also provide specialized reproductive health services, supported by centers at the secondary and tertiary care levels. Access is universal and is based on the free and informed decision of the woman or the couple. Specialized services are also available to the approximately 6% of the female population undergoing menopause, including educational activities for individuals, couples, families, and the community, as well as hormone replacement therapy. The National Program for Early Detection of Cervical Cancer offers screening nationwide. In

2000, the screening rate was 132.4 per 1,000 women aged 25 and over, and more than 80% of the positive cases detected by the program were diagnosed at clinical stage 0. The death rate from this cause was 6.9 per 1,000 women. The National Program for Early Detection of Breast Cancer has three components: breast self-examination, physical examination by a doctor, and mammography screening.

In the area of cardiovascular surgery, some 1,700 surgical operations of medium to high complexity are performed a year, including highly complex repairs of congenital malformations in neonates. In addition, each year an average of 2,276 cardiology procedures are performed, including angioplasty and valvuloplasty, and 1,602 pacemakers are implanted. The rate of organ donation is about 19 per million population, and every year Cuban physicians perform an average of 100–150 kidney transplants, 12 liver transplants, 12 bone marrow transplants, 150–189 cornea transplants, 2 heart transplants, and more than 400 bone grafts. Minimally invasive surgery is practiced in 52 hospitals of the network by general surgeons, orthopedists, rheumatologists, gynecologists, pediatricians, neurosurgeons, and urologists. Services for patients with chronic renal insufficiency include innovative dialysis methods, with more than 180 artificial kidneys and 32 reverse osmosis plants to purify the water used for dialysis. Hemodialysis services are provided to 1,400 patients, among whom mortality is below 24% a year. Prevention of kidney disease has been incorporated as an essential function of the PHC services. In the period 1997–2000, 17 hospitals performed intraocular implants (more than 5,500 lenses annually) and retinal and subretinal surgery, among other procedures. Oncology services have benefited from the use of technologies such as teletherapy and brachytherapy, as well as simulation and planning.

Health Supplies

Efforts to assure the availability of drugs are geared towards sustainably increasing industrial, local, and pharmacy production; extending the use of natural medicine and traditional medicine and homeopathy techniques; and strengthening pharmacoepidemiology in the Principal Pharmacy and its network of pharmacies in the municipalities. More than 1,000 generic drugs are produced in Cuba, and they are classified based on the WHO criteria according to whether they are of chemical-industrial origin, naturopathic, homeopathic, or herbal, as well as phytopharmaceuticals and apitherapy products. National manufacturers make 86% of the drugs consumed in the country. The biotechnological products produced in Cuba include innovative products such as interferon, recombinant streptokinase, epidermal growth factor, melagenine, PPG (policosanol—a dietary supplement), anti-psoriasis cream, monoclonal antibodies, and transfer factor. In addition, Cuban laboratories have produced several new vaccines, such as those for hepatitis B, meningococcus, and leptospirosis.

The country also manufactures medical equipment of proven quality, such as ultramicroanalytical laboratory testing systems that use fewer reagents; computerized equipment for studies of the electrical activity of the heart; equipment for storage, transmission, and evaluation of bone scan images; rapid microbiological test kits; and ozone and laser treatment instruments. Recently, magnetic resonance models have been developed using Cuban technology.

Human Resources

The number of workers in the national health system increased from 298.5 per 10,000 population in 1996 to 321.5 in 1999; of these workers, 72.4% were women. In 1996, the country had 60,129 physicians (54.6 per 10,000 population), and in 1999 the figure had increased 6% (58.2 per 10,000). The highest ratios were found in the western provinces. The ratio of nursing personnel to population in 1999 was 78.3 per 10,000; 77.8% of these workers were technical and auxiliary personnel. The ratio of dentists to population was 8.9 per 10,000 in 1999.

Institutions that provide advanced medical training in collaboration with science and technology units are offering a program known as the "postgraduate health certification ladder," in which students participate in short courses and graduate and specialization programs leading to a master's degree and, eventually, a doctorate. The Virtual Health University, organized in 1997, utilizes the Telematic Health Network to operate an information system that links the network of units in the national health system.

The State guarantees employment for 100% of graduating health professionals, which meets the demand for health services. Cuba has a centralized human resources planning process, through which five-year plans are developed for training health workers, bearing in mind the needs of the various geographic areas and the country as a whole.

Health Research and Technology

The Science and Technology System is composed of 28 science and technology units, 12 of which are research institutes. Research in the provinces is conducted by professional training institutions in the health field, including 4 medical universities, 22 schools of medicine and 4 schools of dentistry, the National School of the Public Health, the Latin American School of Medical Sciences, and 20 other educational and technical centers and schools of nursing. At the national level, there are 12 research programs, which in December 2000 were conducting a total of 495 research and development or technological innovation projects. Each hospital and healthy municipality has a scientific council that approves projects for epidemiological and traditional biomedical research.

The national health system has 475 professionals who hold a doctoral degree in sciences, 941 researchers, and 9,151 professors

of advanced medical education. In addition to these and other professionals who work in the health sector, there are 198 youth interns and 1,016 graduates in the process of obtaining scientific degrees. Currently, 228 professionals are pursuing scientific degrees and 595 are preparing to do so. The country has PAHO/WHO Collaborating Centers in the areas of housing, reproductive health, diabetes, tuberculosis, vector control, medical malacology, growth and development, and medical genetics.

The National Center for Medical Sciences Information oversees the National Medical Library, the Telematic Health Network, and Editorial de Ciencias Médicas, a medical sciences publishing house. It is also a participant in projects such as PAHO's Virtual Health Library and the Virtual Health University. The health information produced in the country is published in Cuban and international medical journals.

Since 1997, evaluation of health technologies has been promoted. During 2000, evaluations were undertaken in nine medical institutions of seven Cuban products that have been registered and introduced into the national health system.

Health Sector Expenditure and Financing

The total amount spent on public health grew 58.6% between 1994 and 2000—an annual average increase of 9.6% in the state budget. In 2000, this figure rose to 11.0% of the state budget and 6.1% of GDP (Table 5). Wages accounted for the largest proportion of this spending (Figure 11). Spending on drugs averaged around 180 million pesos a year, with no significant variations. The share of the central government in the distribution of expenditure on public health showed a downward trend (from 7.7% of total health spending in 1996 to 7.2% in 2000), which is reflective of the process of decentralization and the strengthening of primary health care. In 2000, US$ 170.8 million were spent directly in the sector, which was 89.6% more than the US$ 90.1 million spent in 1994.

The Ministry of Public Health science and technology units received US$ 2,463,100 in the year 2000 to finance research and development and technological innovation projects; 59.5% of that amount came from external sources. A meeting on "Science and Technology for Health," held in Havana in May 2000, led to the signing of 33 international cooperation agreements on Cuban products. The meeting brought together 80 participants from 23 countries, including representatives of United Nations agencies, companies, laboratories, universities, foundations, and governmental and nongovernmental organizations, in addition to 200 Cubans from more than 90 science and technology institutions working in the health field.

TABLE 5. Health expenditure as a percentage of GDP and the national budget, Cuba, 1994–2000.

Year	Health expenditure (millions CUP)	GDP[a] (millions CUP)	Health expenditure as % of GDP	% of national budget
1994	1,061.1	19,198	5.5	7.5
1995	1,188.3	21,737	5.4	8.0
1996	1,190.3	22,814	5.2	9.3
1997	1,265.2	22,951	5.5	10.0
1998	1,344.9	23,900	5.6	10.3
1999	1,553.1	25,503	6.1	11.1
2000	1,683.8	27,634	6.1	11.0

[a]GDP expressed in current prices in millions of Cuban pesos (CUP).

Sources: Anuario Estadístico. Ministerio de Salud Pública, 2000; Indicadores Básicos de Salud de Cuba. Ministerio de Salud Pública, 2000; Anuario Estadístico de Cuba. Oficina Nacional de Estadísticas, 2000; Estadísticas seleccionadas 2000. Oficina Nacional de Estadísticas, 2001.

External Technical Cooperation and Financing

In regard to multilateral cooperation, Cuba has entered into agreements with various United Nations specialized agencies in the area of health. Since 1998, available funding for cooperation has tended to decrease; between 1999 and 2000, the amount dropped 10%, to US$ 1.84 million. Cuba has received development financing mainly from Canada, Germany, Italy, Norway, Spain, and the United States. The country has also strengthened its ties with institutions of excellence and provided assistance to several countries; for example, Cuba sent 3,160 Cuban professionals to work in other countries (71% to six countries in the Americas) through its Comprehensive Health Program, which offers comprehensive medical care to the most vulnerable populations in 13 countries of the world.

The country has also collaborated in training human resources in university medical schools in countries of Africa, Latin America, and the Middle East. The recently founded Latin American School of Medical Sciences in Cuba trains physicians who then return to practice in their place of origin. The School currently has 3,313 students from 23 countries of Latin America and Sub-Saharan Africa. In addition, the Caribbean School of Medicine in Santiago de Cuba is training 234 students from Haiti.

FIGURE 1. Population structure, by age and sex, Cuba, 2000.

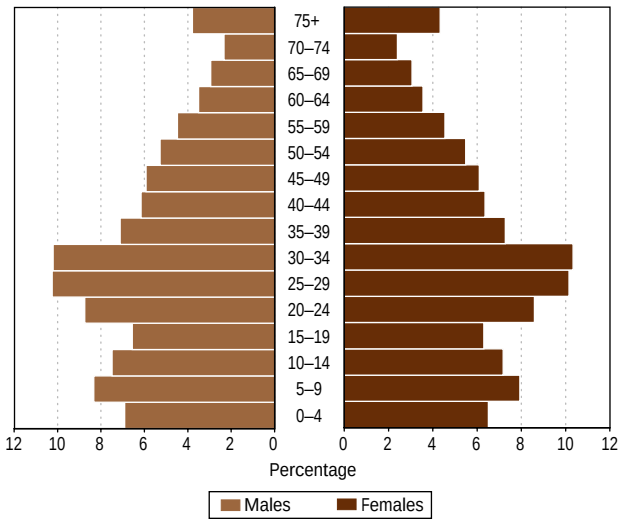


FIGURE 2. Fertility rate, by mother's age, Cuba, 1996 and 2000.

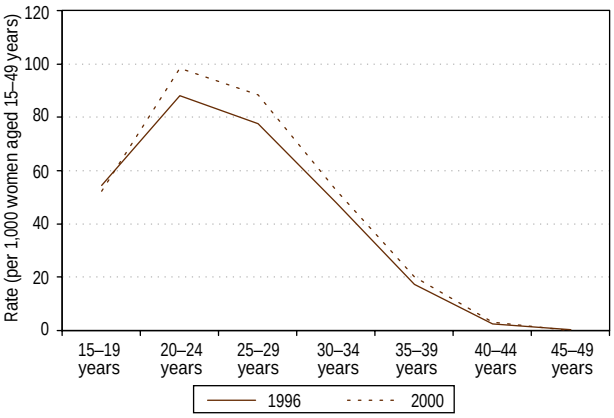


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Cuba, 2000.

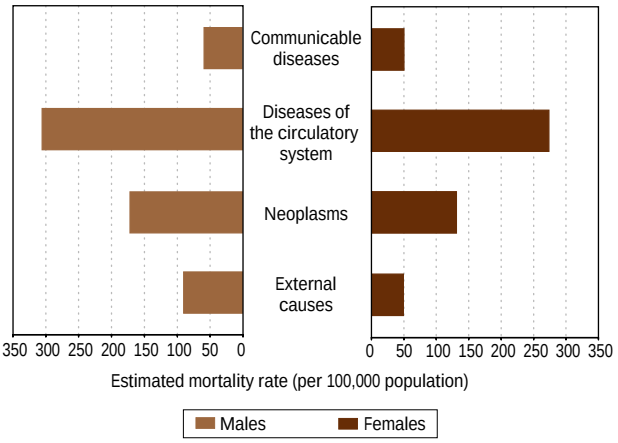


FIGURE 4. Age- and sex-adjusted mortality rates for leading causes of death, Cuba, 1990 and 2000.

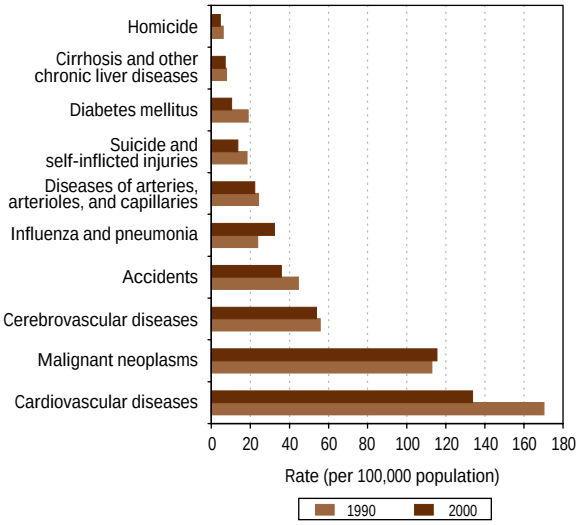


FIGURE 5. Years of potential life lost among persons aged 1–74 years, by leading causes, Cuba, 2000.

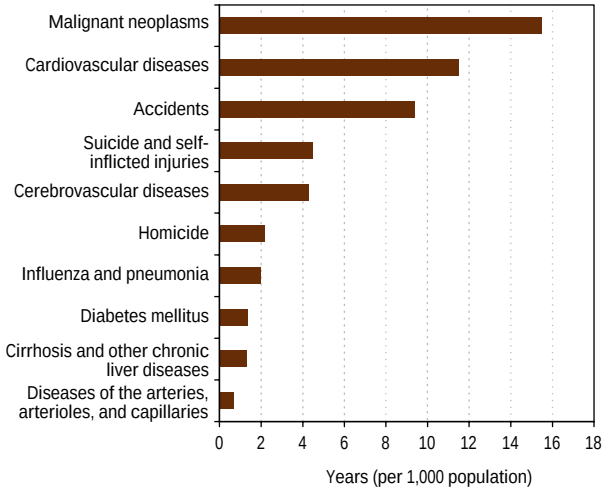


FIGURE 6. Infant mortality, by province, Cuba, 1990 and 2000.

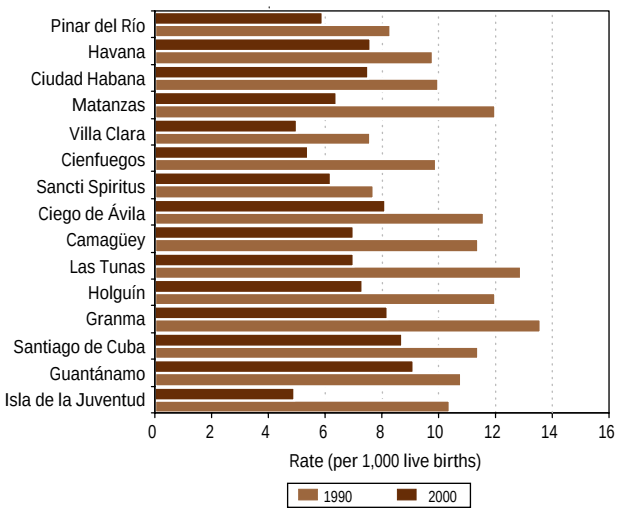


FIGURE 7. Incidence of tuberculosis, Cuba, 1972–2000.

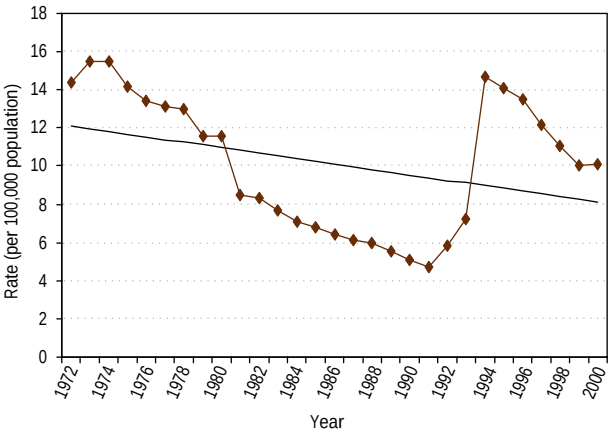


FIGURE 8. AIDS incidence, by sex, with male-female ratio, Cuba, 1990–2000.

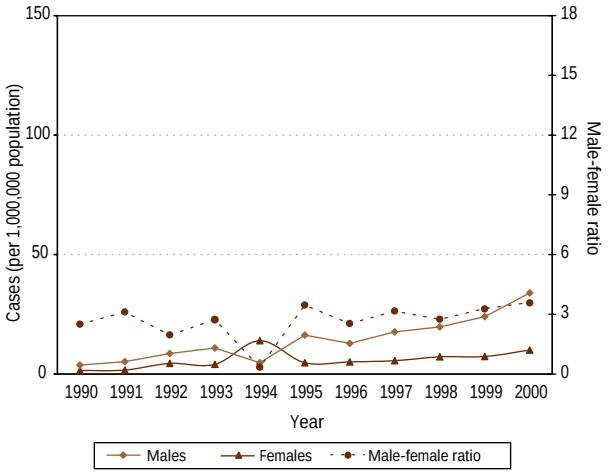


FIGURE 9. Mortality due to cardiovascular diseases, Cuba, 1970–2000.

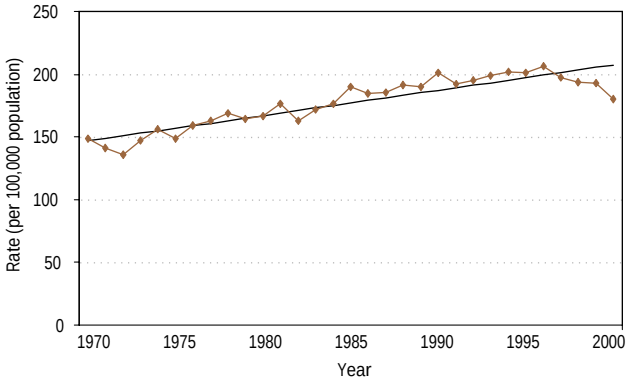


FIGURE 10. Mortality due to malignant neoplasms, Cuba, 1981–2000.

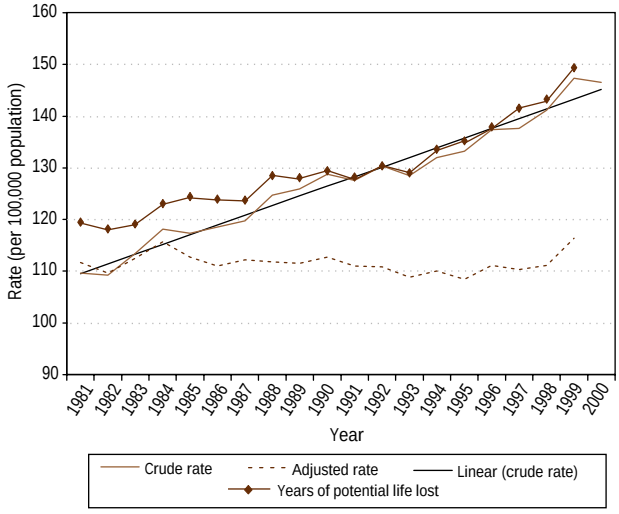
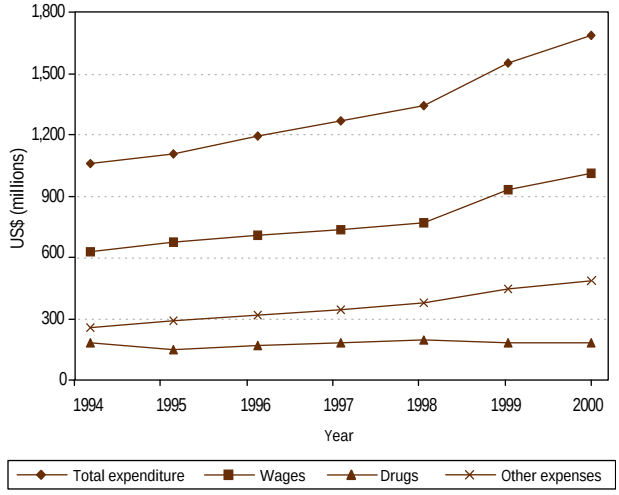


FIGURE 11. Total public health expenditure, Cuba, 1994–2000.



DOMINICA

OVERVIEW

The Commonwealth of Dominica, the largest and most northerly of the Windward Islands in the Lesser Antilles, is situated between the French islands of Martinique and Guadeloupe. The central statistical office projected the total population for the end of 1999 at 76,069. The island covers an area of 790 km^2, and is the most mountainous of the Eastern Caribbean islands. Dominica is of volcanic origin and, with eight active volcanoes, it is considered to be the most seismically active location in the area. The island has an abundance of rivers and 65% of its territory is covered by rainforest. Rainfall ranges between 1,200 mm per year on the east coast to 8,000 mm in the island's central part. Given the centrally located mountain range and the rugged topography, the population is concentrated in coastal towns and villages.

Dominica is divided into 10 parishes; the parish of St. George is the most populous, with 28.6% of the island's total population; the capital city, Roseau, is there.

Carib Indians, Dominica's indigenous population, number 4,500 persons, mainly concentrated on a 15.3 km^2 reservation. Carib villages are located in the Castle Bruce and Marigot health districts. The Carib population is young, with 70% under 30 years of age and 40% under 19 years old. Carib economic activity is mixed, mainly subsistence farming, craft production, and boat building.

Since its independence in 1978, Dominica has been centrally administered and governed through a parliamentary democracy; the Constitution mandates the holding of general elections every five years. The Prime Minister is the Head of Government and the President is the Head of State. Parliament consists of 21 elected representatives and 9 senators appointed by the President; they have full legislative powers under the Constitution.

Furthermore, there are 4 municipal councils and 37 village councils, each functioning independently of the other. This serves as a form of political decentralization intended to encourage local autonomy and social participation in the country's development. Councils are legally constituted and have the authority to make bylaws, impose house and land taxes, and receive an annual subvention from the central Government. Council elections are held every three years. An investigative study commissioned by the Local Government Department in 1999 recommended that the autonomy of these councils be increased and that their functioning be enhanced. Councils are not directly involved in providing health services.

The current Dominican economy can be described as open with persistent internal and external imbalances. It is a monoculture economy that is trying to shift from an overreliance on banana exports into a more diversified economy. To that end, the Government has intensified its efforts to enhance the tourism sector.

Dominica's economy experienced sluggish growth in the 1990s, mainly because of the continuing weakness in the banana industry and the inability of other foreign exchange earning sectors to compensate for the resulting loss. During the 1997–2000 period, economic development was significantly affected by the intensification of global competition with the universal trend towards trade liberalization. Of specific relevance to Dominica has been the World Trade Organization's 1997 ruling against the European Union system of issuing preferential licenses to banana exporters in African, Caribbean, and Pacific countries.

Real per capita GDP rose from US$ 2,077 in 1996 to US$ 2,177 in 1999, a 4.8% increase over the period. Figure 1 shows annual GDP growth from 1991 to 1999. Despite the negative growth experienced in 1997 and 1998, agriculture, particularly the cultivation of bananas, continues to be the highest contributor to the GDP, representing an average of 19.4% for 1997–1999. Agriculture is followed by government services, banking and insurance, wholesale and retail trade, and communications, in rank order. The communication sector exhibited the highest growth rate in the period, registering 43% growth between 1996 and 1999. Socioeconomic conditions in the rural area have been degraded by the decline of the banana industry.

A 1997 labor force survey estimated unemployment at 23%, a marked increase from the 9.9% reported in the 1991 Housing and

Population Census. In some parishes, however, the unemployment rate may be as high as 45.9%. Among persons 15–30 years old, the unemployment rate is 34%. Unemployment among women is estimated at 27.1% and among males, 19.6%. Labor force participation rates are particularly low for women who have no secondary education. More females are employed in the managerial, professional, and clerical positions than men. The female labor force is concentrated in the following occupational classes: elementary occupations, 24%; service, shop, and market sales workers, 20%; technicians and associate professionals, 12.5%; clerks, 12.5%; and skilled agriculture, fishing, and forestry, 11.1%.

Data from the 1997 labor force survey suggest that there is a great deal of mismatched skills and a weak national skill base overall, with more than half of employed persons having no occupational training and 49.6% of the unemployed lacking training that will make them suitable for employment. To help enhance their chances for employment, the Government of Dominica has organized youth skills training programs in urban and rural areas for out-of-school youth.

The country is attempting to identify issues and priorities for poverty reduction and alleviation; this effort is supported by regional and international agencies. The approach is multisectoral, with a mix of social safety net operations and investment programs. The investment components involve youth skill development, as well as development of the social infrastructure and small enterprise.

The Government has stated its commitment to the introduction of a new integrated approach to development planning, with a focus on optimization, efficiency, sustainability, and broad participation. A National Integrated Development Plan began to be prepared in 2000.

The literacy rate in 1998 was 85%; 84% for females and 86% for males. The highest illiteracy rates were recorded among those over 50 years of age. Preschool education is provided for 3–4 year olds at 82 schools. In 1999–2000, primary-school enrollment was 93% and secondary-school enrollment, 88.3%, the highest rate ever recorded in the country. Enrollment at the Community College continues to be low; only an average 16% of students who enrolled in secondary schools attended the tertiary level institution.

Of the total population in 1999, 50.9% was male and 49.1%, female; 32.5% was under the age of 15 and 12.5% was 60 years old and older (Figure 2). The urban population was estimated at 71%. Ministry of Health household data recorded a household size of 3.1 in 1998. The fertility rate continues to decline, averaging 82.7 per 1,000 women 15–44 years old in 1996–1999, compared to 119.5 per 1,000 in the previous four-year period.

In 1997–1998, the crude birth rate was 17 per 1,000 population. Births totaled 1,293 in 1999, compared to 1,426 in 1996. There is no underregistration of births.

The crude death rate for the 1996–1999 period averaged 7.8 per 1,000 population, remaining constant in 1998 and 1999 at 8 per 1,000; 618 persons died in 1999.

The infant mortality rate in the 1996–1999 period averaged 17.3 per 1,000 live births, an increase of 0.8 over the average for 1992–1995. An increase in infant mortality rate of 24 per 1,000 live births was recorded in 1999, for a total of 92 infant deaths compared to 66 in 1998.

Life expectancy at birth for both sexes combined stood at 68.77 years for 1995–2000. For females in that same period the figure was 72.75, considerably higher than the figure of 64.79 for males. There were 22 centenarians including the world's oldest person, who is 126 years of age.

Mortality

In the 1996–1999 period there were 2,333 recorded deaths, 52.7% of which were males. About 24.6% of all deaths occurred in the 15–44 year age group, and of these, 67.1% were males. Deaths in the age group 70 years old and older represented 59% of deaths. Death certification by a medical doctor is mandatory and death registration is complete.

An analysis of mortality by broad groups of causes indicates that deaths due to diseases of the circulatory system accounted for 54.7%; those due to malignant neoplasms, 28.9%; those due to external causes, 8.8%; those due to diseases originating in the perinatal period, 4%; and those due to communicable diseases, 3.6%. The proportion of ill-defined deaths was 38.1%.

An analysis of the broad causes of death by sex indicated that males accounted for 74.8%; further, 64.6% of deaths due to malignant neoplasms were males, while females accounted for 56.6% from diseases of the circulatory system. Figure 3 shows mortality rates by broad groups of causes in 1990–1994.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

There were 58 perinatal deaths from 1996 to 1999; of these, 35 were due to slow fetal growth and fetal malnutrition, and 13 were due to hypoxia/asphyxia. Of the 95 infant deaths in the 1996–1999 period, 58.9% were early neonatal deaths. Prematurity is the major underlying cause in 64.3% of deaths.

During the reporting period, there were 16 deaths among 1–4-year-olds, 25% of which were due to congenital abnormalities.

An immunization program that routinely offers DPT; polio; BCG; measles, mumps, and rubella (MMR) vaccines is in place in the public sector, where more than 99% complete vaccination occurs. Due to a shortage of vaccines in 1997, however, DPT and polio coverage only reached 91.7% and 96.9%, respectively. There have been no reported cases of diseases preventable by immunization in the 1997–2000 period.

Normal growth is reported for 89.8% of children 0–4 years old. There is an increasing trend towards obesity in this age group, however, which averaged 9.2% for 1997–2000. The percentage of low birthweight infants (under 2,500 g) fluctuated in 1996–1999. In 1997, 5% of newborns were low birthweight infants; the figure increased to 9.6% in 1999.

There were 43 reported cases of gastroenteritis in 1997, 75 in 1998, and 103 in 1999. There were two deaths from diarrheal diseases in 1997, one in 1998, and none in 1999. The country has an early intervention and effective management for acute respiratory infections in place; there was only one death due to acute respiratory infections in 1999.

Schoolchildren (5–9 years)

At age 5 years, all school entrants are screened in the school health program for vision, hearing, anemia, growth and development, and general physical health. In 1996–1999, 14 deaths occurred among 5–9-year-olds; of these, 11 were males. Five of these deaths were accidental, three were due to motor vehicle accidents, and one was a homicide.

Adolescents (10–14 and 15–19 years)

Adolescents represented 21.6% of the total projected population in 1999; 2.7% of them were illiterate. The group faces health threats from alcohol use; other substance abuse; sexually transmitted infections, including HIV; violence; accidents; and underemployment.

Concerns over the sexual and reproductive health of adolescents include unprotected sex, unplanned and unwanted pregnancies, and sexually transmitted infections, including HIV/AIDS. The 1997 adolescent health survey showed that 50% of males and 20% of females reported their first sexual encounter by age 10. The survey reported that 20% of 10–12-year-olds, 50% of 13–15-year-olds, and 66% of those 16 years old and older had had sexual intercourse. Sexual abuse was reported in 16% of adolescent girls and 7% of adolescent boys. Condom use among sexually active adolescents stood at 33%, and 23% of sexually active adolescents reported having had an abortion.

Among adolescents, 67% reported that they used alcohol, and 4% reported that they had four to six drinks at a time. Most students surveyed stated that they had not used cigarettes (89%), marijuana (83%), inhalants (83%), or cocaine (94%) in the year before the survey. A Drug Prevention Unit targets school-aged children and adolescents.

More than 50% of adolescents reported that they engaged in physical exercise, but obesity is known to be prevalent among adolescent females.

In 1996–1999, an average of 15.8% of births were to mothers aged 15–19, a rate that equals that of the previous four years.

Depression is emerging as an area of concern among adolescents, as are suicides and suicide attempts. During 1996–1998 there were 78 cases of suicide and suicide attempts, 53% of which were among adolescents younger than 18 years; there were three suicide deaths.

There were 66 deaths in this age group during 1996–1999; the leading causes were transport accidents, injury due to violence, other accidents, and epilepsy.

Adults (20–59 years)

The Government has identified women aged 15–44 as a priority group. Between 1997 and 1999, 97.7% of births in this age group were delivered at health facilities. During the 1998–2000 period, 9% of deliveries were by caesarian section. Prenatal services are utilized by 97% of women, with an average of five visits per pregnancy.

Obstetric causes represented 20% of admissions to Princess Margaret Hospital. There were two maternal deaths in 1996–1999. Since 1997, the primary care facilities operated by the Government have reduced the range and quantity of contraceptive methods, which has led to an increase in the use of services at the Dominican Planned Parenthood Association. The Association recorded a 67% increase in the number of oral contraceptive cycles distributed and a 20% increase in injectibles. Oral contraceptives are the most frequently used method.

Pap smears are analyzed both in public and private laboratories. During 1997–1999, an annual average of 3,624 smears were examined at the government laboratory, for an increase of 6% over the period.

Young men's health is beset by violence, injury from external causes, motor vehicle accidents, drug abuse, and sexually transmitted infections. Unfortunately, data on this group is not routinely collected.

The Elderly (60 years and older)

About 10% of the total population was older than 60 years of age. Chronic, noncommunicable diseases such as hypertension, diabetes, cancer, heart disease, and cerebrovascular accidents are important morbidity and mortality factors for this age group.

During 1997–1999, 71% of deaths occurred among the age group 60 years and older; 48.7% in the 60–79 age group and 51.3% in the group 80 years old and older.

Diabetes and hypertension clinics are held at all health centers and at Princess Margaret Hospital. Medications to manage these conditions are available at no cost to clients in the public sector. Three community day-care centers for the elderly were established in rural and urban areas by a community-based organization. Most elderly persons live alone or with family members; 1.8% are in institutional care.

A national policy on older persons was finalized in 1999; it emphasizes independence, participation in their health, self-fulfillment, and dignity for the elderly. The policy contemplates the establishment of day care centers for the elderly, training of

health workers, dissemination of information, and health education for the elderly.

Family Health

In 1999, 37% of households were headed by women. In 2000, a multisectoral national health and family life education committee was established with the responsibility for reviewing policy and redefining programs. A family life education program is delivered at primary schools.

Workers' Health

A national plan for developing workers' health was developed in 1996; issues for concern included the lack of protective equipment and clothing for workers and an absence of appropriate monitoring of equipment, as well as poor engineering controls, poor ergonomic practices, and unsatisfactory physical working conditions.

Work site conditions are monitored by the Labor Division and the Environmental Health Department. Although there is a regulatory framework for protecting workers, the monitoring of employee health needs to be improved; a multisectoral initiative is under way to this effect.

In 1999, Dominica's Social Security received 114 claims for employment injuries; 99% of these were from men. Of these, 25% originated from the manufacturing sector, followed by the government sector with 22%. Of 4,965 claims for sickness benefits submitted in 1999, 56% were by female workers.

The Disabled

The Ministry of Community Development has developed a policy on the disabled, and the Dominica Association of Disabled Persons advocates for the rights of the disabled. A 1999 school survey revealed that a total of 233 children aged 5–9 years had moderate to severe disabilities; 28% of them were not accessing formal education and 60% were male. Disabilities ranged from mental deficiencies to sensory, physical, and communication disorders.

There are two nonresidential institutions that care for children with special needs. The Alpha Centre, a nongovernmental institution, provides education, parental skills training, and parental support for 160 children with mental and developmental disabilities. In addition, a school for the hearing impaired has 26 children enrolled.

Indigenous and Other Special Groups

Dominica's indigenous peoples, the Carib Indians, speak a combination of English and French Creole. In 2000, the Government established a Department of Carib Affairs specifically charged with addressing this group's community development and poverty alleviation by mobilizing resources and fostering social participation and community action.

Although improvement in socioeconomic conditions and better access to health and education resources have improved the Caribs' health status, a community consultation held in the Carib Territory in 1999 identified the following areas of concern: lack of potable water and solid waste disposal; violence; drug abuse, including alcoholism; tuberculosis; sexually transmitted infections; and helminthiasis. Because this population lives in relative isolation, health issues related to inbreeding are a cause for concern. The Carib Territory is served by two health centers, each staffed by a primary care nurse of Carib descent. Health information from these clinics revealed three cases of low birthweight during 1997–2000. During the same period, 152 pregnancies were recorded, of which 32% were classified as high risk on first admission. Child care clinics had 132 children registered.

By Type of Health Problem

Natural Disasters

The country is vulnerable to a wide range of natural hazards, such as tropical storms and hurricanes. In 1999, Hurricane Lenny, a category 4 storm, damaged coastal structures and equipment on the western side of the island; no lives were lost. Damage and rehabilitation costs were estimated at US$ 140 million and repairs are ongoing. In 1997, the Layou River landslide and floods severely eroded the country's socioeconomic conditions. Although no lives were lost, 600 residents had to be temporarily evacuated.

Dominica's susceptibility and vulnerability to volcanic activity is a major cause for concern. A seismic analysis report concluded that the probability was high for a magmatic eruption with earthquakes of a magnitude between 1 and 5 in the next 10 years. Since 1998–1999 several minor tremors have occurred in the country's south, where 20% of the population resides; there has been no loss of life recorded due to volcanic activity. A National Volcanic Plan was put in place in 1999.

All major public and private sector organizations have well-defined disaster management plans, and simulation exercises are held annually. Building design must comply with the Caribbean Uniform Building code, and mitigation features are considered in the construction of new health facilities.

Vector-borne Diseases

Vector-borne diseases of significance in Dominica are dengue fever and malaria. There was a large dengue outbreak in 2000, during which virus serotype III was introduced for the first time; serotypes I and II also circulate in the country. There was one death due to dengue hemmorhagic fever. Between 1997 to 1999, the average national *Aedes aegypti* household index was 18%; in some communities, however, the index reached as high as 26%. In 2000, the *Aedes aegypti* household index was 13% and the

Breteau Index, 29.4%. The country's vector control program focuses on community participation, education of the householder, and source reduction by biological and chemical control.

Malaria was eliminated on the island in 1962, but there were six imported cases reported during the period, as well as a continuing presence of the *Anopheles* mosquito in three localities.

Yellow fever vaccine is administered to residents traveling to endemic countries; 35 persons were vaccinated over 1997–2000.

Diseases Preventable by Immunization

There were no cases of acute flaccid paralysis in the 1990s, nor any confirmed case of measles since 1991.

Tetanus vaccine is administered to all pregnant women receiving prenatal care in the public sector. During 1997–2000 there was one adult death due to tetanus.

Haemophilus influenzae type B vaccine is only given to children in the private sector. Figure 4 shows average for selected vaccines among the population under 1 year in 2000. As part of the program to eradicate rubella, 21,026 persons between the ages of 12 and 35 received the MMR vaccine in 2000, and 99.2% of children between the ages 1–5 years received their second dose.

In 1997–1999, a total of 47 donors (1.5%) tested positive for hepatitis B antigen; 98% of health care workers had been immunized for hepatitis B.

Intestinal Infectious Diseases

In 2000, 6% of 3,752 stool samples examined tested positive for intestinal parasites. Between 1998 and 2000, the most frequent parasite found was *Entamoeba coli*, followed by *Giardia lamblia*, hookworm, and strongyloides. There were also 71 samples that tested positive for trichuris and 51 for ascaris.

There were 13 cases of typhoid fever during 1997–1999.

Chronic Communicable Diseases

One case of leprosy was reported in 1998, and 19 cases of tuberculosis were reported from 1997–1999. No cases of HIV/tuberculosis coinfection were reported over the period.

Respiratory Conditions

In 1999 there were 520 persons living with asthma registered in primary care clinics. Several workshops on the management of asthma were conducted for health care workers during the reporting period. Common colds was the leading cause of new episodes of illness at the primary care facilities.

Zoonoses

No cases of rabies were reported during this period.

HIV/AIDS

In the reporting period, 69 persons tested positive for HIV, with the male-female ratio for these years ranging from 2:1 to 3:1; the predominant mode of transmission was men who have sex with men. The highest percentage of HIV positives were among the age group 20–54 years old; 10 children under 4 years old and 9 adolescents tested positive between 1997–2000. Eight blood donors tested positive between 1997 and 2000; in 2000, four blood donors tested positive, the highest number seen in any one year in the period. Between 1997 and 1999, 26 persons died of AIDS. The program for testing, surveillance, education, and counseling is not well developed, but a multisectoral strategic national HIV/AIDS plan is being developed.

Sexually Transmitted Infections

Data from the public laboratory for 1997 to 2000 indicates that 50 blood donors (1.6%) tested positive for venereal disease. HTLV1 testing began in 1999, and 40 donors (2.3%) tested positive. Seventy-eight (2.4%) samples in 1998 and 75 (2.5%) in 1999 were strongly VDRL reactive, compared to 205 (6.5%) in 2000. This increase was also noted among pregnant women.

Nutritional and Metabolic Diseases

With the support of the Caribbean Food and Nutrition Institute a micronutrient study was undertaken in four health districts in 1997. The study included 157 girls aged 1–4 years, 410 girls aged 5–16, and 151 pregnant women. Vitamin A deficiency was present only in the 1–4-year-old group, with 1.3% being deficient (<10 mg/dL) and 9.4% being marginally deficient (10–25 mg/dl); no significant gender differences were reported. No beta-carotene deficiency was found, and boys and girls had similar mean values. Anemia (hemoglobin <11 g/dL) was found among 34.4% of children 1–4 years of age, with no gender variation; 53% of 1–4-year-olds had anemia. Vitamin E deficiency was noted in 7.5% of 1–4-year-olds, with no gender difference.

The 1996 Food Consumption Pattern and Lifestyle Survey revealed that 49.3% of respondents were obese; 90% of children 0–5 years old are within a normal weight, while 9% are obese. Exercise is not widely practiced and lifestyles have become more sedentary; 51.6% of survey respondents reported engaging in some form of exercise.

Diabetes is a major public health problem that significantly affects morbidity and mortality. As of December 1999, there were 2,044 persons with diabetes registered at the primary health care clinics (0.7% of total population). Diabetes is the second most frequent cause of visits to health centers or clinics. Diabetes mellitus was the fourth leading cause of death each year from 1997 to 2000. The protocol for managing diabetes requires updating.

Diseases of the Circulatory System

Hypertension has ranked within the three leading causes of death since the 1990s. In 1999, there were 4,041 hypertensives registered at primary care clinics, representing 5.3% of the total population. Hypertensives visit primary health care centers an

average of seven times each year; it is the most frequent reason for visits to these centers. A protocol and referral system for managing hypertension is in place in the public sector.

Malignant Neoplasms

Malignant neoplasms were among the three leading causes of death in 1996–1999. During 1997–2000, 333 malignancies were confirmed by histopathology; the main sites were breast (17.0%), uterine cervix (11.0%), skin (8.7%), stomach (6.9%), and prostate (6.0%).

The incidence of cancer increased with age, with the 65–74 age group accounting for 26.5% and those 75 years and older reaching 27.4%. Pap smear screening is available in all government health facilities and at the Dominican Planned Parenthood Association clinic. Breast self examinations are promoted; mammograms are not available on the island.

Accidents and Violence

Accidents and violence are on the rise. Transport accidents, for example, are among the ten leading causes of death; from 1996 to 1999, an average of 10 persons died each year from transport accidents. During 1996 to 1998, 450 persons received medical attention at health facilities for road traffic accidents.

In 1996–1999, 52 deaths were due to violent injury. According to police reports, crimes of a sexual nature have increased in frequency. From 1997–2000, 104 cases of rape, 187 cases of indecent assault, and 148 cases of unlawful carnal knowledge were prosecuted.

Domestic violence, particularly violence against women, is now recognized as a problem. There is no agency collecting comprehensive, gender-specific data in this area. However, several educational and promotional initiatives on this issue were organized by governmental and nongovernmental agencies.

Oral Health

Oral health services are provided in the public sector at all seven primary health care units, as well as at five private facilities. In 1997–1999, 37,663 annual average visits were made to public health services. The last oral health epidemiological survey was conducted in 1995.

Mental Health

During 1997–2000, Dominica's mental health program focused on enhancing and expanding the community mental health component and counseling services. There was a decrease in the number of admissions to the Psychiatric Unit; of the admissions in 1998, 58% were males. The age group 20–30 years old accounted for 30% of all admissions. More than 75% of all admissions were for the primary diagnosis of schizophrenia.

There were 2,639 visits made to community psychiatric clinics in 1998; monthly forensic clinics are held in the prison for psychiatric inmates, who comprise 10% of the prison population.

In 1997–2000, the police reported a total of 27 suicides, compared to 19 in the preceding four years. Drug abuse, particularly cocaine and marijuana, is reportedly on the rise. Between 1997–2000, 66% of those arrested for drug offenses were males.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

In 1999, the central government announced its policy orientation for the health sector in the Medium Term Economic Strategy Paper (1998). It stated that measures would be pursued over the medium term to reduce central government subsidies, increase user fees, and promote greater private sector participation in health services delivery.

The mission of the Ministry of Health, as stated in the Corporate Plan 2000/2001, is "to promote the well being of all citizens of Dominica through the provision of preventive, curative, and rehabilitative health care, compatible with acceptable standards of human dignity, at a cost that is affordable and sustainable."

The Ministry of Health has once again committed itself to the primary health care approach and to the implementation of health promotion. As envisioned in the corporate plan, this strategy focuses on health promotion, the reorganization of the health sector, health infrastructure, and health program development.

The Ministry's planning activities also take direction from regional health priority areas as defined under the Caribbean Cooperation in Health initiative for 1997–2000.

Priority groups identified in the plan are children 0–5 years old, pregnant and lactating mothers, women of childbearing age, adolescents, the elderly, and males in the reproductive age group.

The draft national youth policy identifies strategic areas such as alcohol and substance abuse by young persons, disabilities, HIV/AIDS, nutrition, sexual and reproductive health for young people, and mental health.

Health Sector Reform Strategies and Programs

During 1997–2000, government health sector reform initiatives focused on health care financing through the implementation of a user fee system, cost containment, equity, and quality of care.

A new schedule of fees was introduced in June 1996 through amendments to the Roseau Hospital Act. Objectives included increasing revenue, providing for the cost of hospital development, recovering recurrent health costs, and creating public awareness of the cost of providing health services.

In June 2000, a broad-based committee assessed the fee system and found that it was a deterrent to access to care and that services were overpriced and the public dissatisfied. As a result of this

analysis, a system of reduced fees was approved, with exemptions for certain categories. In 2000, plans for introducing a national health insurance scheme were reviewed. The Government is holding discussions for the implementation of health insurance, with a view to improving equity, offering universal coverage, and increasing the capacity to respond to its policy orientation.

Services offered as part of primary health care have been defined as the basic package of health services; they are free at point of service, thus increasing access and equity. Continuous quality improvements through quality assurance programs are in place in the nursing service and the government laboratory.

The Health System

Institutional Organization

Health services in Dominica are mainly government operated and financed. Private services are limited to outpatient care delivered by practitioners, generally on a part-time basis, and to family planning services offered by the Dominica Planned Parenthood Association. Fees for these services are paid at point of service.

Each health district has well-defined boundaries, staff, budget, and the capacity for delivering primary health care services. Primary health care services are decentralized and delivered through facilities in villages throughout the island. These facilities include 52 health clinics/centers and two district hospitals. Each of these facilities has a well-defined catchment population. Secondary care services are centralized, but specialist staff from Princess Margaret Hospital conduct ophthalmological and psychiatric referral services in every health district.

Private health insurance is offered through several companies operating on the island. Group insurance schemes are in operation for all major employment categories such as nurses, teachers, civil servants, doctors, the police, and some private companies. These companies provide refunds to members, who access services at private medical practitioners or the public health sector.

Organization of Regulatory Actions

Health legislation is generally outdated and in need of review. The 1968 Public Health Act was repealed and replaced with the 1997 Environmental Health Services Act No. 8. This Act provides the basis for pollution control and waste management in Dominica and has the power to set regulations regarding food safety.

A draft pharmacy act was completed in 1999; it will be submitted to the Legal Department to replace outdated legislation.

Well-defined norms, standards, and goals guide the delivery of health care services in the public sector. New directives were issued in 2000 to guide health services programming and delivery. There is a system for quarterly monitoring and reporting of performance against set standards, but the process has become passive.

Health care delivered in the private sector is not monitored. Under the 1944 Medical Act it is possible to monitor the drug supply in private pharmacies, and submit samples to the Regional Drug Testing Laboratory. The Medical Board (under 1937 regulations) is appointed by the Minister of Health and regulates to some degree the practice of medicine, including the registration of doctors, nurse practitioners, pharmacists, and optometrists. There is no legislative requirement for the registration of alternative medicine practitioners.

The Nursing Council, a legally constituted body, regulates the practice of nursing, under the Nursing Council Regulation.

Squatter villages are being erected with negative environmental consequences.

Environmental impact assessments and hydrogeological studies are prerequisites for the implementation of all major projects, which must be formally approved by the National Physical Planning Board. Similarly, all housing and building plans must be approved by the Board prior to construction. The Physical Planning Unit monitors the construction of buildings for adherence to standards, ensuring safety and environmental protection.

The multisectoral Pesticides Control Board is charged with monitoring the importation, use, and impact of pesticides and chemicals. The Ministry of Health's Environmental Health Department is responsible for monitoring water and food quality and for conducting household and premise inspection. The Ministry of Agriculture, through its Veterinary Division, issues importation licenses and inspects meats and fish. There is no mechanism in place for evaluating medical technology.

Organization of Public Health Care Services

Health Promotion

In 1999, the Ministry of Health set up a Health Promotion Resource Centre and trained specialist staff in health promotion and health education. Sensitization of the public to health promotion was done through mass communication and the organization of community meetings. Additionally, community workshops were held to foster the application of the strategy to community development.

Several communities have participated in PAHO's "Healthy Communities Award" program, and three were granted awards. The Ministry and local groups have emphasized healthy communities and healthy schools.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

There is a need to identify and control risk factors for chronic, noncommunicable diseases. Active epidemiological surveillance

mainly targets communicable diseases, but there is no systematic collection, analysis, and dissemination of information at either the central or district level. The seven Type III health centers have been designated sentinel stations.

One public and one private health laboratory provide services for the island. Quality control is good and the service is reliable. The Environmental Health Department operates a water quality laboratory for monitoring water supplies.

Potable Water, Excreta Disposal, and Sewerage Services

Most of the water consumed is surface water, with the major watersheds concentrated in Dominica's center; 43 catchments are tapped for potable water supplies. In terms of access to potable water supply, 90% of the rural population and 100% of the urban population has coverage through more than 20,000 individual household connections and 500 public standpipes; 98% of the systems are chlorinated.

Water is monitored for physical characteristics and bacteriological quality. Over the years, sustained improvements have been noted in water quality: in 2000, 95% of analyzed bacteriological samples complied with WHO's standards for drinking water. Deforestation and agricultural activities are the major problems that negatively affect drinking water resources.

In regard to adequate excreta disposal, 85% of the population has access to adequate excreta disposal facilities, representing a 20% increase over the 1996 figure. In some areas, particularly the West Coast, however, coverage is as low as 60%. In rural areas, the most common mode of disposal is the pit latrine. The capital city simple sewage system discharges raw sewerage into the sea. However, only 10% of the population in this area are served by the system; a considerable number of households use on-site systems.

The Solid Waste Management Corporation, created in 1997 as a statutory body, is responsible for solid waste collection, storage, and disposal. The Ministry of Health's Environmental Health Department is responsible for monitoring and control of the system; it receives funding from the World Bank and the Caribbean Development Bank. Only 60% of the population has access to all services offered by the Corporation; the remaining 40% utilizes composting, reuse, burning, and burying. A small percentage of householders continue to practice open dumping. Hospital and health facilities' solid wastes are incinerated on the premises.

Pollution Prevention and Control

There is no program in place for monitoring or preventing air pollution.

Food Safety

The responsibility for the approval of imported meats lies with the Ministry of Agriculture, which issues licenses. The Bureau of Standards, which was established in 1999, regulates food importation and safety.

The Environmental Health Department plays a pivotal role in monitoring of the quality of food offered for sale to the public. To this end, it conducts inspections at the port, warehouses, food stores, and food production and vending facilities, and it carries out health education activities. Since 1999, the Hazard Analysis Critical Control Point method has been promoted and utilized for improving food safety.

Food safety regulations are inadequate, but all food establishments and vendors must be registered; 3,465 food handlers and 1,655 food handling premises are registered. Attendance at food handler's clinics and a system of certification is well-established. International certification of food processing plants is undertaken. The Government has identified the assurance of high food safety standards as important, as it attempts to expand the country's tourism sector. Surveillance of foodborne illnesses is inadequate.

Organization of Individual Health Care Services

The delivery of primary health care services is channeled through seven health districts, each with a peripheral network of Type I clinics and one Type III health center per district.

Each Type I clinic serves a maximum population of 3,000 persons living within a five-mile radius of the clinic; it is staffed by a primary care nurse or a district nurse midwife. Services delivered at Type I clinics include reproductive health, nutrition, health education, medical care, community action, emergency services, and child health. Child health clinics include counseling, health education, immunization, nutritional status, and growth development and monitoring. Each Type III center functions as the health district's administrative headquarters and its staff includes nurses, a doctor, a nurse practitioner, a pharmacist, an environmental health officer, and a dental therapist. Every center is equipped with a dental unit and one or two beds for deliveries, and it provides a comprehensive range of services including health education. Type III center staff pays scheduled visits for health care delivery and supervision to Type I clinics. In addition, two small district hospitals have facilities for inpatient care.

Secondary care services are provided at Princess Margaret Hospital, which has a 225-bed capacity, an increase of 35 beds from 1996. The hospital provides inpatient services, ambulatory specialist clinics, emergency service, and diagnostic services. During 1996–2000, an obstetric and pediatric block, an operating theatre, and an intensive care unit were added. Blood banking services are only available at Princess Margaret Hospital. Specialty services include ear, nose, and throat; ophthalmology; radiology; oncology; gastroenterology; and hemodialysis. More than 99% of births are assisted by a trained health care professional. Neonatal health services at the hospital are limited to basic secondary care. Tertiary care for neonates is unavailable in Dominica.

Tertiary care is accessed in neighboring islands, mainly financed through private sources. There is one private laboratory on the island. There are no private inpatient care facilities.

Health Supplies

Dominica participates in the Eastern Caribbean's pooled pharmaceutical procurement system. There is a national formulary and a well-defined process for the rationalization and update of drug availability and use.

The allocated budget for drugs and medical supplies has held at about 8% of the national health budget. During the reporting period, an average US$ 890,000 was spent annually for drugs and medical supplies. The ratio of expenditure for the secondary care facility, as compared to primary health care, was 2.5:1. A 42% increase in the total budget for drugs and medical supplies was obtained. For the corresponding time period, the allocated drug budget for secondary care increased by 43%, and for primary health care, 50%.

Medical supplies for the hemodialysis unit, which provides service for 11 patients, accounted for 25% of the total expenditure on this budget line at the Princess Margaret Hospital. The items that account for the highest expenditure on medical supplies correspond to hypertension and diabetes treatment.

Human Resources

As part of the government's civil service reform program, the "Value for Money" study recommended improvements to the effectiveness and efficiency of the Ministry of Health's organizational structures, systems, procedures, and staff management. As a way to increase staff, health personnel in specific areas have been secured through technical cooperation programs from the governments of France, Cuba, and Nigeria. In 2000, the number of selected health personnel was as follows: 47 medical doctors, 11 dentists, 353 nurses, 30 pharmacists, 8 dental therapists, 4 trained health educators, and 18 environmental health officers.

Training programs for health personnel are generally accessed regionally and extra-regionally; they are funded through scholarships or through government and international agencies.

There are two institutions in Dominica for training health care professionals: the Government-run School of Nursing and the privately-owned and operated U.S. offshore medical school. The number of students accepted to the Nursing School depends on the needs of the health service and the school's capacity. The small teaching staff is responsible for the registered nurse training program, the level II nurse program, the midwifery program, and the mental health nurse program. Continuous education for nurses is regularly delivered through the nursing school and also at service levels.

The medical school trains doctors primarily for the U.S. market, and very few locals attend. Local physicians receive training at the University of the West Indies and outside the region.

Health Sector Expenditure and Financing

The government expenditure on health has averaged 13.9% of the total recurrent budget during 1997–2000. The total government expenditure on health for fiscal year 1999/2000 was US$ 11,148,500. The Ministry of Health is the third largest consumer of government resources.

A review of the distribution of financial resources in 1997–2000 reveals a skew in favor of the secondary hospital, which received an annual average of 48.7% of funds, as compared to 22.5% for primary health care services.

Revenue collections in the Ministry of Health are limited to user fees at Princess Margaret Hospital and negligible amounts in the dental service. Collections at the hospital have consistently fallen below projected estimates (30%); in 1999, for example, total revenue collected was US$ 774,715, with payment arrears of US$ 728,353. The hospital generates only 12.9% of its recurrent expenditure.

It is difficult to ascertain the level of private resources spent for health in the country. According to the 1998 Household Income and Expenditure Survey, private expenditure on health ranked seventh in the breakdown of household expenditure.

External Technical Cooperation and Financing

Throughout 1997–2000, bilateral partnerships for health continued with the governments of France, Cuba, Nigeria, Taiwan, and Japan. The Government of Cuba trained 29 medical and 3 dental students and supplied specialists. The Government of Nigeria provided technical assistance in medicine, nursing, and laboratory technology. The Government of France provided funding for the construction of Princess Margaret Hospital's new operating theatre, as well as technical assistance and training of health care professionals. The European Union provided some funding for health facilities development and equipment.

Dominica also has collaborated with and benefited from regional initiatives and organizations such as PAHO, the Caribbean Community (CARICOM), the Caribbean Epidemiological Centre (CAREC), the Caribbean Food and Nutrition Institute (CFNI), the Organization of East Caribbean States (OECS), the Caribbean Environmental Health Institute (CEHI), and the University of the West Indies. Cooperation with UNICEF, UNAIDS, and UNFPA also continued over the period. The Brenda Strafford Foundation funded the construction of a new Type I health clinic in 1999/2000, continued to meet the operating cost of four health centers, and contributed substantially to ophthalmological services.

FIGURE 1. Gross domestic product, annual growth (%), Dominica, 1991–1999.

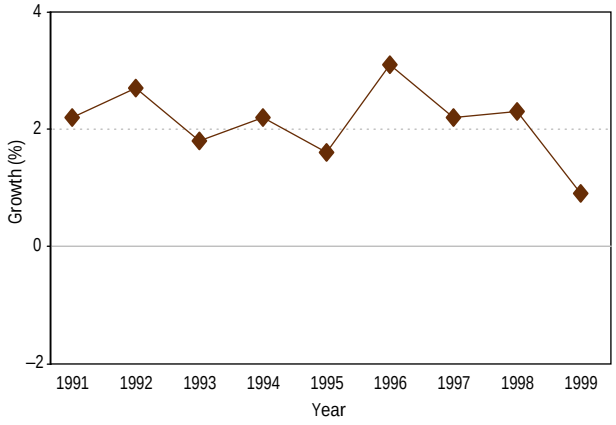


FIGURE 2. Population structure, by age and sex, Dominica, 1999.

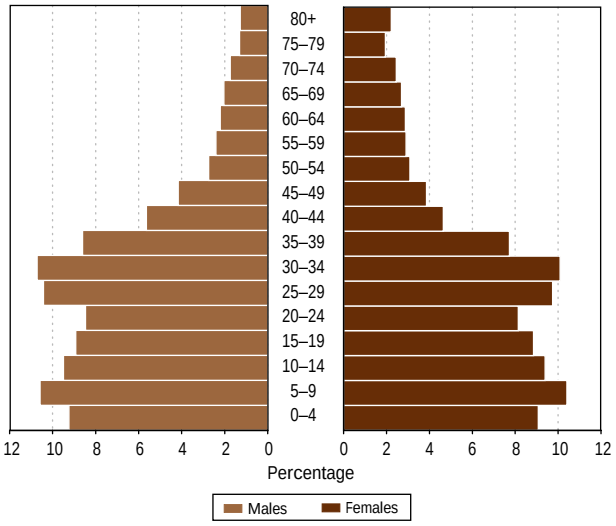


FIGURE 3. Estimated mortality by broad groups of causes and sex, Dominica, 1990–1994.

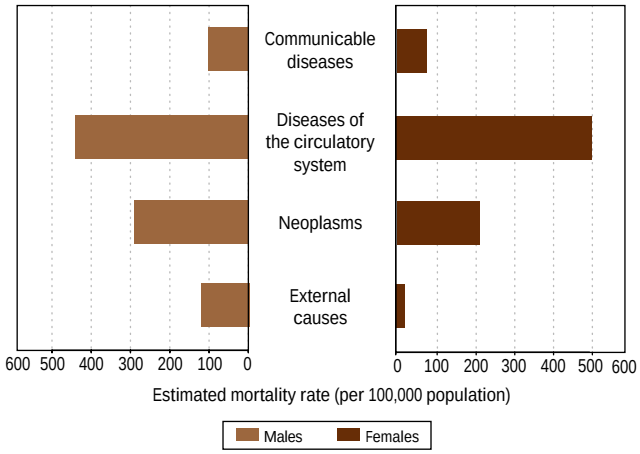
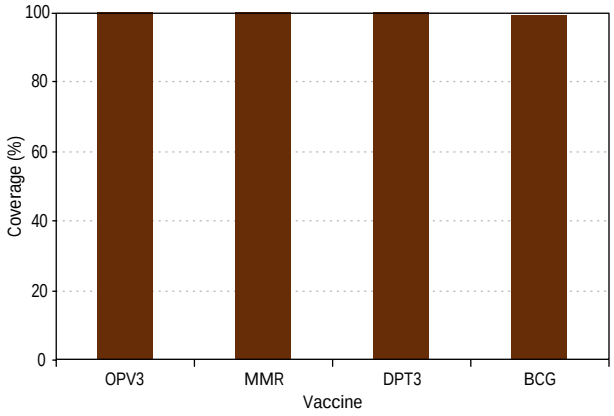


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, Dominica, 2000.



DOMINICAN REPUBLIC

OVERVIEW

The Dominican Republic shares the island of Hispaniola, located between the Caribbean Sea and the Atlantic Ocean, with Haiti and occupies 74% of the island on its eastern side. The country has a land area of 48,442 km^2, and its population in 2000 was an estimated 8,396,164, making for a density of 173.3 inhabitants per km^2. There are 30 provinces plus the National District.

In May 2000 the Dominican Revolutionary Party (the opposition of the party then in office) won the presidential election by a plurality in 97% of the townships, and it also won the majority of seats in the legislature. The new government was inaugurated in August of that year. The transfer of power has been a slow process in all spheres of activity, but nevertheless some important steps have been taken. These include the enactment of the General Law on Health and Social Security; passage of fiscal and tax legislation enhancing the State's capacity to spend and collect monies; an increase in national budget allocations for education and health; creation of a social cabinet and implementation of measures for social compensation; the establishment of three new Secretariats—one for the Environment, another for Culture and Higher Education, and the third for Science and Technology—and integration as a full participant into the Caribbean and Central American subregional free trade agreements.

For decades the country's economy was based on agriculture, but mining began to take on importance in the 1970s with growing demand for the country's ferronickel, gold, and silver. At the same time, free export industry zones and tourism were developing infrastructure along the northern coast and in the far eastern part of the country. The exchange rate went from 13.6 Dominican pesos per U.S. dollar in 1996 to 16.3 in 2000. In September 1998 the country was battered by Hurricane Georges, causing losses estimated at US$ 2,024 million. The country has also been servicing a foreign debt that represented 18.6% of GDP in 2000.

Macroeconomic indicators showed overall economic growth during the period 1996–1999, with an average annual increase in GDP of 7.8%, followed by 6.8% in 2000 (Figure 1). This growth was seen especially in mining (16.4%); hotels, bars, and restaurants (16.1%); communications (14.1%); transportation (13.9%); trade (13.3%); manufacturing (12.3%); electric power and water (10.4%); agriculture (6.8%); and construction (6.4%). Thus it can be seen that the economy has developed on the bases of services and light industry, tourism, financial services, communications, construction, free zones, and trade. Annual per capita GDP has been rising since 1996, and in 1999 it was US$ 1,887 ($73,990 Dominican pesos), or 17% higher than it had been the year before. The inflation rate ranged from 4.0% in 1996 to 5.1% in 1999. The central government had a budgetary deficit in the first half of 2000, due mainly to lower tax revenue as a result of the higher cost of oil.

During 1996–1999 social spending as a proportion of public expenditure averaged 39%, and the proportion relative to GDP was 6%. On average, spending on health represented 8.9% of total public expenditure and 22.8% of all social spending. Public investments in social development (health, education, and social welfare) represented 5% of GDP. In 1999 the real minimum wage (in constant US dollars) was 20% higher than it had been in 1980. Unemployment fell from 16.7% of the economically active population (EAP) in 1996 to 13.9% in 2000, and 61% of the increase in employment during 1996–1999 corresponded to the informal sector. In 1997, the proportion of EAP working in microenterprises was 28.4%, and this figure rose to 34% in 1998. The Central Bank reported that in 1998, 43.9% of the EAP was self-employed, 33.5% was working in the private sector, 10.8% was in the public sector, 5.3% consisted of unpaid workers, and 3.4% was engaged in domestic service. Women predominated in domestic service, the public sector, and unpaid labor.

According to the National Survey of Household Expenditure and Income (ENIGH), the ratio of the highest income quintile to the lowest quintile decreased from 12.1 in 1992 to 10.4 in 1998, for a concomitant reduction in the Gini index from 0.482 to 0.456. In 1998, 25.8% of the Dominican population (21.5% of the households) was below the poverty line (monthly income of US$ 60 per capita), which represented a reduction relative to 1992 (31.7% of the households), but it still meant that 2.1 million peo-

ple were living in poverty, 3.9% of them under 10 years of age. The same survey, when repeated in 1999, showed that 45% of the poor households did not have piped water to their homes, 64.8% used latrines for the elimination of excreta, 64.2% did not have the benefit of refuse collection services, and 50% lived in homes with walls made of wood or thatched palm leaves.

In 1999, 66.5% of the poor people lived in cities, compared with 47.9% in 1992. Between 1992 and 1999 the proportion of female heads of household rose from 21.7% to 24%, while the proportion of heads of household with less than eight years of schooling declined from 77.4% to 70.9% and the proportion of poor households with seven or more members dropped from 24.2% to 13.2%. In 1999 the poverty rate was 12.5% in the National District, compared with 33.5% in rural areas and 18.6% in other urban areas. The worst living conditions in rural areas were found in households headed by agricultural workers. For homes in which the head of household had no schooling at all the poverty rate was 37.8%, compared with 2.8% for those in which the head of household had a university education. There was a positive correlation between poverty level and number of household members: households with more than six members had a poverty rate nearly four times greater than those with fewer than three members (37.5% and 10.3%, respectively).

A study on patterns of poverty revealed considerable heterogeneity between one health region and another in the interior of the country. In 1996 all the regions saw a reduction in the proportion of poor households relative to 1993. In 1996 more than 75% of the poor households were located in the Enriquillo and El Valle regions, and the latter had the highest level (47%). There were also great contrasts within the provinces that make up the regions, except in El Valle, where the proportion of poor households was higher than 80% in all the provinces. In the Yuma region the proportion of poor households ranged from 90% in the province El Seibo to 50% in La Romana. One poverty belt was identified along the Haitian border and another one ran from north to south in the central part of the country, while the situation was heterogeneous in the eastern half, where high levels of poverty in Sánchez Ramírez, Monte Plata, Samaná, and El Seibo contrasted sharply with low levels in the National District, San Pedro de Macorís, and La Romana on the Caribbean coast. In absolute numbers, the National District and Santiago have the largest concentrations of poor households. There is also heterogeneity between municipalities in all but the poorest provinces (Elías Piña, Bahoruco, and El Seibo), which are relatively homogeneous. In the city of Santo Domingo (the urban part of the National District), the neighborhoods have poverty levels ranging from 70% in Domingo Savio and La Zurza to 2% in Piantini, La Esperilla, San Gerónimo, and Los Cacicazgos.

In 1998 the literacy rate was 84.4% among adults over the age of 15 (83.9% in women and 85% in men). The gross matriculation rate (at the primary, secondary, tertiary, and baccalaureate levels) was 73.5% (74.3% for girls and 72.7% for boys), while 13.5% of the population aged 15 to 45 had a university-level education (18.4% in urban areas and 4.3% in rural areas). At the same time, 15.6% of the population over the age of 15 was illiterate, and the figure was nearly three times greater in rural areas (25.6%) than in the cities (9.9%).

Of the persons interviewed in the household survey who had sought medical and dental care, 46.8% used public services and 53.2% went to private establishments. For 32% of the respondents the cost of medical and dental care, as well as drugs, came out of the family budget, constituting an especially heavy burden for the poorer households.

According to national population projections for 2000 of 8,396,164 inhabitants, 60.2% resided in urban areas and 39.8% in rural areas. The natural growth rate declined from 20.6 per 1,000 in 1990–1995 to 18.6 per 1,000 in 1995–2000, and in the same time span the crude birth rate fell from 26.9 per 1,000 to 24.5 per 1,000. In terms of age distribution, children and youth under 15 years represented 36.4% of the population in 1990–1995, and this proportion was down to 33.5% in 1995–2000, while the group aged 60 and over increased from 6% to 6.5% in the same periods (Figure 2). Life expectancy at birth in 2000 was estimated at 70.1 years (67.8 for men and 72.4 for women). In that same year the general fertility rate was estimated at 2.7 children per woman, and net migration was calculated at –1.4.

Mortality

Figure 3 shows estimated mortality by sex and broad groups of causes for 1995–2000. The estimated crude mortality rate for 1995–2000 was 6 per 1,000 population; however, underregistration is believed to be as high as 42%, which limits the usefulness of mortality rates in understanding the evolution of specific causes and their geographic and social distribution. In 1998 the crude rate of registered mortality was 3.3 per 1,000 population. Ill-defined conditions declined from 57.4 per 100,000 population in 1995 to 31.1 per 100,000 in 1998. That same year, 83.8% of the registered deaths were physician-certified. Registered proportional mortality by age groups was 21% for the period 1994–1998, and in 1998 registered mortality by age groups was as follows: 1–4 years, 2.4%; 5–14 years, 2.1%; 15–49 years, 23.8%; 50–64 years, 16.3%; and 65 and over, 43.9%.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

In 1998, underregistration of deaths in infants under 1 year of age was estimated at 60%, and it was even higher for neonatal mortality (mainly associated with premature births), which in

1999 represented more than 80% of all infant deaths. According to the standards adopted as part of the Infant Mortality Surveillance System in 1997, all deaths in infants under 24 hours old must be reported and investigated. Estimated infant mortality declined from 47 per 1,000 live births in 1990–1995 to 40 per 1,000 in 1995–2000, with much of the reduction in postneonatal mortality. This improvement was the result of fewer deaths from communicable diseases; between 1994 and 1998 the proportion of registered infant deaths from this group of causes fell 34%. During the same period, conditions arising in the perinatal period increased 31%, external causes were up from 1.4% to 2.5%, and neoplasms remained at 2%. In 1998, conditions arising in the perinatal period accounted for 64.5% of the deaths reported to the surveillance system; communicable diseases, 13%; and acute diarrheal diseases, 9.4%.

In 1998, registered mortality in children 1 to 4 years was 2.4%. The leading cause of death was communicable diseases (40%), followed by external causes (24.6%).

According to the Secretariat for Health and Social Welfare, in 1999 the five leading causes of morbidity in infants under 1 year old were acute respiratory infections (668.8 per 1,000 infants in that age group), acute diarrheal diseases (329.3 per 1,000), parasitoses (138.5 per 1,000), anemia (66 per 1,000), and dermatitis (50.8 per 1,000). In children aged 1 to 4 years the primary causes of morbidity were acute respiratory infections (221.2 per 1,000) and acute diarrheal diseases (69.4 per 1,000).

According to the latest Demographic and Health Survey (ENDESA-96), which covered the period 1993–1996, 47.8% of all children under 5 years old had had at least one episode of acute respiratory infection in the two weeks prior to the interview. The survey also found a 10.7% prevalence of chronic malnutrition, while that of global malnutrition was 5.9% and acute malnutrition was 1.2%. Data from the National Epidemiological Surveillance System indicate that the age groups most affected by dengue in 1999 were infants under 1 year, followed by children 1 to 4 years old, with rates of 45.2 and 28 per 100,000, respectively.

Schoolchildren (5–9 years)

Registered proportional mortality in the group aged 5 to 14 years remained stable. External causes headed the list of causes of death, with an increase of 35.8% between 1986 and 1998, and the second leading cause was communicable diseases, which rose 7.8% relative to 1986.

This age group is at greatest risk for dengue, followed by the 1–4-year-old group and infants under 1 year. In 1999 the reported rate of dengue in children 5 to 9 years old was 27.3 per 100,000 children in that age group, and in adolescents 10 to 14 years old the rate was 18.4 per 100,000.

Adolescents (10–14 and 15–19 years)

According to the results of ENDESA-96, 12.5% of the male population aged 10 to 19 years had no education, 34.3% of them had one to four years of primary school, and 37% had five to eight years of primary school, while among girls of the same age 7.7% had no education, 29.4% had 1 to 4 years of primary school, and 41.4% had five to eight years of primary school. Estimated fertility in adolescents aged 15 to 19 was 87 per 1,000 in urban areas and 160 per 1,000 in rural areas. The proportion of adolescents who had initiated procreation increased from 18% in 1991 to 23% in 1996 (18.4% in urban areas and 30.6% in rural areas), and the rate was higher among those without education (58.3%) than among those with secondary (11.4%) or higher (5.2%) education. The newborn children of girls under 18 years with an interval between pregnancies of less than 24 months were four times more likely to die than were those of older mothers with longer intervals between pregnancies. It was also found that 32.7% of adolescents 15 to 19 years old had already initiated sex activity, as had 12.2% of those under the age of 15.

Adults (20–59 years)

In the year 2000, 60% of the population was between 15 to 59 years old. In 1998 registered proportional mortality was 23.8% (14.4 per 1,000), and the most frequent causes of death were external causes (36.2%) and communicable diseases (20.7%), due basically to increased registered mortality from tuberculosis and AIDS (10.8 per 100,000: 8.4 in women and 13.9 in men). In 1998 the leading causes of death in women of reproductive age were AIDS (12.3% of the deaths), transport accidents (6.2%), and cardiovascular diseases (5.8%), while in men the most frequent causes were transport accidents (17.5%), other external causes (12.4%), homicide (11.1%), and AIDS (10%).

In the group aged 50 to 64, registered mortality ranged from 16.7% in 1994 to 16.3% in 1998. Diseases of the circulatory system, the leading cause of death, declined from 41.1% in 1994 to 37.7% in 1998, while neoplasms ranked second, at 19.1% in 1994 and 18.3% in 1998.

ENDESA-96 found that the highest fertility rate was in the group aged 20 to 24 years, with 199 births per 1,000 women (170 per 1,000 in urban areas and 261 per 1,000 in rural areas), followed by the group aged 25 to 29, with 157 per 1,000 women (143 per 1,000 in urban areas and 186 per 1,000 in rural areas). The general fertility rate was 2.3 births per woman (2.8 in urban areas and 4 in rural areas). Among women of reproductive age, 85% had used contraceptives at some time (61% modern methods and 24% traditional methods). The most frequently used modern methods were the pill (43%) and female sterilization (29%).

Among the respondents to ENDESA-96, 98.5% of the pregnant women had prenatal checkups, 98% of them with a physician; 93% received prenatal care during the first six months of their pregnancy, and 88% had four or more visits. In 96% of the cases, delivery took place at a health center (75% public and 25% private). The maternal mortality rate fell from 110 per 100,000 live births in 1990 to 80 in 1999, and the leading causes of death were toxemia, hemorrhage, and sepsis.

The Elderly (60 years and older)

The population over 60 represented 6.5% of the nation's total in 2000, with a masculinity index of 97.5%. Mortality data are tabulated for the elderly starting at age 65. The leading cause of death was diseases of the circulatory system, which accounted for 52% of the deaths in this age group in both 1994 and 1998. All other causes declined from 30% in 1994 to 22% in 1998, and neoplasms were 14.9% and 15.7%, respectively. The people in this population group live for the most part in multigenerational households (fewer than 10% live alone), and 90% of them are self-sufficient. This age group has the highest illiteracy rate (41.8%) and the lowest social security coverage (less than 10%).

The Bureau for Protection of the Elderly in the Secretariat for Public Health coordinates a network of 28 residences for seniors (4 of them government institutions and 24 of them subsidized) and 2 public and 13 private centers that offer daytime elder care. Most of them operate under precarious technical and financial conditions. The initiative "For a Dignified Old Age" brings together nongovernmental organizations that work in the areas of prevention and health education, promotion, and care. In the country's hospitals there is only one complete geriatric unit, which is not readily accessible to the poor population, and three other hospitals have staff specialized in geriatric care. In 1998 a law was enacted on the protection of persons over 65 which might provide support for those not covered by social security, and its enabling regulations are currently being written.

Family Health

According to ENDESA-96, 27% of the households are headed by women (one in every three in urban areas, and one in every five in rural areas). Eight percent of the households consist of only one person; 66% have between two and five members, and 25% have six or more. Most children and adolescents under the age of 15 (56%) live with both parents, 22% live with the mother, 5% with the father, and 14% with neither the mother nor the father. Of the last-mentioned, 30% are 0–2 years old, 40% are between the ages of 3 and 5 years, 16% belong to the 6–9 years group, and 18% are between 10 and 14 years old.

Workers' Health

The Dominican Social Security Institute (IDSS) reported 6,083 work-related accidents in 2000, and of this number, 5,233 were in the National District and 77% required hospitalization. The largest number of accidents occurred in the manufacturing and construction industries. Workers with less than one year on their particular job were at greatest risk for accidents. That same year 1,504 cases of occupational disease were reported, and the most frequent causes were heavy metal poisoning (21.5%), occupational dermatoses (14.8%), arterial hypertension (14.7%), and exertion-related low back pain (12.6%).

Border Populations

The country's greatest concentration of poverty forms a belt along the Haitian border. The report on patterns of poverty considered the following measures to address unmet basic needs, quantified on the basis of data from the 1993 census: improve the material conditions of housing; reduce overcrowding; improve the availability of potable water, household wastewater disposal, and the collection of solid waste or refuse; and increase the availability of electric energy, productive jobs, schools, education subsidies, and adult education programs.

By Type of Health Problem

Natural Disasters

The country is exposed to hurricanes because of its geographical location and to earthquakes because of its proximity to a geological fault in the central mountain range. The most frequent natural disasters are floods, and the most vulnerable areas are the outskirts of the cities. The greatest damage in recent years was inflicted by Hurricane Georges, which battered much of the country in September 1998 and caused economic losses estimated at US$ 2,193 million. The rains resulted in floods and other types of damage that affected almost the entire population either directly or indirectly. Some 49,000 homes were completely destroyed and 121,714 were partially destroyed; 28% of the schools, 87 health establishments, and 6,000 hotel rooms or other tourist accommodations were affected to some degree; and more than 500,000 people were evacuated from their homes, 301,266 of them temporarily housed in 584 shelters erected for the purpose. The surveillance system registered 239 hurricane-related deaths.

Vector-borne Diseases

Malaria saw an upswing in 1998 and 1999 following Hurricane Georges. In 1997 there were 816 cases, with a slide positivity rate (SPR) of 0.18 and an annual parasite index (API) of 100 per 100,000 population. Then in 1998 the number of cases rose to 2,006, the SPR was 0.44, and the API was 240 per 100,000, and in 1999 the cases peaked at 3,589, with an SPR of 0.52 and an API of 42.7 per 100,000. By 2000 the number of cases was back down to 1,233, the SPR was 0.21, and the API was 14.7 per 100,000.

Two epidemiological patterns of malaria have been identified. The first involves endemic transmission, which occurs in 34 municipalities in 6 provinces inhabited by 10% of the country's population and has accounted for 80% of the cases in the last 10 years. The pattern in these areas is seasonal and is related to agricultural production cycles and the movement of temporary migrant workers. The other pattern is characterized by endemic outbreaks associated with the construction industry in areas experiencing rapid economic development which have attracted large numbers of migrant workers from the endemic areas of the

island. It affects the remaining 124 municipalities, where 90% of the population lives.

Since 2000 there has been increased coordination with Haiti in this area. A joint proposal for the elimination of malaria has been developed and international cooperation has been requested.

Dengue is endemic in the Dominican Republic. In 1995 steps were initiated to organize surveillance, including serologic testing and isolation of the virus, and in 1997 the active case-finding strategy was incorporated. In 1998 a total of 2,923 probable cases were identified (35.7 per 100,000 population), and 1,118 of these (38.2%) were confirmed. In 2000, 3,462 probable cases were reported and 798 of these (23%) were confirmed, including 58 cases of hemorrhagic dengue, 6 of which were fatal. Incidence peaks between the months of June and October, at the time of the rainy season, and remains low during the rest of the year. The dengue-1, -2, and -4 serotypes had been circulating simultaneously, but starting in July 2000, dengue-3 became predominant. *Aedes aegypti* infestation indexes are high in urban areas (60%). Studies conducted by the Tropical Disease Control Center found that tanks used to store water in urban homes were the primary breeding ground for the vector. Laboratory studies conducted by the Center showed the ovicidal effect of "oiled" chlorine applied to the inside walls of the water storage tanks.

In 2000 a dengue prevention strategy was launched in which the community was enlisted to apply chlorine to the inside walls of the household water tanks. The use of insecticides at the community and household level has been reserved for emergency epidemiological situations.

Lymphatic filariasis is the target of a control program launched in 1999, which includes the identification of foci through school surveys conducted at the municipal level and mass treatment of the population once a year. Foci of schistosomiasis and cutaneous leishmaniasis have been identified, but the frequency of these diseases is very low.

Diseases Preventable by Immunization

The last confirmed case of polio was registered in 1985. During 1994–1999 a total of 147 cases of flaccid paralysis were reported, all of which were determined not to be polio. In October 2000 there was an outbreak caused by a poliovirus derived from the Sabin type 1 vaccine virus. Between July 2000 and June 2001 a total of 104 cases of acute flaccid paralysis (3.4 per 100,000 population under 15 years of age) were detected: 14 of these were confirmed by isolation of the virus, 12 were classified as compatible based on clinical data, 62 were ruled out, and 16 were still pending classification. The 14 confirmed cases were from Santo Domingo (3) and the provinces of La Vega (6), Santiago (3), Monseñor Nouel (1), and Espaillat (1). The age of the patients with confirmed or compatible cases ranged from 9 months to 14 years, and the age group most affected was children 1–4 years old (0.9 per 100,000). In 5 of the 14 confirmed cases the family members did not know if the children had been vaccinated, and 4 of them were given a single dose of oral polio vaccine (OPV).

National coverage of infants under 1 year old with three doses of OPV has been about 80% over the last five years. In the municipality of Constanza, La Vega Province, where most of the cases in the outbreak occurred, coverage of children under 5 years old had been only 20% to 30%. The national vaccination days had been discontinued five years ago, but three national polio vaccination campaigns were conducted during 2000–2001, with coverage ranging from 97% to 100% (Figure 4).

A case of measles was confirmed in 1997 after two years with no reported cases, and in December 1998 an outbreak occurred in the eastern part of the country which spread to other provinces over the next two years. In 1998 there were 14 confirmed cases; in 1999 the number rose to 274; and in 2000 there were 253. Infants under 9 months were most affected in 1999 and 2000 (14.4 and 15.3 per 100,000, respectively), followed by children between 1 and 4 years old (11.3 and 7.4 per 100,000). Vaccination coverage of infants under 1 year in 1997 and 2000 ranged between 80% and 95%. In 2001 there were 112 confirmed cases of measles, but none of these occurred after the measles vaccination follow-up campaign conducted in the first half of that year.

During 1997–2000 there were 145 cases of diphtheria, with 36 deaths. In 1999 and 2000 the age group most affected was 1–4-year-olds, with incidences of 3.4 and 2.5 per 100,000, respectively. The province of Santiago accounted for 31 (89%) of the cases reported in 1999 and 39 (78%) of those reported in 2000. National coverage of infants under 1 year with three doses of DPT vaccine ranged from 74% to 80% in 1997–2000. Vaccination coverage in the province of Santiago was 67% in 1998, 56% in 1999, and 81% in 2000.

A total of 82 cases of whooping cough and 4 deaths were recorded during 1997–2000. Forty (49%) of these cases were reported in 2000, and 26 (65%) occurred in the province of Santiago, while the age group most affected was infants under 1 year (15.1 per 100,000).

There were no cases of neonatal tetanus in 1997 or 1998; one case was reported in 1999 and four in 2000, all five of them fatal. Two of the mothers did not know their vaccination history, and three had not been vaccinated. With regard to nonneonatal tetanus, 102 cases were reported in 1997 and 2000, and 26% of these were fatal. The age group most affected in 2000 was 1–4-year-olds (1.24 per 100,000), followed by adults between the ages of 30 and 34 (0.8 per 100,000). The extent of Td and TT coverage in adults is unknown.

Epidemiological surveillance of rubella was initiated in 1999. During that year there were 346 confirmed cases, and in 2000 there were 818. The age groups most affected in 1999 were children 5 to 9 years old (7.8 per 100,000) and young adults aged 20 to 24 years (6.4 per 100,000). Again in 2000 the group most affected was children between 5 to 9 years (21.4 per 100,000), and adoles-

cents 10–14 years old (13.3 per 100,000) were in second place. Vaccination against rubella has not yet been introduced.

Surveillance for *Haemophilus influenzae* type b (Hib) infections was begun at sentinel hospitals in 2000. Population-based studies of meningitis conducted in 1998 and 1999 revealed an annual incidence of 14 per 100,000 in children under 5 years old in the National District. Vaccination against Hib was initiated in 2001. No surveillance system has been established for hepatitis B. Third-dose vaccination coverage of infants under 1 year ranged from 46% in 1997 to 68% in 1999.

Intestinal Infectious Diseases

A national survey of the school population was conducted in 1999 to detect parasitoses and followed up with deparasitation campaigns. The results showed that 65.5% of the schoolchildren were infested. The protozoa most frequently found were *Blastomyces hominis* (27%), *Entamoeba coli* (26.7%), and *Giardia lamblia* (17.7%), and among the helminths the most frequent were *Trichuris trichiura* (5.5%), *Ascaris lumbricoides* (4.9%), and *Necator americanus* (2.3%). The survey was repeated in 2000 for evaluation purposes.

Chronic Communicable Diseases

The incidence of tuberculosis in 2000 was 62.4 per 100,000 population, and the rate of cases diagnosed on the basis of positive sputum smear was 34.3 per 100,000 population. Nine cases of tuberculous meningitis were reported that year in children under 5 years of age. It is estimated that more than 10% of tuberculosis patients are HIV-positive.

The National Tuberculosis Control Program has had limited capacity for case-finding and overseeing the full course of treatment. It is estimated that in 1999 only about 60% of the cases were detected and only 49.6% of these were cured; 16% of the cases were resistant to one of the first-line drugs and 4% presented multidrug resistance. The incidence that year varied considerably from one province to another, with the highest rates recorded in San Juan (143.4 per 100,000 population), La Romana (96.9), San Pedro de Macorís (85.2), and the National District (81.7).

In 1999 three services began to offer directly observed treatment, short course (DOTS), and in 2000 the strategy was extended to selected establishments in five provinces, with plans to incorporate it progressively over a period of two years in the primary care services responsible for 60% of the national population at greatest risk. The target is to detect at least 70% of the estimated sputum smear-positive cases and cure 85% of them.

Leprosy has declined considerably: in 2000 overall incidence was lower than 3 cases per 100,000 population. Execution of the control program has been the responsibility of the Dermatology Institute, which is subsidized by the Secretariat for Health. There are few localities left with incidence rates as high as 10 per 100,000, and the trend is for leprosy to disappear as a public health problem in the coming years.

Zoonoses

Rabies is the most important zoonosis. The frequency of rabies in domestic animals and the human population has tended to fluctuate in relation to the annual vaccination coverage of dogs. When coverage is low or there is a long interval between doses, the number of cases in animals tends to increase and human cases begin to appear, traceable either to mongoose foci in the wild or to the large canine population in marginal urban areas. Between 1990 and 1997 a total of 12 human cases were registered, but there were none between 1998 and 2000. In 2000, 64 cases were reported in animals: 32 in dogs, 21 in mongooses, and 11 in other species. Most of the cases in animals (59%) were in the National District, San Pedro de Macorís, and Dajabón. National canine vaccination coverage was very low in 1999 (27%) and 2000 (less than 5%). The country produces vaccines for both human and animal use.

There have been confirmed isolated cases and small outbreaks of leptospirosis. Toxoplasmosis infections have been reported in pregnant women in some areas of the country. Brucellosis infections have occurred on farms.

HIV/AIDS

Between 1995 and 1998 the annual incidence of reported cases of HIV/AIDS fell from 6.4 to 3.9 per 100,000 population, but it is believed that underregistration is high. In 2000 it was estimated that 2.4% of the population of reproductive age was HIV-positive, which means that more than 100,000 adults are living with HIV/AIDS (40% of them women). It is estimated that between 1999 and 2005 about 29,000 new people will become infected, 5,000 of them children under the age of 5 years (Figure 5).

In 1998 AIDS accounted for 3.7% of all mortality diagnosed at the national level. The epidemic, once concentrated in groups traditionally regarded as being at high risk, has now extended to the general population. That same year 80% of the reported cases were in heterosexuals. The male-female ratio is nearly 1. The cases reported between 1991 and 1998 have occurred mainly (61%) in the 25–39 years age group. Transmission via blood transfusion and intravenous drug use is very low.

Sexually Transmitted Infections

Based on information provided by women in surveys, the following annual incidence rates have been estimated for some of the sexually transmitted infections: syphilis, 300 per 100,000 population; genital ulcers, 2,300 per 100,000; genital herpes, 900 per 100,000; venereal verruca, 200 per 100,000; and chlamydiosis, 620 per 100,000, while the frequency of gonorrhea and chancroid was very low. Of the women interviewed, 26.9% said that they had had a vaginal infection in the last year and 32.9% reported that they had had a sexually transmitted disease.

Nutritional and Metabolic Diseases

The Demographic and Health Surveys of 1991 and 1996 show that the prevalence of malnutrition in children under 5 years old

has declined. In both surveys the percentages of children with –3 or more standard deviations in terms of weight for age and height for age were higher in rural areas. In 1996 the two indicators had improved in both urban and rural areas, as had the difference between them. The largest deficits were in height for age, which nevertheless fell in urban areas from 3.1 in 1991 to 1.6 in 1996, and in rural areas from 9.8 to 4.4. Reductions occurred in all regions of the country, although in 1996 differences were still observed in the interior: Region VI (provinces of San Juan de la Maguana and Elías Piña) and Region IV (Pedernales, Independencia, and Bahoruco) were the most affected (7.4 and 4.3, respectively). The height-for-age deficit in schoolchildren was about 20%.

Acute malnutrition in infants under 1 year seen at health establishments declined from 2.2% in 1994 to 0.75% in 1999; in children 1 to 4 years old it fell from 3.1% to 0.9%; and in those aged 5 to 14 years it decreased from 0.6% to 0.2%. The incidence of low birthweight has been falling steadily, and in 2000 it was 7.3%. ENDESA-96 found that 90% of newborns were breast-fed; the average duration of breast-feeding increased from 1.7 months in 1991 to 10.5 months in 1997; and the proportion of infants breast-fed during the first 6 months of life increased from 50% to 71.5%.

Micronutrient surveys conducted in the population under 15 years of age in 1993 brought to light the following deficiencies: iron, 30%; iodine, 74%; and vitamin A, 19%. School breakfast and lunch programs have been introduced since then, and the coverage of these programs has been steadily increasing. Iodization of salt is compulsory.

Diabetes is a growing problem. In 1986 it accounted for 2.1% of all diagnosed deaths (7.1 per 100,000 population), and by 1998 this proportion had risen to 4.2% (12.3 per 100,000).

Diseases of the Circulatory System

More than 10% of all consultations, more than 6% of emergency visits to the country's health establishments, and 80% of adult nonobstetric hospital admissions were for cardiovascular diseases. Survey results have set the prevalence of hypertension in adults at 24% nationwide. These diseases head the list of broad groups of causes of death, rising from 29.4% (85.3 per 100,000 population) in 1986 to 34.2% (103.56 per 100,000) in 1998. In 1998 the leading diagnosed causes of death in the general population were ischemic heart disease, which rose from 7.1% (23.1 per 100,000 population) in 1986 to 11.3% (19.8 per 100,000), and cerebrovascular diseases, which increased from 6.6% (21.8 per 100,000) in 1986 to 8.8% (15.5 per 100,000). The rate of diagnosed mortality from hypertensive disease was 3.8% (5.1 per 100,000 population) in 1998, up from 2.6% (8.6 per 100,000) in 1986. In 1998 cardiovascular diseases accounted for 37.5% of all diagnosed deaths (112.1 per 100,000 population) in men and 44.2% (95.1 per 100,000) in women. In particular, ischemic heart disease in men increased from 4.1% (13.4 per 100,000 population) in 1986 to 11.3% (19.8 per 100,000) in 1998.

Neoplasms

Between 1986 and 1998 registered mortality due to neoplasms increased from 9.4% (26.1 per 100,000 population) to 13.1% (39.7 per 100,000). The most frequent sites in patients who died in 1998 were the prostate, 1.9% (5.9 per 100,000 population); other digestive organs and the peritoneum, 1.8% (5.8 per 100,000); trachea, bronchus, and lung, 1.4% (4.4 per 100,000); stomach, 0.9% (2.8 per 100,000); breast, 0.8% (2.5 per 100,000); colon, 0.6% (1.8 per 100,000); and uterine cervix, 0.5% (1.57 per 100,000). In that same year, the most frequent sites in males were the prostate, 3.4% (11.8 per 100,000); other digestive organs and the peritoneum, 1.7% (5.9 per 100,000); and trachea, bronchus, and lung, 1.6% (5.5 per 100,000). In women the most frequent sites were other digestive organs and the peritoneum, 2.3% (5.8 per 100,000); breast, 1.9% (4.8 per 100,000); trachea, bronchus, and lung, 1.3% (3.2 per 100,000); and uterine cervix, 1.2% (3 per 100,000).

Accidents and Violence

Mortality in this overall group of causes rose from 16.5% (26.4 per 100,000 population) in 1986 to 19.5% (34.2 per 100,000) in 1998. During the same period the mortality rate from accidents increased slightly (from 23 to 24.8 per 100,000), although the proportion of deaths declined (from 68.5% to 61%). Homicides increased somewhat in terms of their rate (from 5.5 to 8.2 per 100,000) and the proportion rose slightly (from 15.5% to 16.3%), while suicides more than tripled in both respects, from a rate of 2 per 100,000 population and a proportion of 6% in 1986 to 7.5 per 100,000 and 18.5% in 1998. The rate of other unclassified external causes dropped from 9.2% to 0.3% of all external causes because of improvements in certification and coding.

According to National Police records, deaths from traffic accidents in 2000 were up 1% from 1998.

Emerging and Re-emerging Diseases

The reported incidence of meningococcal disease has been rising steadily as the surveillance system launched in 1996 has become stronger and laboratory support has improved. In 1998 the rate was 2.4 per 100,000 population, and in 1999 it was 2.3 per 100,000. Children under 9 years old were at greatest risk in 1999, and that same year 80% of close contacts or probable cases received chemoprophylaxis within 72 hours.

In the National District a specialized epidemiological surveillance system has been implemented for bacterial meningitis, and it detects about 600 probable cases a year, of which about 50% are confirmed. In children under 5 years old *Neisseria meningitidis* accounts for less than 10% of all laboratory-confirmed cases of bacterial meningitis—less than the frequency of *Haemophilus influenzae* type b (60%) or *Streptococcus pneumoniae* (30%). In the cases of meningococcal disease confirmed by isolation of *N. meningitidis*, the serogroup C has predominated (80%).

Foodborne diseases have been increasing in frequency and importance as national and international tourism has grown.

Ciguatera, from the ingestion of marine fish, is the most frequently reported food poisoning in household outbreaks. In institutional outbreaks, on the other hand, *Staphylococcus* in dairy products has been the agent most often involved, especially in schoolchildren.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

During the 1996–2000 quadrennium, health policies were tied to the process of State modernization. The principal actions were directed toward decentralization, availability of services, and drug safety, and measures were also taken to address problems related to the coverage, organization, management, and quality of services. In addition, progress was made in a set of strategies that focused mainly on primary care and democratization of the health system in order to achieve greater equity and eliminate exclusions based on purchasing power, place of residence, ethnic group, sex, age, disability, or state of health.

At the same time, the sectoral reform process was addressed in depth, with emphasis on improving organization, reducing poverty, modifying the financing system and the allocation of resources, and revising the functions and responsibilities of health system institutions. The Secretariat for Health adopted the reduction of maternal and child mortality as a high priority, introduced a new health care model, adopted a policy for the deconcentration and decentralization of management, and formulated programmatic and administrative standards, as well as norms for epidemiological surveillance.

Health Sector Reform Strategies and Programs

The Secretariat for Health and the central government have been actively promoting health sector reform, and in 1997 they established a framework for the process based on six guiding principles: universality, equity, integrality, solidarity, participation, and sustainability. That same year the Presidential Commission for Health Sector Reform was created and given the mission to promote and develop the reform process. The Secretariat for Health and the Dominican Health Insurance Institute hold seats on the commission, as do other agencies of the executive branch, health unions, the Congress of the Republic, and representatives of the community and the private sector.

The following steps were taken toward health sector reform during the period: creation of provincial and regional health directorates as a basis for the deconcentration and decentralization of Secretariat for Health management; increased deconcentration of hospital management through the implementation of enabling regulations on this subject; creation of hospital administration councils, maternal and infant mortality surveillance committees, and committees on improving the quality of care; introduction of a new health care model with emphasis on primary care but also with links to an organized service network; formulation and dissemination of more than 24 standards for health care, including epidemiological surveillance and vector elimination campaigns, especially in connection with the control of dengue and malaria; the strengthening of health promotion, not only through adoption of the healthy municipalities and communities strategy but also with emphasis on tourism and health; and formulation of a decree that standardizes the registration, management, production, distribution, marketing, prescription, and sale of drugs. These measures have given managers increased authority to make local decisions without granting them full autonomy.

The Social Security Reform Law, which separates the functions of financing, care delivery, and insurance, was drafted and approved during the period. According to this new law, health services would be financed by a contribution from the State to cover the indigent population and workers in the informal sector plus compulsory quota contributions paid by public and private employees and employers. These contributions would permit the creation of a family health insurance system in which all citizens would be covered by a compulsory universal basic plan. Care would be provided by a mixed network of providers, paid for on a capitation basis, and evaluated on the basis of improvements in health status and the accessibility, equity, sustainability, and quality of health care. The General Health Law defines the leadership role of the Secretariat for Health and establishes the structure of the National Health System, as well as the bases for its operations and for the execution of essential public health functions. Fulfillment of the provisions of these two laws will entail a reorganization of the health system—a process to be initiated in mid–2001 and completed within 10 years.

It has been proposed to update the procurement, inventory, and distribution of drugs and medical supplies, restructuring the system to better meet the needs of providers. The Essential Drugs Program (PROMESE), which currently comes under the Secretariat for Health, would become a support center for processing requests and purchasing drugs and supplies.

The Health System

The health system comprises two subsectors, the public and the private. The public subsector is made up of governmental institutions, such as the Secretariat for Health and Social Welfare and the Essential Drugs Program; various decentralized institutions that provide health services, such as the Dominican Social Security Institute, the Armed Forces and National Police Social Security Institute (ISSFAPOL), the National Population and Family Council, the National Children's Council, and the municipal governments, which provide environmental health services; as well as certain nonprofit and for-profit health insurance insti-

tutions and service providers, which are governed by the General Health Law, the Social Security Reform Law, and other legislation that relates to specific areas such as the selection and contracting of medical personnel, blood banks, organ transplants, and drugs and pharmacies, as well as various regulations (for example, those that apply to hospitals).

The Secretariat for Health provides leadership for the system and delivers health services to 75% of the population, the majority of them uninsured. Access is free, depending on availability of the services, and no prior insurance is required. Access to the services is not guaranteed, nor is the quality thereof.

The private subsector, on the other hand, concentrates for the most part on serving the upper-income strata. In recent years it has been taking steps to improve its infrastructure, introduce technology, and organize provider networks. The subsector also includes private nonprofit organizations, some of them State-subsidized. In particular, there are beneficent organizations associated with hospitals and centers that offer specialized care in the areas of cancer, rehabilitation, diabetes, cardiovascular diseases, and dermatology.

In the public hospitals patients are expected to make a voluntary contribution toward the recovery of costs, and often they are required to pay for certain supplies and complex medical treatments, even though the Essential Drugs Program provides basic drugs and supplies at no cost for hospitalized patients.

The forms of insurance include worker-employer prepayment schemes such as the IDSS (7%) and the ISSFAPOL (between 2% and 3%) and also prepaid private medical insurance, self-managed insurance, and private providers (15% for the last three types considered together). The prepaid private insurance schemes specify the benefits covered, which are likely to vary depending on the insurer; they require a high copayment; they exclude a number of conditions; and, with no strategies or programs for the management of risks, they often fail to cover catastrophic expenses. The private medical sector operates on the basis of direct fee-for-services at the time they are provided.

The country is a member of the Central American Parliament and the Caribbean forums; it has agreements with the Central American countries on harmonizing the regulation of drugs; and it belongs to various international health organizations.

Organization of Regulatory Actions

The main advances in this area include the formulation of standards, criteria, and parameters for the installation and accreditation of health establishments; regulations and manuals for laboratories and blood banks; standards for good manufacturing practices for pharmaceutical products and medical supplies; and standards governing food production and protection. There is compulsory registration of drugs and food; the food production chain is inspected regularly; and the quality of water for human consumption is monitored. However, regulatory processes are still needed in order to improve the quality of care, standardize the procedures for quality control, and improve biosafety.

The Bureau of Drugs and Pharmacies in the Secretariat for Health is responsible for the evaluation, registration, and control of drugs and for the accreditation of establishments engaged in the production and marketing of drugs, in connection with which a compendium of national standards has been compiled. Drug quality control and the regulation of inspection are the weakest points, and there is no public health surveillance of drugs that require monitoring, no requirement to report adverse reactions, and no system for the recall or restriction of drugs.

During 1996–2000 there was a major improvement and expansion of the physical infrastructure of the health services network in both the public and private subsectors, with the introduction of new and expensive technologies. However, because three different agencies were taking part in the process (the Secretariat for Health, the National Planning Office of the Presidency, and the National Office of Supervisors of Public Works), there were problems in coordinating regulation, management, and safety guarantees in the procurement and use of health technologies, as well as in the evaluation of these.

The pharmaceutical sector includes 100 private laboratories, which operate mainly with national capital and engage in the final processing of imported raw materials and the fractionation and packaging of products. Quality control is excellent. A government laboratory produces vaccines against rabies and brucellosis (strain 19), diagnostic antigens (PPD, Bang antigen), and avian vaccines.

The initiative of primary environmental care, involving the health, education, environment, and water supply and sanitation sectors, among others, is intended to strengthen environmental action at the local level through the participation of institutions and communities. Environmental health coordinators have been trained in the provincial health directorates of the Secretariat for Health.

The General Law on the Environment and Natural Resources was promulgated in 2000. The Secretariat for the Environment and Natural Resources is responsible for conserving and improving environmental quality by progressively improving the management, administration, and regulation of soil, air, and water pollution. The General Bureau of Environmental Health, under the Secretariat for Health, participates in the management of environmental health risks through the sanitary control of air, water, and soil pollution.

Organization of Public Health Care Services

Health Promotion Services

In 2000 the General Law on Youth and the Law on Tobacco Use were enacted, and the Law on Traffic was amended to make seat

belt use compulsory and regulate the number of passengers in motor vehicles. During 1995–2001 the Bureau of Health Promotion and Education and the Department of Healthy Municipalities were created within the Secretariat for Health, together with an Interinstitutional Committee in Support of the Healthy Municipalities Strategy. In addition, the Schools for Human Development initiative was launched under the Secretariat for Education, as were other Healthy Municipalities activities in various parts of the country, in some cases with the support of universities. A graduate-level university program was developed in the field of health communication, and the Circle of Health Journalists was strengthened.

The Secretariat for Health created the Comprehensive Adolescent Care Program, which in 2000 offered 37 specialized services and enlisted 5,000 adolescent "multipliers," who will multiply the diffusion of the program's ideas among their peers and the community. This program works to prevent teen pregnancies, sexually transmitted infections and AIDS, and drug use. The Secretariat for Education created the program Family and Sex Education, the content of which is being gradually incorporated into primary and secondary school curricula.

Disease Prevention and Control Programs

The greatest strides in disease prevention and control have been seen in connection with the following programs: maternal and child care, including Integrated Management of Prevalent Childhood Illness (IMCI) and the Expanded Program on Immunization (EPI); vector-borne diseases; zoonoses; tuberculosis; leprosy; AIDS/STI; and, to a lesser extent, mental health; oral health; and control of noncommunicable diseases.

National standards have been revised or developed for most of the programs, as well as for epidemiological surveillance and surveillance of high-risk newborns and infant and maternal mortality. Training in application of the IMCI strategy has been given to health service workers and personnel from more than 30 nongovernmental organizations that participate in actions at the community level related to this strategy. More than 100 community organizations have taken part in activities aimed at reducing infant and maternal mortality. The first phase of this initiative was executed during 1997–1999 and the second phase covers the period 2000–2001.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

The Bureau of Epidemiology has normative responsibility for the surveillance system, which is decentralized and has an epidemiology unit in each of the provincial health directorates and health areas, in each hospital, and in each national program. The central level includes units on surveillance, health situation analysis, and information support. Creation of the National Epidemiology Institute was recently approved. Also, standards have been adopted for the national level itself and have been adopted by the Secretariat for Health, the IDSS, and the Armed Forces and National Police Social Security Institute.

The epidemiological surveillance system has two components, one general and the other specialized. The first corresponds to the early warning subsystems (compulsory reporting, coverage of ports and airports, word-of-mouth reports), microbiological surveillance, and sentinel surveillance. The second component consists of the surveillance units in the prevention and control programs. The Health Situation Analysis Unit is responsible for the surveillance of infant and maternal deaths and the analysis of vital statistics, and it also produces analytical reports from time to time.

Potable Water, Excreta Disposal, and Sewerage Services

Potable water and sanitation services are provided by the National Potable Water and Sewerage Institute (INAPA) and regional corporations. In addition, the program for the decentralization of rural aqueducts initiated by INAPA in 1997 has created more than 20 rural water supply associations which are responsible for the management of community services. The IDB project Consolidation of Water and Sanitation Reform is aimed at making INAPA and the regional corporations commercially viable.

According to a comprehensive evaluation of water and sanitation services conducted in 2000, 71.4% of the population had access to potable water through a supply system within 500 m of the home in 1998, with an average of 83% in urban areas and 50.4% in rural areas. At the national level, 89.5% of the population was covered with some form of excreta disposal (20.1% by sewerage systems)—78.7% in rural areas and 95.6% in urban areas. However, for only 48% of the population was wastewater treated prior to being discharged.

It is estimated that urban cleanup benefits only 40% of the population in cities, and the quality of the service is rated as inadequate to very poor.

Pollution Prevention and Control

The Bureau of Health and Environment in the Secretariat for Health has responsibility for education, prevention, and training programs on the subject of air quality, and it also has a division that responds to complaints.

Organization of Individual Health Care Services

The public subsector, administered by the Secretariat for Health, has four levels of management: the central level, which is responsible for standards and policies; the regional (with nine health regions), which supervises and supports provincial administration; the provincial, with 30 provincial health directorates that oversee the delivery of care through provincial health networks; and the local, consisting of hospitals and health care centers that directly serve users. The latter establishments are connected to provincial health care networks which receive technical and administrative support from the central and regional levels.

The health services are organized into three levels of care based on complexity: primary care essentially consists of ambulatory and community care; secondary care is of general or intermediate complexity and is offered by municipal or area hospitals that give specialized basic care; and tertiary care is of advanced complexity, provided by regional general hospitals and national referral and specialized hospitals.

At the primary level there are about 1,099 outpatient establishments, 474 of them located in rural areas. They have the capacity to treat basic health problems, and their services are provided by general physicians, nursing auxiliaries, community health promoters, and technicians trained in environmental health and vector control. A new model is being developed to strengthen primary health care by promoting the redistribution of resources and establishing a network of primary health care units, one for every 500 to 700 families in a given area, composed of a general physician, a nursing auxiliary, a supervisor of health promoters, and voluntary promoters. These units are responsible for 25 activities which make up the basic set of health services, including prevention, promotion, disease and emergency care, vector control, and community health education. For each of these activities there is a community health committee. As of 2000, 16 rural provinces were applying this model and benefiting 80,000 low-income families.

The secondary level consists of 126 establishments, each with 40–50 beds and at least an operating room, radiology equipment, a laboratory, a pharmacy, and ambulance service. They cover populations ranging from 20,000 to 50,000. The tertiary level is made up of 42 general and specialized hospitals, including those administered by beneficent organizations.

In all, the public network has a total of 1,267 establishments. The IDSS has 18 tertiary-level hospitals, 3 of which are regional and specialized; 25 polyclinics at the secondary level; and 211 outpatient units. The Armed Forces and National Police Social Security Institute has two complex general hospitals and 57 dispensaries located in places where there are concentrations of its population.

Mental health services were expanded during the period. At least 10 hospitals have set aside beds for mental health patients, and five crisis intervention units, five community centers, and one daytime care hospital were established. Mental health was incorporated into the primary care program, and drugs for the treatment of mental illnesses were included in the basic list. However, people with mental health problems continue to encounter access barriers and difficulties in connection with reinsertion into the workforce.

Care is provided for the disabled in more than 310 public and private establishments and health care centers. Nine public hospitals, most of them located in Santo Domingo, offer physical therapy and rehabilitation services. The Dominican Rehabilitation Association has the most far-reaching organization, with facilities in the provinces, and offers the most comprehensive, advanced-level services. Legislation has been enacted to protect the disabled and promote their acceptance in society. An estimated 30,000 persons are candidates for cataract removal, but availability of this surgery to the public is very limited.

The country has many laboratories; they offer complex services; and quality has been improving steadily. There has also been improvement in the quality, safety, and availability of blood products, as well as the regulation and supervision of blood banks. Despite these advances, however, of the 60,885 units of blood collected in 2000, only 20% were donated voluntarily. All donations are screened for HIV (incidence: 0.42%), hepatitis B/HBsAg (incidence: 1.2%), hepatitis C/HCV (incidence: 0.64%), syphilis (incidence: 0.86%), and human T-cell lymphotropic virus types I and II (HTLV-I/II).

The State offers free oral health services, especially preventive and low-complexity, low-cost care (such as extractions), with emphasis on the maternal and child population. Other types of care are also provided by the private sector, but coverage is low. An executive decree approved in January 2001 calls for the fluoridation of all salt for human consumption.

The following health services are offered throughout the network: prenatal, delivery, and postpartum care; family planning; screening and treatment for breast and uterine cancer; reproductive health counseling; and treatment of sexually transmitted infections and AIDS.

Although both the public and the private subsectors have specialized hospitals, there are problems with their organization and the quality of care. Table 1 summarizes the installed capacity of institutions in the public and private subsectors.

Health Supplies

The country has 51 hospital pharmacies, 1,937 community pharmacies, 740 popular dispensaries that sell drugs at discounted prices, 100 national laboratories that produce drugs, and 682 warehouses for storage and distribution. In 2000 the government spent US$ 14.28 million on supplying drugs to hospitals, rural clinics, and popular dispensaries. In 2000 the total amount spent on drugs was US$ 246,558,000 at wholesale prices to pharmacies. The national pharmaceutical industry contributed 30% of the products and 70% were imported. Pricing is based on free market forces with oversight by the State.

The most recent basic list of essential drugs, issued in February 1997, contains 222 drugs and 392 pharmaceutical forms. The public sector's drug purchasing system is centralized and is carried out through the Essential Drugs Program.

A total of 14,182 registered products are on the market, and 1,760 of these (12.4%) are generic drugs. There is a fee of approximately US$ 416 to register a pharmaceutical product, and the license is good for five years. The importation, production, and marketing of narcotics and psychotropic substances falls under the responsibility of the National Drug Control Bureau.

TABLE 1. Selected resources available in the health sector, Dominican Republic, 1999.

Sector	Type of resource			
	Beds per 1,000 population	Clinical laboratories (no.)	Blood banks (no.)	Radiodiagnostic machines (no.)
Public	1.6	179	32	110
Private	3.9	1,800	35	21
Total	2.0	1,979	67	131

Source: Secretariat for Health and Social Welfare, Dominican Republic.

National production of drugs, reagents, and equipment is very basic, and most of these supplies are imported.

Human Resources

In 2000 the country had 15,679 physicians (19 per 10,000 population), 2,603 professional nurses (3 per 10,000), 12,749 nursing auxiliaries or technicians (15 per 10,000), 7,000 dentists (8 per 10,000), and 3,346 trained pharmacists. In the Secretariat for Health there were increases in several of the professional categories between 1994 and 2000: the number of physicians went from 5,626 to 8,993; dentists, from 376 to 1,074; nurses and auxiliaries, from 8,600 to 10,969; and pharmacists, from 372 to 496. There is no information on the distribution of human resources by subsector, but in the two main institutions of the public subsector (the Secretariat for Health and the IDSS) the total number of posts in 1999 came to 59,194 for all professional, technical, and administrative categories.

The Higher Education Council recognizes institutions that prepare health professionals, including nine schools of medicine, six schools that train professional nurses and technicians, four that offer career programs in bioanalysis, seven for dentists, and four for pharmacists. In the last five years the State university system graduated 58.4% of the health professionals, an average of 502 a year. The numbers are on the rise, even in nursing, although the figure for this discipline is very low (70 a year) relative to the country's needs.

In terms of advanced education, there are 53 medical residency programs (38% of them university-accredited) in 20 specialties and 6 subspecialties at 15 teaching hospitals. Four universities offer five programs in public health, and three award a master's degree in this field. In addition, there are graduate-level programs in occupational health, health management, maternal and child health, adolescent health, health communications, and bioethics.

Enrollment is down in training programs for health technicians because of the shortage of jobs, despite the deficit, and programs for blood bank technicians, technicians in prostheses and orthotics, and physical therapy technicians have been eliminated.

Health Research and Technology

There is no science and technology council to facilitate policy making and the coordination of national strategies for research development. Most of the research in recent years has been carried out by the Maternal and Child Health Research Center, the Infectious Disease Service in Robert Reíd Cabral Children's Hospital, groups working under the aegis of the University of Santo Domingo, the Center for Tropical Disease Control, and the General Bureau of Epidemiology. In general, the research tends to be applied.

The number of educational and health sector institutions that offer access to their technical literature through the Internet is growing exponentially, and use of the methodologies developed by the Latin American and Caribbean Center on Health Sciences Information (BIREME) is being promoted. Also, monographs on health topics produced in the country have been incorporated into the Latin American and Caribbean Literature on Health Sciences (LILACS) database.

The Dominican Association of Biomedical Journal Editors has grown and is taking part in creation of the Dominican Republic Virtual Health Library, as well as in the Scientific Electronic Library Online (SciELO project). Fewer than half of the eight libraries in the Hospital Library Network have access to the Internet.

Health Sector Expenditure and Financing

Total per capita expenditure on health in 1996 was US$ 111 (6.5% of GDP), of which US$ 28 was spent in the public subsector and US$ 83 in the private subsector. Public sector spending amounted to 1.5% of GDP. Since no significant structural changes took place in 1997–2000, it is estimated that the figure remained stable during the period. However, the situation can be expected to change substantially once the new legal framework is implemented.

The private sector predominates in financing of the health system: 55% of the funds come directly from households, 75% of which do not participate in any insurance scheme or prepayment mechanism. According to a study of 1997–1998 national health

accounts conducted by the Central Bank and PAHO, both public and private spending were concentrated in urban areas, and mainly in Santo Domingo, and the monies were spent primarily for specialized and hospital care. Direct spending by households was distributed as follows: outpatient services, 59% (61% of this amount for drugs); hospitalization, 18%; oral care, 13%; and various preventive expenditures, 10%.

An analysis of provider spending by budgetary category showed that the public sector spent the largest portion on salaries (64.5%) and that the focus was more on curative care and administration and less on maintenance, resulting in periodical purchases of equipment. The Secretariat for Health spends 43% of the public expenditure, followed by PROMESE and IDSS. In 1997 budgetary execution of the Secretariat for Health was about 60%, and in 1999 it was 80%. The decentralized subnational units in the provinces and municipalities spend almost nothing on health services, but they do pay for environmental sanitation and the handling of solid waste.

The study of national health accounts showed that for the poorest quintile the government contributed 36% of total per capita spending, compared with 19% for the most affluent quintile. However, the larger proportional contribution to the population most in need has not substantially altered its access to care or its living conditions. Nonprofit organizations spend about US$ 67 million (7.7% of total expenditure), and their resources come from the central government, international financing, and household spending. The differences in financing, access, utilization, and expenditure are most marked in terms of place of residence. Two national studies that have examined this situation—namely, the Poverty Map of ONAPLAN and the Central Bank's Family Spending Survey—show that the populations most affected are those living near the Haitian border, in the southern part of the country, and in the Santo Domingo and Santiago de los Caballeros urban poverty belts.

External Technical Cooperation and Financing

International cooperation continues to be very active in the country. The multilateral agencies include PAHO, UNICEF, UNDP, UNFPA, FAO, WFP, and UNAIDS. In addition, the European Union initiated a four-year project in 2000 that has a budget of EU$ 13.5 million. In terms of bilateral aid, USAID has committed US$ 25 million for 2000–2004, and JICA has provided support in the form of equipment and professional training. In addition, various nongovernmental organizations, including CARE, CARITAS, Global Links, Medicus Mundi (Spain), Plan International, and Visión Mundial (Venezuela), have collaborated on projects at the local level.

Two very significant projects have been formulated and approved that will help to advance the reform process: the World Bank has set aside US$ 30 million to support deconcentrated and decentralized management, and the IDB has made US$ 75 million available to the Secretariat for Health for the purpose of institutional strengthening.

FIGURE 1. Gross domestic product, annual growth (%), Dominican Republic, 1991–2000.

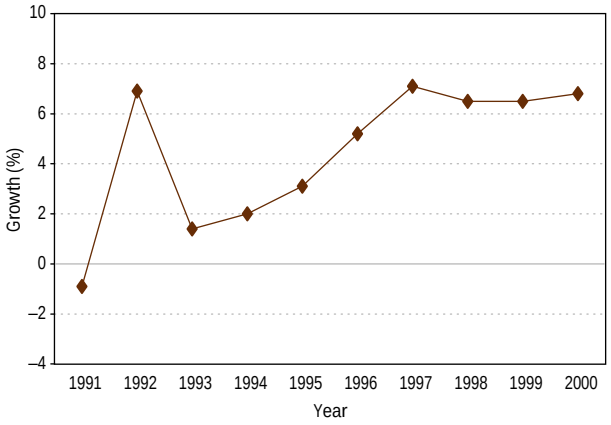


FIGURE 2. Population structure, by age and sex, Dominican Republic, 2000.

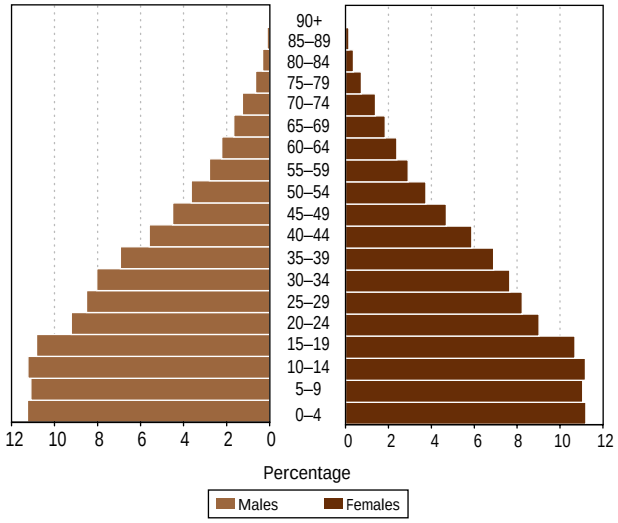


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Dominican Republic, 1995–2000.

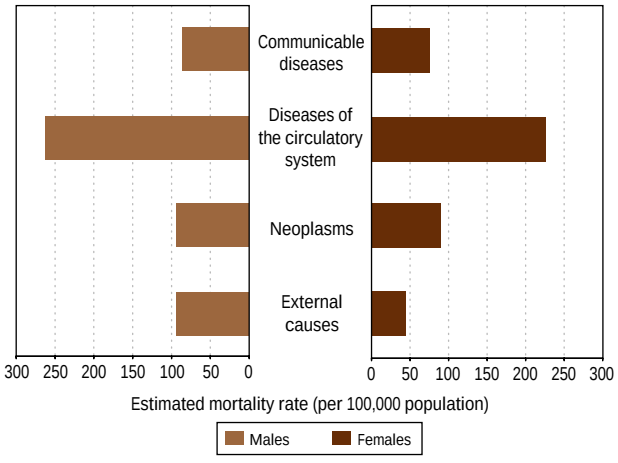


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage among pregnant women, Dominican Republic, 2000.

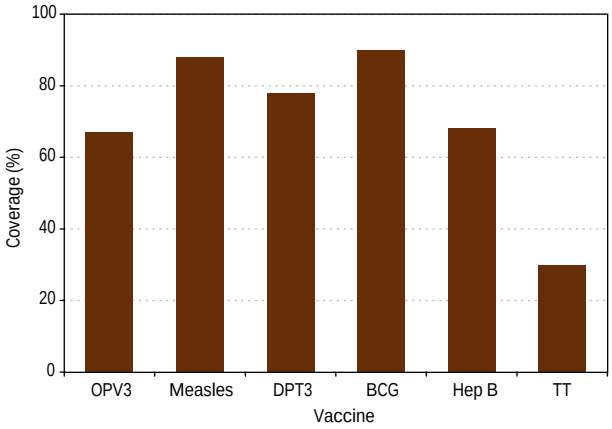
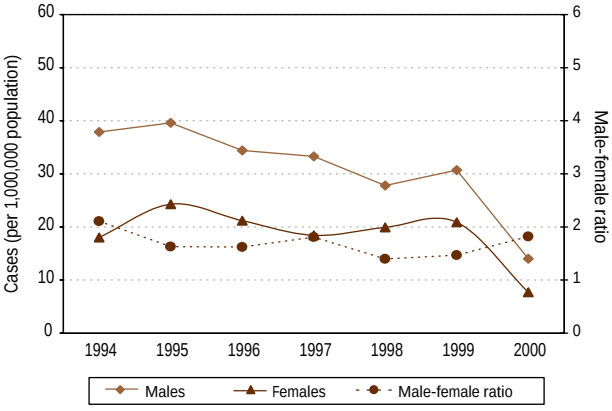


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Dominican Republic, 1994–2000.



ECUADOR

OVERVIEW

Ecuador is a democratic, multicultural, and multiethnic country with marked social and economic differences between its four geographical regions: coastal, mountain, Amazon, and island (Galápagos). Situated in northwestern South America, the country is bordered by Colombia and Peru and has a surface area of 256,370 km^2. In 2000, the population was estimated at 12,645,495 inhabitants, with a density of 49.3 inhabitants per km^2. The Republic is divided into 22 provinces, 215 cantons, and 1,149 parishes (361 urban and 788 rural) and the indigenous territorial and Afro-Ecuadorian circuits established by law. The two largest poles of regional development are Quito, the capital, with 1,559,844 inhabitants and Guayaquil, the main port, with 2,079,432 inhabitants, which together make up 46% of the urban population; 63% of the country's population lives in urban areas. The 16 provinces have less than 500,000 inhabitants, and four of these have under 100,000 (three Amazon provinces and the Galápagos Islands).

Between 1997 and 2000 the economic, political, and social crisis, stemming from a dependent model and adjustment measures, which failed to achieve the desired effect, deteriorated. Coupled with this was the economic impact of the El Niño phenomenon in 1997 and 1998, followed in 1999 by a sharp drop in the price of oil which finances almost 40% of the national budget.

The rate of growth of the GDP fell from 3.4% in 1997 to –7.3% in 1999, recovering to 2.0% in 2000 (Figure 1). The public debt, 81% foreign and 19% domestic, was US$ 1,110 per capita, representing 100% of GDP in 1999, by comparison with US$ 1,050 and 60% of GDP in 1997. The debt followed a rising trend in the 1990s; this, combined with 61% inflation in 1999, caused a severe recession in all areas and a decline in the population's real income, resulting from the freezing of bank deposits, deterioration in the financial sector, and the placement of a moratorium on foreign debt. The price of the U.S. dollar rose from 3,700 sucres in 1997 to 29,731 in January 2000. In an attempt to control hyperinflation, the Ecuadorian monetary system was dollarized, at a parity of 25,000 sucres per dollar, and in September 2000 the sucre was formally eliminated. Various factors were responsible for the gradual stabilization of the economy during 2000: the dollarization process, the agreement reached with the International Monetary Fund, the increase in foreign exchange revenues from oil, and remittances by emigrants, as well as the laws passed to modernize the State. However, by December 2000, inflation had reached 96%, as a result of the tendency for the price of local products to rise on a par with imports, though this was not the case with wages and salaries.

Since 1997 political instability has become more accentuated, with three presidential changes in four years. Nevertheless, the Peace Agreement between Ecuador and Peru was finally signed and augurs new development potential for both border countries. Indigenous and other social organizations are seeking new solutions to the extremely impoverished living conditions of the country's socially excluded sectors, as well as an increased voice in national decision-making. Congress is developing economic modernization, decentralization, and privatization plans formulated by the National Council for Modernization, and is promoting tax and social security reforms which are key to economic stability and the dollarization process.

The proportion of the government's total budget (excluding debt service) earmarked for social sector expenditure declined gradually, from 36% in 1996 to 17% in 2000. Per capita health expenditure dropped from US$ 52 to US$ 26, and spending on education from US$ 17 to US$ 7 over the same period. Ecuador's classification on the UNDP Human Development Index slid from 0.78 in 1995 to 0.73 in 2000.

In 1990, the living conditions of 50% of the population were poor. In 1999 the proportion increased to 69% nationwide and 88% in rural areas. Urban poverty went up from 30% in 1995 to 55% in 1999. The inequity gap is continually widening: in 1995, 10% of the wealthiest segment of the population earned 41% of the income, while the poorest 10% earned only 1.0%; by 1998, income for the first group increased to 43% and among the poorest dropped to 0.6%; so, the Gini coefficient of consumption rose from 0.43 in 1995 to 0.48 in 1999, and the coefficient corresponding to income increased from 0.54 to 0.59 over the same period.

The percentage of Ecuadorians who survive on two dollars or less a day increased from 38% in 1998 to 44% in 1999. In June 1999 the family food basket cost US$ 273 a month, more than 30% higher than the total monthly income of a poor family and insufficient to cover its minimum nutritional requirements.

Fifteen percent of the households of the poorest tenth of the population live in overcrowded conditions, with more than three people to a bedroom, while only 3.8% of the richest tenth live in similar conditions. For the poorest tenth, 26% of homes are connected to piped water and 12% have a toilet and sewerage, versus 84% and 77% of the richest tenth, respectively. According to the Ministry of Urban Development and Housing (MIDUVI) there are structural difficulties that make it hard to meet the growing demand for housing due to migratory flows from the countryside to the cities; the national housing deficit was estimated at more than one million housing units for the year 2000.

Migration flows from areas of extreme poverty to the poles of development continued, causing uncontrolled urban growth. Between 1990 and 1997 the cities accounted for 93% of the population growth rate. At the same time, a considerable number of Ecuadorians emigrated, principally to the United States of America and Spain. It is hard to know exactly how many became illegal immigrants, but the rate certainly increased towards the end of the nineties. National Migration Department figures showed that out of the 386,440 people who emigrated in 1999, 2,800 were physicians (10% of the total membership of the Ecuadorian Medical Federation), the majority of them young people who went to Chile. An estimated 200,000 of those who leave Ecuador each year never return to their homeland.

Unemployment in urban areas went up from 9.2% in March 1998 to 17% in July 1999; but there was a reverse trend in 2000 and urban employment dropped to 9.6% in December, partly due to the number of jobless people who left to seek work abroad. Informal employment, which deprives workers of any social benefits they might otherwise have been entitled to, increased from 57% of the economically active population (EAP) in 1999 to 66% in 2000; most of the underemployed work as itinerant service providers, peddlers, construction laborers, craftsmen, and street food vendors. In 1992, 35% of the workers in the informal sector were women. The highest unemployment rates are among young people between 18 and 29 years of age. More women than men are unemployed, and 16% of the total number of girls and boys between 10 and 17 are either working or looking for work.

Approximately 50% of the population lives in the coastal region; 45%, in the mountain region; 4.7%, in the Amazon region; 0.1%, in the island region; and 0.7% in zones that are not geopolitically delimited due to interprovincial disputes. Annual population growth between 1995 and 2000 was estimated at 1.9%. Ecuador has a predominantly young population; in 2000 those under 15 years of age accounted for 34% of the population (Figure 2), which was less than in 1990 (39%), and adolescents accounted for nearly 22% (1,378,904 from 10 to 14 years and 1,334,131 from 15 to 19). The number of people aged 65 and over increased from 4.1% in 1990 to 4.7% in 2000.

The indigenous peoples belong to nine different nationalities in the Amazon region, one in the mountain region and seven in the coastal region, four of which are in the process of obtaining recognition. Because various criteria are used to determine the different nationalities and peoples to which the indigenous population belong, the figure ranges from 25% to 40%, according to the Confederation of Indigenous Nationalities of Ecuador. Afro-Ecuadorians were estimated at 3% in rural areas in 1995 (Development Council of the Nationalities and Peoples of Ecuador) and 15% of the total population; the National Statistics and Census Institute estimates that they account for 6%. The indigenous and black populations in the rural zones are concentrated in the 288 parishes with the highest poverty rates; 83% of the rural indigenous population and 81% of the black population are poor.

Taking the population as a whole, 8% of men and 12% of women are illiterate. Only 53% of the indigenous population has access to primary education, 15% to secondary education, less than 1% to higher education, and 30% are illiterate.

The global fertility rate fell from 4.0 children per woman over the 1985 to 1990 period to 3.3 between 1994 and 1999; according to the Demographic and Maternal and Child Health Survey the drop is connected with the increase in schooling among women, their growing inclusion in the labor market, and migration from rural to urban areas, where there is better access to health services. However, the overall rate conceals significant variations by area, ethnic group, and level of schooling. It is higher among women in rural areas (4.4 children per woman, although in the Morona Santiago rural area, in the Amazon region, it was as high as 8.1) than in urban areas (2.6), and among women with no schooling (5.5) than women who pursued their studies to higher education level (2.0). From 1995 to 1999 the fertility rate among indigenous and black people remained high; in provinces with predominantly indigenous populations, for instance in mountain regions such as Cotopaxi and Bolívar, the rate was 4.7 children per woman, and in coastal provinces with black populations, such as Esmeraldas, women averaged 4.6 children each.

The birth rate, corrected for births that were registered late, fell from 26 per 1,000 population in 1990 to 23 in 1998, a drop of 12%. For the 1995–2000 period, life expectancy was 69.9 years for the general population (67.3 years for men and 73.5 years for women), which is up one year by comparison with 1990–1995 values.

Mortality and Morbidity

The last available estimate for 1995 puts underregistration in general mortality at 25%, and higher among men (26%) than among women (23%). Underreporting of maternal mortality between 1988 and 1994 was estimated at 26%, and underregistration of infant mortality over the period 1994–1999 was 33%.

General mortality in 1999 was estimated at 5.9 per 1,000 population (6.8 among men and 4.9 among women). Deaths for which a medical certificate was issued accounted for 87% of the deaths recorded in 1999, a 2.3 point rise with respect to 1995; the higher value was in the coastal region (89%) but lower in the Amazon region (63%). These rates are directly proportionate to the distribution of medical staff. Deaths due to ill-defined signs and symptoms increased slightly: 14% of the total in 1999 compared with 13% in 1995.

Diseases of the circulatory system were the leading cause of mortality in the Ecuadorian population. Between 1995 and 1999 the mortality rate due to these cases, adjusted for underregistration and ill-defined signs and symptoms, rose by 31.5% (from 117.7 to 154.8 per 100,000 population). By contrast, the mortality rate from communicable diseases fell by 26.3% (from 108.1 to 79.7 per 100,000 population) over the same period and went down from second place as the cause of death in 1995, to fourth place in 1999.

In 1999, the risk that Ecuadorian men ran of dying from some external cause was 4.4 times higher than for women (132.4 per 100,000 males, 30.3 per 100,000 females). Less marked gender differences in terms of the risk of dying from communicable diseases (33.6% higher in men; 91.1 per 100,000 males, 68.2 per 100,000 females) and cardiovascular diseases (16.2% higher in men; 166.1 per 100,000 males, 143.0 per 100,000 females) are observed (Figure 3). Mortality rates from diseases of the circulatory system are higher among people aged 50 and over, whereas communicable diseases mainly affect children and the elderly.

In the epidemiological profile, infectious and chronic diseases coexist alongside violence, traffic accidents, and mental health problems. Acute respiratory diseases were the most frequent reason for consultation for reportable diseases in 2000, totaling 697,524 cases, practically three times more than for diarrheal diseases (225,734 cases). The main health risk factors are connected with overcrowded dwellings, poor water quality, environmental pollution, nutritional deficiencies, and the increase in general and family violence, as well as the lack of citizen safety.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Infant mortality was estimated at 30 per 1,000 live births between 1994 and 1999, which is a 25% decrease from the value estimated for 1989–1994 (44 per 1,000); the variation between urban and rural areas is 22 per 1,000 to 40 per 1,000, respectively, and between the mountain and coastal regions, 39 and 28. The inequities between less and more heavily populated provinces are reflected by the Gini coefficient of 0.22 for infant mortality (Figure 4). The neonatal component in the national rate is equivalent to 63% of infant mortality. Among children of mothers who studied to a higher education level, a segment where the rate of infant mortality is low, this component is 82%, whereas for uneducated mothers where infant mortality rates are high, the neonatal component is 45%; postneonatal deaths are mainly due to infectious or nutritional diseases (Figure 5).

The mortality rate recorded in 1999 was corrected for underregistration and ill-defined causes. The leading causes of infant mortality for large groups were conditions that began during the perinatal period, which were responsible for 49% of the corrected number of deaths, and communicable diseases (26%).

The mortality rate in the group aged 1 to 4 was 354 per 100,000 in 1999: 382 for males and 325 for females; 47% of the deaths corresponded to the communicable diseases group, with a significant component of acute respiratory infections (21%) and infectious intestinal diseases (16%); 8.3% of deaths were the result of nutritional deficiencies and anemias. According to the 1998 Survey on Living Conditions, respiratory infections in the month prior to the interview affected 45% of children under 5, and acute diarrheal diseases, 25%. According to studies based on 1998 data, chronic malnutrition (–2 SD) was responsible for 26% of deaths and global (weight-for-age) malnutrition for 14%.

The main care networks for children under 5 prior to their entry into the formal education system are the National Child and Family Institute, Operation Child Rescue under the Ministry of Social Welfare, and the National Preschool Education Program under the Ministry of Education. The networks are focusing on early stimulation and psychological, motor, and social stimulation.

Schoolchildren (5–9 years)

In 1999, the mortality rate among children between 5 and 9 years of age was 92.1 per 100,000. When causes are broken down into broad groups, external causes are the most frequent, accounting for 31% of the 1,312 estimated deaths; infectious diseases represent 24%; malignant neoplasms, 11%; and diseases of the circulatory system, 5.9%. Social exclusion and inequities were evident in the school-age population: 12% of children and adolescents between 8 and 17 years of age work and do not study, and a further 5.3% both work and study.

Adolescents (10–14 and 15–19 years)

In 1999, mortality in the 10–14 year old age group was 688 per 100,000 in males and 532 in females; among older adolescents it was 1,032 and 635 respectively. External causes were the leading cause of death, estimated at 340 per 100,000 in the subgroup aged 10–14, and 634 per 100,000 adolescents between 15 and 19 years of age; there was a clear predominance of deaths from these causes among the male population: 613 per 100,000, mainly due to traffic accidents, and 224 per 100,000 in women, who are more likely than men to commit suicide.

According to the Demographic and Maternal and Child Health Survey of 1999, 25% of women between 15 and 19 were sexually

active. Their first sexual experience took place on average at 16.6 years of age, which is inversely related to the level of schooling. Contraceptives were only used by 11%. An estimated 20% have been pregnant once and three out of every four pregnancies ended in abortion; the birth rate was 91 per 1,000 adolescents in this group and represented 14% of total fertility. Of all the deliveries attended in the country, 18% of the women were under 20 years of age and between 19% and 24% of deliveries in state hospitals were performed on women under age 19. The main causes of hospital deaths were complications during pregnancy, delivery, or the puerperium. In 1998, five adolescents between 10 and 14 years of age died from obstetric causes and 52 in the 15–19 age group died from those causes.

Sexually transmitted infections and AIDS affect the country's young population, although the true extent is unknown; 9% of seropositives and 2.6% of AIDS cases in 2000 occurred in this age group. Another major problem in adolescence is drugs; prevalence in the use of illegal drugs (narcotics) in 2000 was 6% nationwide, and prevalence in the use of legal drugs (tobacco and alcohol) in the 1990s was 14%, similar to the prevalence at the end of the eighties (15%), without major differences by sex. Accordingly, 43% of adolescents have smoked at least once in their life and 29% have consumed some kind of alcoholic beverage; 10% of adolescents have been intoxicated before the age of 10, and 30% before the age of 15, without there being any significant differences by sex.

Adults (20–59 years)

External causes constituted the leading cause of death in adults from 20 to 59 years of age. The number of deaths totaled 5,486, equivalent to 35% for that group and 25% of all adult deaths. Among adult men, 47% of total deaths were due to external causes. Neoplasms were the main cause of death in the 50 to 59 age group, totaling 1,449 deaths, equivalent to 43% of all adult deaths from that cause. Neoplasms were more frequent in women (60%); 119 women died from malignant tumors of the stomach, 106 from breast cancer, and 192 from cervical cancer. Diabetes mellitus was more frequent in women between 50 and 59 than in younger women; 549 women died from diabetes mellitus, which accounted for 59% of all adult deaths from this cause. Ischemic heart disease was five times higher in the 50 to 59 age group than in younger adults (55 per 100,000 population), and more frequent among men (75% of the total). The rate of cerebrovascular disease among adults aged 50 to 59 was 67 per 100,000 population, five times higher than for the 20-to-49 year-old age group.

The five leading causes of death among adult women were neoplasms in general, communicable diseases, external causes, cerebrovascular diseases, and diabetes mellitus; among men they were external causes, communicable diseases, neoplasms, cirrhosis, and ischemic heart disease.

Contraceptive usage by adults aged 20 to 59 has risen significantly since the early nineties, reaching 66% by 1999, predominantly women; the increase was quite considerable in rural areas and among uneducated women. The most popular method was female sterilization (23%), followed by the pill (11%) and the IUD (10%), although there was an upturn in the use of natural methods such as the rhythm method (7.7%) and *coitus interruptus* (6.3%); there was a 3.7% prevalence of the use of injectable contraceptives, nearly seven times higher than in 1994. Use of condoms accounted for only 2.7% of the contraceptive methods practiced, despite the fact that it is the one most recommended to prevent sexually transmitted diseases and AIDS.

In 1999, 81% of pregnant women had at least one prenatal check-up; public institutions provided 68% of these check-ups; with the Ministry of Public Health accounting for 56% of them. Prenatal control coverage is higher in urban sectors (89%) than in rural sectors (72%), averaging 2.6 check-ups per pregnant woman; only 43% of women who had prenatal care had five check-ups, which is the minimum during pregnancy, and 23% had nine or more. Institutional coverage for deliveries was 69%, significantly higher in urban areas (86%) than in rural areas (49%); 29% of deliveries were attended by midwives, relatives, or the pregnant woman herself, and the situation was more critical in rural areas of the indigenous sectors. Although just 36% of all women who gave birth had check-ups during the puerperium, averaging 1.4 check-ups per woman nationwide, only 20% of women in rural areas had a check-up after giving birth.

The Elderly (60 years and older)

People over the age of 60 tend to be a socially excluded group in Ecuador; they have partial access to basic health services, but geriatric and gerontological services are very incipient. The majority are not entitled to retirement benefits and those who are, earn far less than the cost of the basic food basket. The situation of the elderly in rural areas seems better than in urban areas, because old people there tend to remain involved in productive labor and traditionally play a privileged role within the family.

In 1999 the five leading causes of death among the elderly were neoplasms with 5,810 deaths (a rate of 685 per 100,000 population); communicable diseases, particularly acute and chronic respiratory diseases, with 3,143 deaths (371 per 100,000); cardiac insufficiency with 3,091 deaths (364.6 per 100,000); cerebrovascular diseases with 2,675 (316 per 100,000); and ischemic heart disease with 2,433 (287 per 100,000). Neoplasms, cardiac insufficiency, communicable diseases, cerebrovascular diseases, and diabetes mellitus were predominant in women; and neoplasms, communicable diseases, ischemic heart disease, and cerebrovascular diseases predominated in men.

Family Health

Migration is a social phenomenon that can harm the family structure, increasing the number of children who start work at an early age or live on the streets. Over 80% of migrants are young

people, between 10 and 39 years of age, and 53% of them are women.

Domestic violence has attracted considerable attention due to the existence of legal instruments such as the Law against Violence to Women and the Family, and the agencies set up by the State, municipalities, and civil society, and nongovernmental organizations to safeguard them. The evaluation by the National Women's Council in 1999 estimated that 68% of women nationwide have suffered some kind of family violence, of which 8% was sexual violence. Likewise, 75% of the women who were abused and lodged complaints (18,446 in 1995 and 30,551 in 1998) were between the ages of 25 and 39; 45% were married and in 76% of the cases the aggressor had been the spouse or intimate partner.

Workers' Health

At the beginning of the nineties the annual death rate was down compared to the previous decade, according to information from the Ecuadorian Social Security Institute (IESS); by contrast though, temporary and permanent disabilities increased. Between 1996 and 1998 mortality rose from 155 deaths to 185, and from 273 cases of temporary disability to 324; the number of cases of permanent disability remained at 214 during those years. The main reasons attributed by the IESS to accidents in the workplace are: unsafe material conditions, 21%; unsafe actions, 64%; unsafe conditions and actions, 15%. Only 22% of the workers who are required to wear a helmet and/or seat belt actually do so; only 42% utilize hand protection, and 13%, foot protection. Occupational accidents in the population not affiliated to the IESS and reported by the Ministry of Public Health increased from 4,804 in 1997 to 6,005 in 2000.

Occupational diseases are infrequently identified and recorded; in 1997 the IESS classified 49 cases as professional diseases; the most frequent were related to noise and dust; there were also clinical presentations of allergy, asthma, and poisoning/intoxication. Several studies indicated the existence of diseases such as neurosensory hypoacusis among 52% of workers exposed to noise in the textile industry; exposure to lead among workers in the metallurgical industry; presence of chromium in urine in 68% of workers and nickel in 49% of workers in metal plating firms; and exposure to organic solvents in refineries with high levels of benzene, toluene, xylene, and n-hexane poisoning. Research sponsored by UNICEF and the International Labor Organization in 1995 on occupational health in child workers demonstrated the high level of exposure to organic solvents, organophosphate pesticides and carbamates, mercury, and lead in bootblack activities, fruit growing, gold mining, and roof tile production.

The Disabled

A study of prevalence conducted between 1994 and 1996 (ESADE, Universidad Central/CONADIS) indicated that 49% of the population suffers from some degree of deficiency, including problems of visual accuracy, 13% from some kind of disability, and 4.4% from a handicap; the handicapped predominate in urban areas (2.8%) compared with rural areas (1.6%). According to the same study, deficiencies related to psychological development are predominant in children under age 5 (36%), followed by language deficiencies (20%) and musculoskeletal deficiencies (16%). In children over five years of age, the most frequent deficiencies are locomotion (27%), communication (26%), and behavior (19%); the after-effects of disease, especially infections, cause 47% of the disabilities. Disabled persons are clearly another socially excluded group, given that levels of literacy, employment, earning power, training, social security, and access to health services are lower among the disabled than they are for the general population, according to the above-mentioned source.

Indigenous and Other Special Groups

Estimated infant mortality for 1999 in Cotopaxi and Chimborazo, two of the provinces with the highest concentration of poor indigenous inhabitants, was as high as 62 and 55 per 1,000 live births, respectively, while the national rate was 30 per 1,000 live births. Child malnutrition in areas with a large indigenous population is 1.7 times higher than the national average (1998 Survey on Living Conditions). The lower the level of schooling attained by the mother, the greater the difference.

The maternal mortality rate recorded at the national level was 55.4 per 100,000 live births in 1998, but in Napo and Morona Santiago, two provinces with a predominantly indigenous population in the Amazon region, it was three times higher (163.0) and higher still in Esmeraldas (175.0), which has the largest population of African origin. In indigenous areas, access to drinking water is 22% below the national average, and basic sanitation coverage is 33% lower.

By Type of Health Problem

Natural Disasters

In 1996 there was an earthquake in Cotopaxi and, in 1998, another in Bahía de Caraquez. The death toll for the latter was three, with 69 injured, and 2,909 adversely affected. Sixty percent of the area's buildings were damaged, and 1,240 were left homeless. The damage caused in 1997 is estimated at 2,869 million dollars, or 17% of the GDP. That year, there was a drought in the Province of Loja; the El Niño phenomenon hit in 1997 and again in 1998 (producing the climate system's worst damage of the 20th century); and there has been considerable activity from the Tungurahua volcano since 1997, necessitating the evacuation of 25,000 people between October 1999 and May 2000. In October 1999 the Pichincha volcano erupted, and 1,131,000 tons of ash fell on Quito. There were aviation accidents in Manta and Quito and ruptures to a pipeline in a sector of the city of Esmeraldas in

1998 (17 people died, 30 were burned, and 200 homes caught fire) and in two sections in Sucumbíos in 2000, in which more lives were lost.

Vector-borne Diseases

The country's malaria-prone area comprises 133 cantons in 18 provinces, with a population at risk estimated at 6,648,338 inhabitants. In 1996, 161,307 blood smears were examined, and 421,000 in 2000. Reported cases increased from 11,991 in 1996 to 104,598 in 2000, perhaps as a result of the floods and the mobilization of people because of El Niño; the province of Manabí accounted for the largest proportion of cases in 2000, 23% of the total. In 1997 Esmeraldas had registered 30% of the total cases in the country, but this figure dropped to 14% in 2000 due to the stratification of malaria and the establishment of priority areas in the province. The annual parasite index (API) rose from 6.8 per 1,000 inhabitants under surveillance in 1998 to 14 in 2000; the province of Guayas had the lowest API (4.3) and Esmeraldas the highest (32). In 1994 there were approximately 10,000 cases of *Plasmodium falciparum* and 67 deaths, while in 1999 there were nearly 50,000 cases and only 16 deaths.

The only serotypes of dengue already prevalent in the country were dengue-1, dengue-2, and dengue-4; and dengue-3 was introduced. Several coastal provinces also have high rates of *Aedes aegypti*. In 1996 there were 13,000 suspected and confirmed cases. That figure dropped to under 6,000 cases a year between 1997 and 1999; in the year 2000 there were more than 22,958; in 2000, 80% of the suspected cases of dengue in the country were detected in the Guayas province. During epidemiological weeks 11 to 20 in 2000, there was a dengue epidemic in Guayaquil, with certain clinical features indicative of hemorrhagic fever.

During 1997, 31 cases of yellow fever were reported in the Amazon region; research conducted on vaccinated people in that area revealed that they had all undergone seroconversion. A vaccination program was implemented in the provinces where the disease used to be endemic; beginning in 1999, the Expanded Program on Immunization (EPI) introduced antimalaria vaccination on a regular basis. In the year 2000, 30,770 doses of this vaccine were given to people of all ages in the Amazon region. The incidence dropped from four cases in 1998 to two in 2000. There are 161 locations in nine provinces where the likelihood of the disease reaching urban areas is high. Due to their high indices of *Aedes aegypti,* the risk of transmission is greatest in the provinces of Manabí, Guayas, Esmeraldas, and El Oro. Cases of jungle yellow fever occur sporadically.

The main foci of transmission of *Trypanosoma cruzi,* which causes Chagas' disease, are in the provinces of Guayas, El Oro, Los Ríos, and Manabí, in the coastal region, and also in some temperate valleys of the inter-Andean provinces of Loja, Azuay, Bolívar, and Cotopaxi. According to various studies, it is estimated that between 18% and 32% of the country's population lives in areas with a high risk of vector-borne transmission. The latest epidemiological studies carried out at the end of the nineties showed a prevalence of 1.7% in the coastal region (98,600 cases), 0.3% in the mountain region (16,500), and 1.0% in the Amazon region (5,000), with a total of 119,600 infected.

Diseases Preventable by Immunization

The vaccination program includes BCG (tuberculosis) at birth; DTP (diphtheria, pertussis, and tetanus) and OPV (oral poliomyelitis vaccine) simultaneously at 2, 4, and 6 months of age; MMR (measles, mumps, and rubella) at one year of age; DTP and OPV boosters between the ages of 1 and 4; and DT (diphtheria and pediatric tetanus) in the second and third grades of primary school. In the Amazon region, the hepatitis B vaccine (HPV) is also applied at birth and at 2 and 6 months of age, and the antimalaria vaccine is given together with the MMR vaccine. Pregnant women nationwide receive two doses of Td (diphtheria and tetanus for adults) during the first pregnancy and then a booster during subsequent pregnancies. In the highest-risk zones though, women of fertile age are given the first two doses of Td at an interval of one to two months, followed by the third dose six months after the second, the fourth application one year later, and the fifth a year after that.

People of any age who are susceptible to yellow fever, be they residents, migrants, or travelers in the Amazon region, are given a single-dose vaccination against the disease every 10 years. In 1999 the antimalaria vaccine was included in the basic vaccination program for infants under 1 year of age; coverage varies considerably across the various Amazon provinces and among different age groups, averaging 26% in 2000.

Following evidence of several deaths from hepatitis D and because of the high prevalence of hepatitis B in indigenous communities in the Amazon region, HBV was introduced in 1999 for children under 1 year of age in that region. In 2000, 40% coverage was attained. A recent study of hepatitis B markers in schoolchildren and nursing or pregnant women revealed a 3.6% prevalence of surface antigen carriers and 16% total infection.

The last case of poliomyelitis occurred in 1990, and between 1998–2000 epidemiological surveillance for acute flaccid paralysis remained strong. The highest vaccination coverage of infants under 1 year of age by the oral polio vaccine was reached in 1996 and 1998; and in 2000, 83% coverage by the third dose was attained.

Since 1997 the country has been free of measles cases; in 1998, vaccination coverage against measles exceeded 95%. A rubella epidemic, which began at the end of 1998, has spread to all the provinces; between 36% and 44% of rash and fever diseases are rubella, the highest incidence of the disease being in children under a year, and in schoolchildren and preschool children, in descending order.

The incidence of tetanus fell from 24 cases in 1998 to just 6 in 2000. Coverage by two doses of TT/Td increased from 12% between 1988 and 1990 to 58% between 1998 and 2000 (Figure 6).

The diphtheria epidemic in 1994 and 1995 led to the introduction of control measures, increased coverage by DPT in children under 5 years of age, and the growing use of DT in schoolchildren and Td in women of fertile age, which explains why the disease has very nearly disappeared. There was 90% coverage by the third dose of DPT in 2000.

Outbreaks of pertussis in 2000 and previous years mainly affected children under 5 in remote rural indigenous communities, who had not completed their vaccination schedule. Since the third quarter of 1999, outbreaks in the coastal region have affected more than 80 infants under 6 months of age, 60 of whom were under 3 months.

In 1999 the National Institute of Hygiene and Tropical Medicine (INH), the Directorate of the Province of Guayas, and two sentinel hospitals in Guayaquil began to conduct epidemiological surveillance of bacterial meningitis in children under 5. Data on the first year in operation reveals a predominance of *Haemophilus influenzae*, followed by *Streptococcus pneumoniae* and, less frequently, *Neisseria meningitidis*. The INH reference laboratory identified meningococcus type C as the cause of a meningitis outbreak at the prison in Guayaquil between October and November 2000; there were nine cases, and a case fatality rate of 44%; five strains were isolated (four of meningococcus C and one of W-135).

Intestinal Infectious Diseases

The rate of diarrheal diseases remained stable: 199,352 cases in 1996 and 225,734 in 2000; with 52% of the latter occurring in the coastal region; 40% in the mountain region; 8.4% in the Amazon region; and 0.2% in the island region. According to surveys conducted in 1999, 20% of children under the age of 5 had had one episode of diarrhea in the two weeks prior to the interview. The incidence of typhoid fever increased from 6,800 cases in 1996 to 12,904 in 2000. In that year 90% of the cases were in the coastal region; 5.7% in the mountain region; and 4.4% in the Amazon region; in the island region only two cases were reported. The incidence of food poisoning increased from 7,000 cases in 1996 to 8,774 in 2000. There were 1,060 cases of cholera in 1996; 65 in 1997; 3,755 in 1998; 171 in 1999; and 39 cases in 2000; during 2000, the cases were scattered over three provinces in the coastal region and one in the mountain region.

Chronic Communicable Diseases

In 1997, 7,214 cases of pulmonary tuberculosis were recorded; 4,900 in 1998; 4,300 in 1999; and 5,064 cases in 2000. The highest incidence in 2000 was in the Amazon region, in the provinces of Orellana (588 cases per 100,000 population), Napo (174), and Sucumbíos (169); in the mountain region there were 61 cases per 100,000 population in Bolívar, 44 in Cañar, and 35 in Cotopaxi; in the coastal region, El Oro had 62 cases per 100,000, 61 in Guayas, and the incidence in the Galápagos islands was 70 per 100,000. The percentage of tuberculosis cases with positive sputum smears detected and treated in relation to the number expected was 62% in 1998, 45% in 1999, and 57% in 2000.

Leprosy is found in all zones with a tropical and subtropical climate; 151 new cases were reported in 1996, 129 in 1997, 138 in 1998, 165 in 1999, and 194 in 2000; 58% of the cases reported were in the province of Guayas.

Acute Respiratory Infections

In 1996, 599,549 cases were seen during consultations by outpatients of all ages. That figure rose to 697,524 in 2000; 40% of the total in 2000 corresponded to the mountain region; 50% to the coastal region; and 10% to the Amazon region; no cases were reported in the island region. According to 1999 surveys, 57% of children under 5 years of age had had an acute respiratory infection in the last two weeks prior to the interview; prevalence in children was highest in the Amazon region (65%) and lowest in the coastal region (54%).

Zoonoses

In 1996, 65 cases of human rabies and 1,175 cases of canine rabies were registered. Since then, the rate of these zoonoses has declined thanks to the Urban Rabies Elimination Program introduced that year. In 2000, 3 cases of rabies were registered in humans and 82 in dogs; Azuay province accounts for 67% of cases of canine rabies in the country.

Plague has remained focalized in the province of Chimborazo, in the center of the mountain region; after 12 case-free years, there were 13 in 1998 and 8 in 1999 among the province's indigenous communities.

Teniasis was registered in 21 of the 22 provinces between 1995 and 1999; 409 cases were reported in 1995, and the number declined to 320 cases in 2000. The higher incidence in 2000 was in the provinces of Esmeraldas (12 per 100,000), followed by El Oro (8 per 100,000) and Azuay (7 per 100,000). There were 224 cases of cysticercosis in 2000; the highest incidence was in Sucumbíos, 13 per 100,000 and Loja, 8 per 100,000.

In 1998 an outbreak of leptospirosis was confirmed; between January and March, approximately 160 suspected cases were reported in the Province of Guayas, with an estimated fatality rate of 10%. The outbreak was associated with heavy rains and floods, due to a higher level of exposure to leptospiras from contact with animal carriers and the reduction in drinking water supplies and hygienic waste disposal.

HIV/AIDS and Sexually Transmitted Infections

Between 1984 and 2000 1,561 cases of AIDS and 1,559 carriers of HIV were reported. This trend rose from 1996 to 2000 (Figure 7); in the year 2000, there were 315 cases of AIDS and 348 cases of HIV carriers. Cases were reported in 10 of the country's 22 provinces; the majority in Guayas (83%), followed by Pichincha (5%), Azuay (2.5%), El Oro and Manabí (2%), Cañar and Chimborazo (1.5%), and Loja (0.9%). Twenty percent were in

women; 64% in the 20–39-year-old age group, and 1.5% among children under 9 years of age; 62% were in heterosexuals, 33% homosexuals, and 5% bisexuals. The fatality rate was 4%.

The incidence rate of gonorrhea in 1999 was 46 per 100,000 and the largest number of cases was reported in the Amazon region, 116 per 100,000. The incidence of congenital syphilis was 1.4 per 100,000; and primary-secondary syphilis, 16 per 100,000. The incidence of genital herpes was 14 per 100,000 and for hepatitis B, 5 per 100,000.

Coverage by compulsory serological screening of donated blood in 2000 attained 100% for HIV-1, HIV-2, hepatitis B, and syphilis; 99.6% for hepatitis C; and 91.5% for the agent of Chagas' disease. The prevalence of reactive serology for every 10,000 units for infection markers was 20 reagents for HIV-1 and -2; 21 for hepatitis B; 86 for syphilis; 58 for hepatitis C; and 10 for Chagas' disease.

Nutritional and Metabolic Diseases

Results of the ENDEMAIN-99 Survey found the national incidence of low birthweight to be 16.1% for the 1994–1999 period; 3.3% of all live births had low birthweight and were premature. The incidence of low birthweight is higher in rural areas (19%) than in urban ones and was higher in the mountain regions (20%) than in the coastal areas (13%).

Mortality from nutritional deficiencies was estimated at 11 per 100,000 population in 1999; in infants under 1 year of age it was 161 per 100,000. If one compares the results of the Diagnostic Survey of the Nutritional and Health Situation of the Ecuadorian population under 5 years of age, conducted in 1988, with the 1998 Survey on Living Conditions, with a cut-off point of –2 SD compared with the median, a slight improvement in the nutritional situation can be seen in children under 5. The prevalence of chronic malnutrition declined from 34% in 1986 to 26% in 1998. Acute malnutrition rose from 1.7% to 2.4%. Studies conducted in 1997 by the Ministry of Public Health in a national sample revealed that 47% of men and 55% of women are anemic. By age group, those most affected were children under 1 year old (65%), from 1 to 2 years (75%), and from 2 to 3 years of age (67%). In the 6–15-year-old age group, 56% are anemic. Anemia also affects 60% of pregnant women and 57% of nursing mothers.

A study conducted by the Ministry of Public Health in 1996 in poor parishes showed a 17% prevalence of retinol deficiency (below 20 mg/dL) in children aged 12 to 36 months. The greatest deficiency was observed in the parishes of the mountain region, with 22.1%. Low levels of retinol were detected in 24% of children with anemia. The retinol deficiency problem has been classified as moderate and subclinical and is found mainly in parishes of extreme poverty.

In the year 2000 the deficiency disorder surveillance system reported 92.3% with levels above 15 ppm. Research on salt intake by the population revealed that 96.3% use iodized salt in their diet. The ioduria median was 240.9 mg/L. Ultrasounds performed on schoolchildren that year read normal.

According to the ENDEMAIN-99 survey, 97% of live births were breast-fed at least once; 27% during the first hour after birth, and 71% the first day. Breast-feeding to some degree lasts 15.5 months on average, but exclusive breast-feeding lasts only 2.2 months; rates are higher in rural areas and among women with less schooling. A Ministry of Public Health report indicates that breast-feeding lasts 9.1 months on average and that the prevalence of exclusive breast-feeding is 29%.

The fatality rate from diabetes mellitus in 1999 was estimated at 27.0 per 100,000 population and was higher in women than men. Data from 1995 shows that 19% of schoolchildren in Quito were obese and 22% had mixed dyslipidemias.

Diseases of the Circulatory System

The rate of cerebrovascular disease in 1999 was estimated at 36 per 100,000 population (32 in 1995); the estimated rate of ischemic disease was 31 (13 in 1995) and hypertensive diseases, 23 (19 in 1995). In 1999, cerebrovascular disease in women caused 34 deaths per 100,000, ischemic heart disease 23, and hypertensive diseases 23; death from cerebrovascular disease in men was estimated at 37 per 100,000, 38 from ischemic heart disease, and 23 from hypertensive diseases.

Malignant Neoplasms

According to mortality data for 1999, accumulated malignant neoplasms were the second overall cause of death, ranking second for adults and first for the elderly. In the general population the most frequent causes are malignant stomach neoplasms, estimated at 18 per 100,000 population; followed by malignant tumors of the prostate (6.3 per 100,000 in men), and of the trachea, bronchi, and lung (6.6 per 100,000 men and 4.2 in women). The mortality rate from cervical cancer was 6.3 per 100,000 and from breast cancer, 7.1 per 100,000.

Accidents and Violence

In 1999, traffic accidents were responsible for the deaths of 19 per 100,000 population; assaults, 20 per 100,000; and intentional self-inflicted injuries, 6.5. Traffic accidents killed 7.9 per 100,000 women. Among men, assaults were the first cause of death, estimated at 36 per 100,000. Between 1997 and 2000, the health services responded to 10,000 to 12,000 cases resulting from ground transportation accidents and 4,800 to 6,000 from occupational accidents over the same period.

According to recent surveys on violence against women, only 2% of cases of sexual harassment of children by relatives were reported to the police, 6% of sexual abuse outside the family, and 5% to 8% cases of sexual harassment of adults. With the passage of the Law against Violence to Women and the Family in 1998 and the creation of special community-level support units for its enforcement, considerable inroads have been made in recent years regarding the issue of gender and family violence. According to research conducted by the Center for Planning and Social Studies

and the María Guare Foundation, 7 out of every 10 women suffer, or have suffered in the past, from some type of violence by their husbands, intimate partners, ex-husbands, or boyfriends.

Oral Health

An epidemiological oral health study conducted in 1996 among schoolchildren between ages 6 and 15 in public schools in urban and rural zones shows that 87% of children have caries by the time they are 6, and 85% by the age of 12. The DMFT rate in the 6-year-old age group is 0.22 and at 12 years of age it is 3.00. A decline over the 1988 indices was observed, as well (DMFT 0.70 and 5.00, respectively).

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Ministry of Public Health conducted a national survey in 1997 in which four State functions were defined: governance, health promotion, guaranteed equitable access to decentralized care, and provision of services. Three levels of action related to national health policies were proposed: a) intersectoral, to foster health promotion and social participation; b) sectoral, related to the health system, health insurance, regulation, assignment and use of resources, medical practice, science and technology, and legal reform in the field of health; and c) institutional, essential public health functions of the Ministry of Public Health and coordination of external cooperation.

In May 1998, for the first time ever, the National Constitutional Assembly incorporated specific wording on the integrated concept of the right to health care (promotion and attention), the organization of the national health system, the recognition of traditional and alternative medicine, the State's regulatory role, and public financing methods. It also reaffirmed the strategy to decentralize government policy, as well as a new competitive social security scheme based on universality, solidarity, and efficiency.

In the legal field, decentralization comes under the special State Decentralization and Social Participation Act, which has been in effect since October 1997 and sets guidelines for transferring social and economic competencies and resources to the provincial councils and municipalities.

Health Sector Reform Strategies and Programs

Since 1997 there have been several attempts at reform, such as local demonstrative projects with the active involvement of the municipalities. In 1988 the Ministry of Public Health determined that planning functions would be decentralized, as well as the management of human resources and working budgets and rate collection for health control services. A bylaw was also put into place for autonomous management and social involvement in public health centers and hospitals with mechanisms for partial cost recovery based on subsidized prices varying according to socioeconomic categories of users. Between 1998 and 2000, the basic principles for the functional coordination of national policies by institutions were updated and expanded, as was the model for the decentralization, provision, and financing of services combining equity with efficiency, and a common plan of action in which each institution performs a specific function.

The Health System

Institutional Organization

The functions of the health sector include management, regulation, planning, insurance, human resources development, and services provision; the latter is undertaken through the Ministry of Public Health, the Ecuadorian Social Security Institute (IESS), the Armed Forces, municipalities, and private institutions, whether for social or commercially profitable purposes. Lack of coordination is more accentuated among the institutions that provide services, which are governed by different type of policies, health care models, and financing schemes, with the resulting duplication of investments.

Developments in Health Legislation

The main achievements in this field since 1997 are the inclusion in the Constitution of 1998 of specific text relating to health, and the passing of the law creating the Special Vaccines Fund. In the area of occupational health, the Ministry of Labor approved safety regulations on building and other public works, which were adopted and disseminated by the Chamber of Construction.

In 1997 the structure and functions of the Ministry of the Environment were established. It has three main functions: promotion, governance, and supervision of sustainable environmental management. During the period 1998–2000 progress was made in creating constitutional and legal standards for the conservation and sustainable use of resources. The passage in 1999 of the Environmental Management Act is a contribution to environmental control in all sectors of production. Various municipal ordinances have been issued to control industrial pollution. The air quality control program is implemented at the municipal level, and the water control program is implemented by the Ministry of Health.

In 1998 the Special Health and Environment Commission was established in the legislature, through which a number of different initiatives have been processed, such as the law governing the operation of Private Health and Prepaid Medicine Companies (1998); the law creating the National AIDS Institute (INSIDA, 1999); the Law on Production, Importation, Marketing, and Dispensing of Generic Drugs for Human Use (2000); and the reforms to the Health Code, which have been in force since February 2001 as part of the Law on Social Investment.

The Law on the Production, Importation, Marketing, and Dispensing of Drugs for Human Use was passed in March 2000.

It establishes standards to expand the generic drugs market through incentives for national production and the registration of imported products. In the case of generic drugs, the Law allows for a higher profit margin than for brand products; it requires physicians in the public sector to prescribe them and pharmacies to stock them. It also sets guidelines for the applicability of the National Table of Basic Drugs, which contains 330 active principles and post-registration quality control of all drugs, with the participation of the universities and the private sector.

In October 2000 the Ministry of the Environment defined priorities and policies for sustainable development in three areas: preservation and utilization of natural capital for ecologically sustainable products; control and improvement of environmental quality in urban centers and rural areas; and immediate intervention in fragile and threatened ecosystems.

Direction, Regulation, Health Provision, Insurance, and Financing

Although health sector reform and the proposal of a national health system are based on the separation of functions, no national policy has yet been formulated on the subject. The pilot experience of the Health Services Modernization Project (MODERSA) proposes that services be purchased from a local plural network, on the basis of a costed benefits plan; this proposal is included in the Social Security reform proposals. The Ministry of Public Health, through the Free Maternity Act, has applied the local funds criterion to reimburse expenses for services provided by their own service units, as a principle that separates the financing from the service provision function, in an attempt to change the exclusive subsidy on supply for a gradual subsidy on demand. In summary, the separation of functions has barely been developed, although it is the main trend of the proposals on sectoral and institutional reform.

The segment of the population with access to the various public and private institutional providers is 79.5%: 30% of the population (mainly in the poorer social strata) uses the services of the Ministry of Public Health; 22% (generally members of the urban population with sufficient purchasing power) uses the private sector; 10%, the IESS; 9%, Farmers Social Security; 4%, the Guayaquil Welfare Board and the Society to Combat Cancer; 3%, the Armed Forces and the Police; and 1.5%, other public services. The rest are not covered owing to economic reasons or sociocultural barriers; it is estimated that a large proportion of the population excluded from the institutional services is indigenous and uses home remedies or traditional medicine.

Decentralization of Health Services

Management of human resources has been decentralized to the provinces; and financial and budgetary management, to the areas and hospitals of the Ministry of Public Health. The IESS has introduced a modernization and decentralization plan to handle insurance and financing at the level of regional structures and has plans to create mechanisms to purchase services and make per-capita payments.

The Decentralization Act, in force since October 1997, still lacks some health regulations, although the Cantonal Health Council has experimented with its application. Since 1998 the Ministry of Public Health has signed agreements with a number of municipalities to carry out health activities, but in no case have the responsibilities or physical, material, or financial services referred to in the law on the matter been transferred. The municipality of the Metropolitan District of Quito is in the process of reaching an agreement on handling the network of the centers and subcenters of the Ministry (including a medium-complexity referral hospital), as the basis for developing a municipal insurance model.

Private Participation in the Health System

The private sector still has a low level of involvement in health sector reform and decentralization processes. A few nongovernmental initiatives have made some successful attempts at implementing local health management strategies; for instance, one in the province of Azuay which includes mechanisms to purchase services from private suppliers. It was proposed that the National Health Council include a delegate from the private sector and the prepaid medicine organizations. The cities, particularly the larger ones, have a broad network of privately sponsored health services which offered sustained investment growth in the last few years; however, other than offering social security services, they are not playing an active role in the reform processes.

Health Insurance

Only 23% of the population carries some kind of public or private health insurance. For over 60 years, the Ecuadorian social security system has focused priority on "recovering the workforce"; coverage by the general insurance system does not exceed 11% of the national population, which represents only 28% of the EAP in a country in which over half the workforce is made up of informal workers. By contrast, the Farmers Social Security system, created in 1978, grew rapidly in the eighties and nineties and now has about a million beneficiaries, which is nearly 9% of the national population and approximately 25% of the rural and peasant population.

Organization of Regulatory Actions

Health Care Delivery

The Ministry of Public Health regulates the provision of health services, especially as regards the development of infrastructure and the endowment of outpatient and hospital services. It also issues health care standards in programs such as mother and child health, sexual and reproductive health, pre-

vention and control of tuberculosis, diabetes and hypertensive disease care, early childhood development, and decentralized management of essential drugs, as well as standards on the regionalized health services system and the response capacity of health units, among others. There is also a law that establishes standards for the organization and operation of private health and prepaid medicine companies and guarantees the rights and obligations of their members.

Certification and Professional Health Practice

All health professionals receive their certification from the various public and private university institutions. There are no processes to recertify knowledge and experience after graduation, nor do health service workers need to be recertified in order to practice and be paid for their services. Public health services, which employ the largest portion of human resources in this profession, do not evaluate performance or provide differential remunerations or incentives in accordance with the level of knowledge or experience of their staff.

Basic Health Markets

The Health Code establishes the regulation of drugs and other medical inputs. The specific law on generic drugs regulates prices, health registration, quality control, marketing and dispensing, and lays down pecuniary sanctions if regulations are infringed. It is complemented by the standards and procedures for health registration and the control of natural products for medicinal use that were issued in 1999. The system for regulating drug prices comes under the Ministry of Industry and Commerce, with little intervention from the Ministry of Public Health. There is no specific, systematic body to regulate technological aspects; however, there are various provisions in the different laws and regulations, such as the Health Code, in building and maintenance standards that are applicable to health service infrastructures, and in regulations on the importation of technological products, but they do not regulate use or quality control.

Environmental Quality

Three air quality indicators are rising: total suspended particles (TSP), particles below 10 microns in size (PM10), and sedimentable particles. The negative impacts on health of the eruptions of the Pichincha volcano were acute respiratory infections which increased 1.6 times compared with the previous period; low respiratory infections, 2.2 times; and asthma and respiratory insufficiency, 1.3 times; PM10 also exceeded 400 m/m^3 during the eruptions. Sulfurous anhydride (SO_2) levels are also increasing, although the annual average in Quito is below the allowable level, and in the south it is very close to the allowable limit. As far as water contamination is concerned, less than 5% of wastewater is treated.

Food Quality

The Ministry of Foreign Commerce, Industrialization, and Fisheries, through the Ecuadorian Standardization Institute, is responsible for drawing up standards to monitor the quality of foodstuffs. The Institute is the focal point of the Codex Alimentarius Commission and coordinates its functions with the Ministries of Health and Agriculture and the other public and private institutions involved in food production and consumption; it is in charge of fostering quality control of foodstuffs and technical standards. In accordance with the Health Code, the Ministry of Public Health (through the Office for the Control of Foodstuffs of the Health Control Directorate) is in charge of regulating and designing national policies and strategies to control foodstuffs, as well as to audit the processes implemented.

Organization of Public Health Care Services

Health Promotion

The Ministry of Public Health, as the governing body, has created political and technical agencies to cover the positive concept of health and improve the population's health and well-being; namely, the Directorate of Integral Promotion and Care, the Directorate of Communication and Education, and the Directorate of Indigenous Health. Together with the Ministries of Education and Social Welfare and other organizations, it has fostered the creation of healthy areas, through the promotion of health in fields related to tropical diseases such as dengue and malaria, and through a national environmental health education and communication campaign that has designed permanent promotional activities. Some 380 establishments participate in the "healthy schools" initiative, expressing an interest in furthering this process through the training and active involvement of teachers, pupils, and the community in general.

In 2000 the Social Emergency Plan was formulated. It covers the following components: education, food, employment, health care for vulnerable groups, and community organization, with funding from the IDB and the World Bank.

Disease Prevention and Control Programs

The country has followed the country strategies recommended by PAHO/WHO for eradicating, eliminating, and controlling vaccine-preventable diseases, which demonstrates the national political will and technical commitment in this area. The Expanded Immunization Program is considered a priority by the Ministry of Public Health and since 1999 a plan of action has existed, updated for 2001–2005, to evaluate the Interagency Coordination Committee. Another strategy that has contributed since 1997 to coordinate efforts and integrate health-related actions for children under 5 years of age is the Integrated Management of Childhood Illness (IMCI); practically all the gov-

ernmental and nongovernmental child health institutions, including universities, participate in it. Since 1995 the Ministry of Public Health has been implementing the Integrated Program for the Control of Micronutrient Deficiencies, which includes vitamin A and iron supplementation strategies for groups at risk, the fortification of foodstuffs for mass consumption (flour with iron, and salt with iodine and fluoride), as well as nutritional education and diversification of the diet.

Anti-cancer programs have made good progress, thanks primarily to the efforts of the Ministry of Public Health and the Society to Combat Cancer. The achievements of the anti-smoking campaign are also significant, as are the efforts to prevent cervical cancer, for which innovative strategies targeting women between 35 and 64 have been introduced. Since the eighties, the Ministry of Public Health has implemented programs to detect and control high blood pressure and diabetes mellitus; unfortunately, some momentum has been lost in recent years, mostly due to a lack of state funding.

In 1999 the Ministry of Public Health formulated a project, funded by the World Bank, to control the malaria outbreak and reduce the number of serious cases of the disease and its fatality rate. At the beginning of the year 2000, the directly observed treatment, short course (DOTS) strategy was introduced in three provinces to improve tuberculosis prevention and control, with cooperation from Canada.

An overall health promotion effort has been addressed at preventing family and gender-based violence. This involves a coordinated effort in which six national nongovernmental organizations are implementing and institutionalizing a model to deal with family violence in the country in eight provinces.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

There is no national health information system. The Ministry of Public Health has numerous information subsystems that sometimes duplicate efforts and are often designed in response to vertical programs, precluding an overall view of health issues. Other problems include the lack of staff training in statistical and epidemiological analysis of information, technological backwardness of the information network, and limited access to the Internet.

There is a network of five laboratories for diagnosing measles and rubella, which complements the network of public health laboratories of the National Institute of Hygiene and Tropical Medicine. The Ministry of Public Health is encouraging laboratories to provide support for the surveillance of hepatitis B, yellow fever, influenza, meningitis, and bacterial pneumonia. A project is being negotiated with the European Union to improve the network of public health laboratories based on the priority of the situations requiring surveillance, such as vector-borne and foodborne diseases, rabies, plague, congenital syphilis, and water quality for human consumption.

Potable Water, Excreta Disposal, and Sewerage Services

In 1996, the Ecuadorian Institute of Sanitary Works (IEOS) merged with the Ministry of Urban Development and Housing, so the guidance, training, regulation, and technical assistance attributions are now carried out mainly by the Undersecretariat of Drinking Water and Basic Sanitation. The municipalities are responsible for providing water and sanitation services, in accordance with the law on the modernization and decentralization of the State. There are 16 urban municipal water and sewerage companies, and in the rural areas the water systems are run by community administrative boards. There are an estimated 214 supply systems in the urban sector and 3,500 in the rural sector. In 1998, 30% of the population lacked water supply services, and 42% had no sewerage services. Nearly all domestic and industrial wastewater is discharged into bodies of water.

Solid Waste Services

The Ministry of Public Health and various nongovernmental organizations have taken steps to improve the situation of hospital solid waste management. In 2000, the activities of 226 health establishments and the application of national standards in this field were evaluated in six provinces. The average compliance rate was 48%; the province of Zamora scored the lowest (18%) and Pichincha the highest (64%).

Pollution Prevention and Control

Environmental issues have been incorporated into basic education and university research programs and are of permanent interest to the media.

The Ministry of the Environment is conducting nine programs and seven basic instruments for compliance in this area, such as: land ordinance and environmental planning; an environmental impact study system; a national information and sustainability indicators system; economic incentives for promoting environmental management; research center for the conservation and use of biodiversity; capitalization and operation of the environmental fund; and implementation of international protocols and conventions.

The regulatory function of the Ministry of the Environment and the most populated municipalities has produced a variety of results: the creation, in October 1998, of the National System for the Management of Chemicals; National Air Quality Plan 2000, that will guide and coordinate the monitoring activities of the municipalities and foster institutional and legal reforms; the National Training Plan for the Rational Use of Pesticides; the memorandum of understanding with United Nations agencies to coordinate the International Chemical Security Program; the agreement with the Ministry of Public Health to integrate the Environmental Impact Study System; national regulations for evaluating environmental impacts, including health impacts; and a preparedness program for chemical emergencies, with interinstitutional participation in Quito and Guayaquil. In Quito, the

municipal government has issued an ordinance to control emissions and will enforce the requirement that new cars come equipped with a catalytic converter.

Food Safety

The provincial directorates and health departments inspect the operations of food processing plants, premises where food is sold, food preparation, and products for human consumption. The Ministry of Public Health delegates responsibility to the municipal hygiene directorates for inspecting and monitoring the sale of food by street vendors. The laboratories of the National Institute of Hygiene and Tropical Medicine conduct microbiological analyses, as well as other types required for issuance of the health certificate. The National Directorate of Epidemiology of the Ministry of Public Health coordinates the Epidemiological Surveillance System for Foodborne Diseases. Organizations such as the Specialized Consumer Protection Commission and the Ecuadorian Consumer and User Forum foster and promote quality control of foodstuffs by encouraging the application of standards, promoting consumer rights, and keeping the population informed through periodical publications.

Food Aid Programs

In August 2000 the Ministry of Public Health initiated the Food and Nutrition Program 2000, addressed at providing food to the poorest sectors of the population, with support from the World Food Programme. The program initially covers seven provinces but there are plans to extend it later to the rest of the country, with help from various different institutions and cooperation agencies.

The Ministry of Education and Culture is developing the School Food Program to provide breakfast and lunch to children at state schools on a national scale. The Ministry of Social Welfare has set up community canteens and school dining halls, and provides food grants in the child care centers of the Children's Rescue Operation and the National Child and Family Institute. There are also food aid programs for emergency situations.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

In 1999 there were 2,825 establishments in existence providing outpatient care and 541 providing hospital care. The Ministry of Public Health, with the highest number of establishments and broadest geographical coverage, has 121 hospital units (22.4% of the total number of hospitals in the country), of which 15 are specialized hospitals (8 for acute problems and 7 for chronic ones) and 106 general hospitals (22 at the provincial and 84 at the canton levels); there are also 1,541 ambulatory health care establishments (54.5% of the total), of which 103 are urban health centers, 1,202 subcenters (the majority of which serve the rural population), and 236 health posts (in villages with less than 1,500 inhabitants). The IESS has 18 hospital centers and 1,001 outpatient units, including their own and special sections in companies; the latter include 572 primary health care units, which come under the Farmers Social Security system. The Armed Forces and Police Health Services have 96 outpatient health care units and 20 inpatient ones located in the main logistic centers in the country. The services of the Guayaquil Welfare Board include 4 large hospitals, one with pediatrics and more than 500 beds. The Society to Combat Cancer has grown and now has a modern infrastructure consisting of 5 hospitals, one of them with 160 beds in Quito. Other ministries and some public and private nonprofit institutions also have health services, 28 outpatient and 3 inpatient. Few municipalities have their own health services; there are only 3 hospitals and 12 outpatient units.

The private health services have 367 inpatient units (68% of the national total), the majority being for-profit clinics and polyclinics; the 147 outpatient units (5% of the national total) belong almost entirely to nonprofit organizations. Not included in the institutional statistics are the nearly 10,000 private doctor's offices, the majority of which are in the big cities; many of them with only an elementary infrastructure and technology.

A total of 19,083 beds were available in 1999, slightly more than in 1996 (18,030 beds); the ratio of beds per 1,000 population in 1999 was 1:5; and in 1995 it was 1:6. Forty-one percent of the total number of beds in the sector belong to the Ministry of Public Health and 27% to the private sector. The ratio of discharges per 1,000 population was 51:2 in 1999, out of a total of 635,766 people discharged from hospital, of which 45% were in the units of the Ministry of Public Health. That year the average length of stay at the national level was 5.2 days per patient (4.8 in Ministry of Public Health establishments and 2.7 in private ones). Of the 17,098,011 patients receiving health care of any kind at the national level in 1998 (1.4 per inhabitant), 45% were attended to at Ministry of Public Health institutions, 34% at IESS facilities, and 21% at other public or private institutions. Diseases accounted for 66% of that total, prevention and promotion activities for 23%, and dental care for 11%; in other words, three curative actions for each preventive one.

There are still many economic, cultural, and geographical barriers that restrict access to health services, especially by the poor, mainly indigenous, population. According to the 1998 Survey of Living Conditions, 72% of families acknowledge that it is financially hard for them to have access to health services; in the rural part of the coastal area, 84% had these restrictions.

Auxiliary Diagnostic Services and Blood Banks

The Network of Blood Banks consists of 38 blood banks and storage centers, belonging to five institutions. According to a report by the National Secretariat of Blood Banks, a total of 82,237 units of blood were collected in the year 2000, or a rate of 68 donations per 10,000 population. The Ecuadorian Red Cross col-

lects 79% of that amount, and the Ministry of Health only 1%. There are 10 blood banks with MICROELISA equipment for screening donated blood; the rest send samples to other referral banks or perform rapid on-site screening tests.

Specialized Services

The National Council on Disability, the state agency responsible for defining policies and coordinating the provision of services for the disabled, created a register in 1996 which is being kept throughout the country. It is also promoting the approval and updating of the Disability Act.

There are 76 establishments that provide basic and health services to the elderly; 3 of them come under the Ministry of Social Welfare, 4 are units of the Ministry of Public Health, 1 belongs to the Ministry of Defense, and the rest are private. Generally speaking, the degree of development of gerontological and geriatric care is very incipient; there are only 12 geriatric specialists in the country and no specialists at all in geriatric rehabilitation. In the year 2000 the Ministry of Public Health set up the National Committee for the Elderly, to promote and enforce laws aimed at improving living conditions and organizing health care and promotion services.

Disaster response is undertaken through central and provincial government action, the municipalities, the Ministry of Public Health and the Undersecretariat of Environmental Sanitation, the Civil Defense System, and the Red Cross; there are also interinstitutional and interdisciplinary support groups, such as the Psychosocial Disaster Care Network. In order to deal with the El Niño weather system, in 1997 a special contingency unit was created under the Office of the President. The Ministry of Public Health prepared a contingency plan and set up a special disaster prevention and response unit at the central level, in addition to regional and provincial units. Since the end of 2000 the Ecuadorian Government has been helping Colombian and Ecuadorian refugees displaced from the border areas affected by drug trafficking and guerilla problems.

Health Supplies

In 1998 major adjustments were made to the institutional policies and legislation on generic drugs, with repercussions on production, marketing, and consumption. In 1999 there were approximately 6,903 registered drugs; only 1,945 (28%) of that total are regularly available in the market as generic drugs. There are 19 recognized producers in the country: 6 transnational and 13 national ones, the latter with only 9.6% of the market. More than 80% of the drugs consumed are imported, generating a high level of dependence on the international market. In 1998, the pharmaceutical market was worth US$ 344 million; at the end of 2000, due to the acute economic crisis, it shrunk drastically to US$ 240 million (30%). Eighty-five percent of drugstores are in urban areas and 5% in the outer cities, while there are only 10% in rural areas, which is where 40% of the country's population lives.

The majority of the reagents are imported through marketing companies and their supply to the public and private laboratories is based on historical consumption. New customs legislation has lengthened the time necessary for the entry of vaccines and syringes, by requiring that these products be inspected at the place of origin instead of the port of entry, according to the previous regulation.

According to reports, the Infrastructure Maintenance System of the Ministry of Public Health has invested an estimated US$ 50,000 per bed in hospital equipment; the total figure is close to US$ 4,350 million. The main problems associated with technological infrastructure are the wide variety of brands and models; the fact that half the equipment is out of service or operating below capacity; the obsolescence of physical plants and facilities in a state of disrepair; continuous incorporation of state-of-the-art technology; inefficient use of energy resources; lack of hospital safety programs, biosecurity, disaster prevention and mitigation; and lack of vulnerability studies and equipment regulation programs. National policies are insufficient; local maintenance systems are poorly developed; the market for used and remanufactured equipment is growing; the amount of donated equipment is increasing; technical service support is weak; and infrastructure development processes lack proper coordination. There is also a shortage of personnel in this area, which is made up of 75% practical, 20% technical, and only 5% professional staff.

Human Resources

In 1999, the number of health professionals per 10,000 population was broken down as follows: 13.8 physicians, 1.6 dentists, 5.0 nurses, 0.8 midwives, and 10.7 nursing auxiliaries. These rates have remained steady for the past five years, except for auxiliaries, whose numbers are declining because very few are being trained in the country. Instead, there is a drive to bring existing nursing auxiliaries up to a professional level. The breakdown of human resources is very uneven between one province and another; the highest concentration is found wherever there are universities.

In 2000 there were 10 medical schools, 13 nursing schools, 4 schools of dentistry, and 2 schools of obstetrics; from which 895 physicians, 446 nurses, 378 dentists, and 182 qualified midwives graduated in 1997, respectively. In the year 2000, the public and private universities agreed to strengthen the Association of Faculties of Medical Sciences, which is working with the associations of schools of different professions to increase their presence and the participation of universities in the discussion and generation of health policies in the country.

In 1999 and 2000, the IESS and Ecuadorian Farmers Social Security Institute organized permanent education committees in an endeavor to overcome some of the training problems faced by

the services. The University of Loja, in conjunction with the two institutions, has set up a Continuing Health Education Center.

In the labor market, low salaries, a looseness in the types of contractual agreements offered to health staff, and growing unemployment are basic problems for training institutions and public health services. The situation has led to labor conflicts, reduced quality of service, and subsequent discontent by the population; it also encourages professional and nonprofessional staff to emigrate abroad.

Health Research and Technology

In 1999, the Ministry of Public Health, through the Institute of Science and Technology, gathered information on health researchers and research, published a National Directory of Health Researchers, and set up a Researchers Network, which has been unable to remain functioning. There is no defined policy for financing scientific research on health; thus, the success of researchers depends fundamentally upon their ability to secure funding from public and private institutions to undertake specific activities.

Technological development is incipient; the National Council for Science and Technology was transferred to a Foundation that channels financial support from various donor agencies. The Ministry of Public Health again reformed the structure responsible for research and technological development, and the Institute of Science and Technology was created to set standards on technical and ethical aspects and provide guidance on national priorities.

Dissemination of scientific information has been possible thanks to the development of computerized information networks, but access to it is still limited for most health workers and professionals. Few institutions keep periodical scientific publications and tend to have distribution problems.

Health Sector Expenditure and Financing

Public health spending fell by 1.1% of the GDP in 1995 to 0.6% in 2000, thereby reducing the State's role in protecting this basic constitutional precept. In 1995, the poorest fifth of the population was the recipient of 7.6% of the amount spent on health, while the richest fifth received 38%. In 1998, the poorest tenth of all homes spent 40% of their average current income on health care, while the richest tenth spent only 6.4%.

According to data on the national accounts prepared by the Ministry of Public Health for 1997, total spending on health amounted to US$ 740 million, equivalent to 3.8% of GDP, 17% less than in 1995, representing 4.6% of GDP in that year. Depending on the type of expenditure, 50% is public and 50% private. Direct household expenditures account for 88% of this and principally correspond to drug purchases and other out-of-pocket expenses.

Public spending on health (Ministry of Public Health, Social Security, Municipalities, Armed Forces, and Police) is one of the budget items that has suffered the greatest cutbacks, particularly in central government spending. The sliding trend in social spending observed, from 36% in 1996 to 29% in 1998 and 20% in 1999, has seriously affected this area. Spending by the Ministry of Public Health as a proportion of the State's general budget plummeted from 5.2% in 1995 to 2.7% in 2000. Central government spending accounts for 24% of total health and Social Security expenditure. In the case of the IESS, health service expenditures, which amounted in 1995 to 1.0% of the GDP, have been gradually diminishing, reaching 0.9% in 1998. Seventy-nine percent of the resources spent were concentrated in three of the most urbanized provinces of the country, where the Institute's largest hospitals are. The Farmers Social Security system increased its coverage, in line with a greater share of the expenditures of the IESS, from 1.7% in 1985 to 2.1% in 1998; however, that participation is not so significant considering the fact that it subsidizes a large proportion of the rural population.

Eighty-one percent of the amount spent by public and private institutions goes toward curative care and only 19% toward prevention. The first level of care accounts for 34% of the expenditure; secondary, 30%; and tertiary, 36%. Spending is broken down as follows: 34% on hospital services; 29%, on drugs; 24%, on ambulatory medical services; 12%, on public health services; and 0.9%, on research. Only 32% of public spending on health corresponds to the low-income population, while poverty affects almost 70% of the country's population.

The percentage contribution by the main sources of financing is as follows: 49% from households, which pay the direct or indirect cost of public or private health care; 24% from the State's general budget, from tax and oil revenues; 10% from public sector employers; 9.0% from international cooperation; 3.6% from private companies, corresponding to the employers' contribution to social security and the purchase of insurance and other medical services provided by the private sector; 3.4% from the national lottery; and 0.25% from revenues from municipalities.

Twenty-six percent of total revenues is spent on state entities (such as the Ministry of Public Health and the Armed Forces, the Police, and other ministries); 25%, on the for-profit private sector; 21%, on social security (IESS and Farmers Social Security); 11%, on private pharmacies; 4%, on the Guayaquil Welfare Board; and 13%, on other providers (Society to Combat Cancer, municipalities, nongovernmental organizations, state-commissioned providers, National Child and Family Institute, other welfare foundations, the Red Cross, etc.).

External Technical Cooperation and Financing

The contribution by international cooperation (reimbursable and non-reimbursable) to the health sector is 9% of the budget;

in 1997 it was equivalent to US$ 60.5 million, which is significant considering that the budget allocated to the Ministry of Public Health for that year was US$ 161 million. The largest volume comes from World Bank credits for projects to strengthen and expand basic health services in Ecuador (US$ 70 million in 1993–2000), modernization of Ecuador's networks and services (US$ 45 million in 1999–2000), health and development (US$ 20.2 million in 1998–2001), and the Roll Back Malaria initiative (US$ 3 million).

Health promotion has been boosted through cooperation on specific projects: with Canada on the consumption of alcoholic beverages in indigenous populations, with Cuba on the development of healthy municipalities, and with Peru on healthy borders and binational cooperation in health services.

It is important to highlight the country's participation with its border countries: the Loja project to develop healthy spaces with Peru; the project for the development of peace on the southeastern border of Ecuador; and the joint health projects developed with various funding agencies. Detailed analysis and preparation of suitable health activities is required to tackle the problem of the Colombian population crossing over the border with Ecuador and settling in the northern territory.

FIGURE 1. Gross domestic product, annual growth (%), Ecuador, 1990–2000.

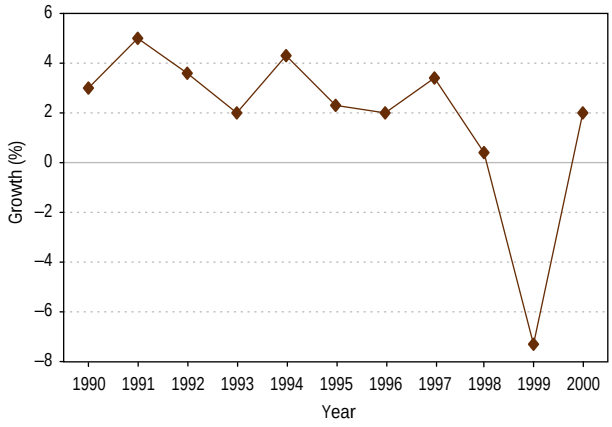


FIGURE 2. Population structure, by age and sex, Ecuador, 2000.

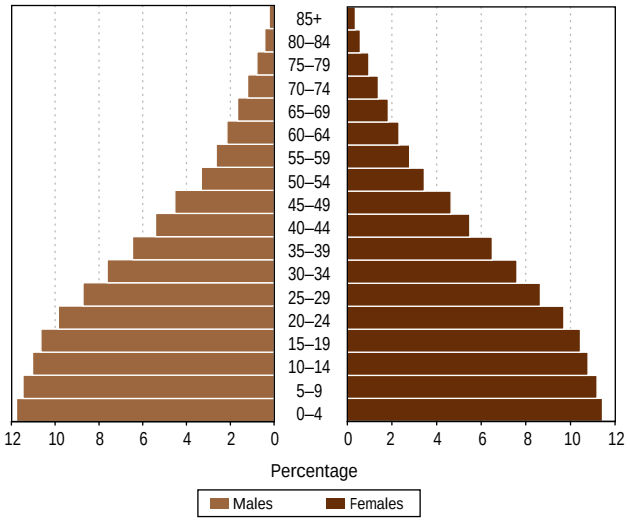


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Ecuador, 1999.

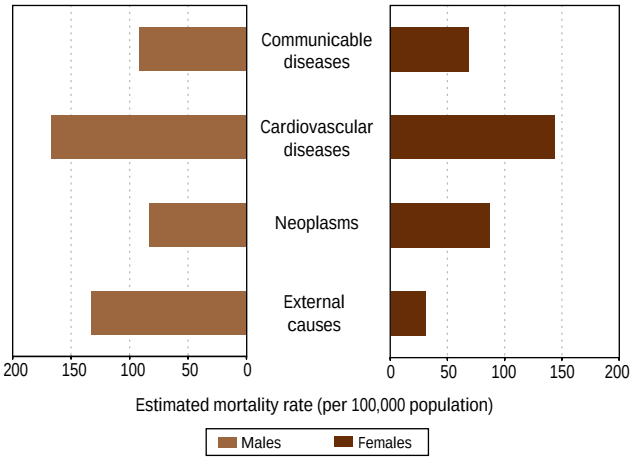


FIGURE 4. Distribution of infant mortality, by province, Ecuador, 1998.

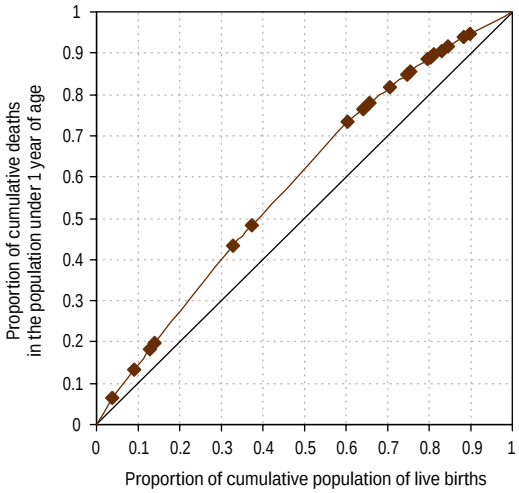


FIGURE 5. Infant mortality, by mother's level of schooling, Ecuador, 1999.

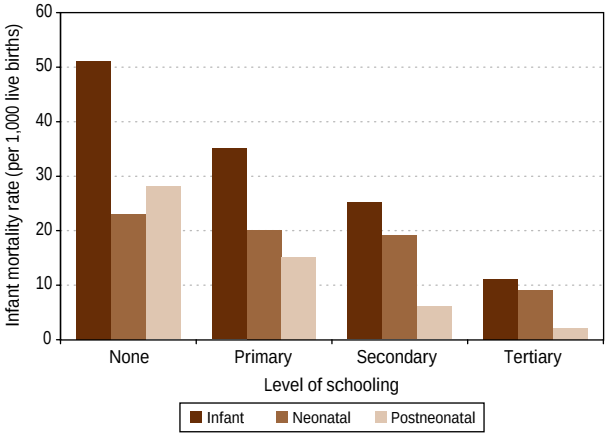


FIGURE 6. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage for women of childbearing age, Ecuador, 2000.

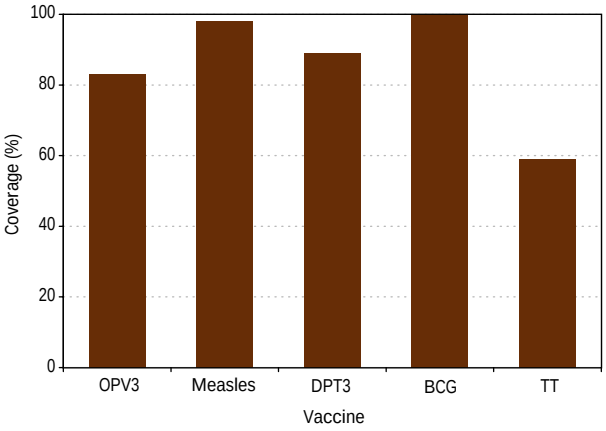
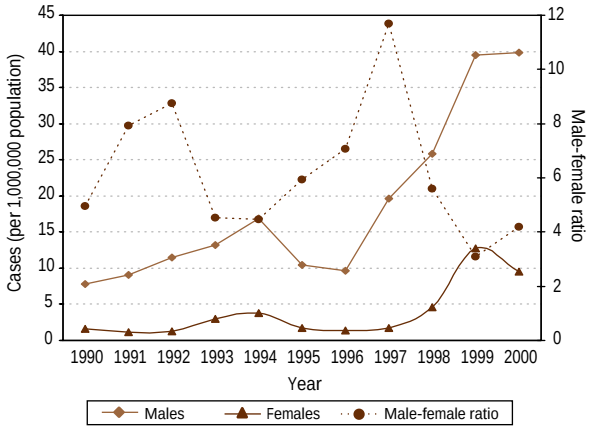


FIGURE 7. AIDS incidence, by sex, with male-female ratio, Ecuador, 1990–2000.



EL SALVADOR

OVERVIEW

El Salvador is a representative, democratic republic with three branches of government: the executive, legislative, and judicial. Currently, its various political and administrative entities—autonomous and semiautonomous agencies, ministries, municipal governments, and organizations representing civil society—are in the process of decentralization.

In terms of the country's economic indicators, the GDP, at constant prices, increased from US$ 1,029.4 million in 1999 to US$ 1,044.6 million in 2000 (Figure 1). Although public spending in general went from 16.0% of GDP in 1998 to 15.8% in 1999, public expenditure in the social sectors increased from 5.4% in 1998 to 5.7% in 1999. The annual inflation rate fell from 4.2% in 1998 to 1.0% in 1999.

In the year 2000, inflation was 4.3%, the constant GDP was US$ 1,641,834, and the nominal GDP was US$ 3,347,729. The economically active population numbered 2,444,959, with an open unemployment rate of 7%. There were 984,903 households headed by men and 398,242 headed by women. A total of 268,780 households were receiving support from abroad, and the annual flow of remittances to families amounted to approximately US$ 1,700 million.

The country's total population as of 2000 was estimated at about 6 million, and of this number, 3.5 million resided in urban areas and 2.5 million lived in the countryside. It is a young population, with a mean age under 20 years (Figure 2). Adolescents, who number 1.3 million, represent 21.4% of the total, and 52.8% of them live in urban areas. Males, at 50.7%, predominate slightly over females.

In 1999 the annual population growth rate was 20.2 per 1,000 and the crude birth rate was 27.7 per 1,000 (24.5 per 1,000 in urban areas and 31.5 per 1,000 in rural areas). The crude mortality rate was 6.1 per 1,000 at the national level, 5.6 for urban residents, and 6.7 for those living in rural areas. As of 2000, life expectancy at birth was 69.4 years for the population as a whole, 71.3 years in the cities, and 66 years in rural areas. That same year, the general fertility rate in women 15–49 years of age was 3.6; for women with no formal education and in the lowest socioeconomic bracket, the fertility rate was 5. On average, women have their first sexual experience at 18.5 years of age and deliver their first child when they are 20.5 years old.

Mortality

According to the Office of Statistics and Census (DIGESTYC), in 1999 there were 28,078 reported deaths, 12% (3,380) of which were from ill-defined causes. The leading causes of death, by broad groups, were communicable diseases, malignant neoplasms, diseases of the respiratory tract, certain conditions originating in the perinatal period, external causes, and other diseases. Almost 70% of the deaths were concentrated in 5 of the country's 14 departments: Santa Ana (548.4 per 100,000 population), Sonsonate (452.9), San Miguel (411.6), San Salvador (389.9), and La Libertad (333.6).

In 1997 the leading causes of death were external causes (83.4 per 100,000 population), communicable diseases (64.3), and diseases of the circulatory system (64.0). In 1999, the leading causes were diseases of the circulatory system (88.3), external causes (82.3), and communicable diseases (59.4).

Diseases of the circulatory system accounted for the highest percentage of deaths among males in 1997; their rate in this category was 30.6 per 100,000 (compared with 30.0 per 100,000 in women). The mortality rate from malignant tumors was 29.0 for women and 18.2 for men. In 1998 men had a rate of 75.6 per 100,000 for deaths due to external causes, which numbered 5,435 overall. That same year, deaths from communicable diseases reached a rate of 39.4 per 100,000 population for both sexes. Deaths due to neoplasms represented 16.6% of all deaths in women, compared with 7.4% of the deaths in men. The male-female ratio of deaths due to external causes was approximately five times as great for males in three consecutive years—specifically, 4.81 in 1997, 5.23 in 1998, and 4.94 in 1999.

In 1999, the largest percentages of deaths in women were caused by diseases of the circulatory system and neoplasms. That same year there were 3,660 deaths from communicable diseases,

the most frequent of which were influenza and pneumonia, with a mortality rate of 24.6 per 100,000; streptococcal and other septicemia, at a rate of 14.5; diarrhea and infectious gastroenteritis, at 9.2; and HIV/AIDS, at 6.1.

A total of 5,068 deaths were attributed to external causes in 1999. The most frequent of these were assaults and homicides, transport accidents, intentionally inflicted injuries, accidental drownings, and falls. Assaults and homicide (37.4 per 100,000 population) had a male-female ratio of 10.7:1.

According to figures from the Ministry of Public Health and Social Welfare (MSPAS), a total of 7,262 hospital deaths were reported in 1999. The five leading causes of hospital deaths were septicemia (7.4%), pneumonia and bronchopneumonia (6.6%), premature birth (4.7%), chronic renal failure (4.6%), and intracranial trauma (4.6%). The 1998 Family Health Survey (FESAL-98) estimated a maternal mortality rate of 120 per 100,000 live births.

In the human development index, El Salvador ranked 104th in the year 2000. In 1998, the literacy rate in the population 15 years of age and older was 77.8% (75% for women and 93% for men), and in the group 15–24 years old the rate was 87.7%.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

The FESAL-98 survey found an infant mortality rate of 35 per 1,000 live births. Postneonatal mortality in rural areas was 41 per 1,000 live births, compared with 27 per 1,000 in urban areas. Half of all infant deaths occurred during the neonatal period (0–28 days of life). The death rate ranged from 12 per 1,000 live births for mothers who had had prenatal care starting in the first trimester to 30 per 1,000 for those who had had none. Considered in terms of birthweight, mortality was 7 per 1,000 live births for infants who weighed 2,500 g or more at birth, compared with 34 per 1,000 for those who weighed less than 2,500 g. Neonatal mortality among full-term infants was 14 per 1,000 live births, whereas among those born prematurely the rate was 55 per 1,000. DIGESTYC reported that the most common causes of perinatal mortality were specific respiratory disorders (26.6%), asphyxiation (23.2%), and specific infections (19.4%). The male-female ratio of mortality in this group was 1.3:1. In 1999 a total of 1,318 deaths were reported in children under 1 year of age: 46.7% of these deaths were caused by communicable diseases, 44.5% by certain conditions originating in the perinatal period, and less than 5% by all other causes combined. Among the deaths from communicable diseases, the leading causes were influenza and pneumonia (42.6%), diarrhea and gastroenteritis of presumed infectious origin (38.2%), and acute diseases of the lower respiratory tract (9.7%). Analysis of the differences yields a Gini coefficient of 0.16. As can be seen in Figure 3, more than 50% of the deaths in children under 1 year of age occurred among 40% of the live births for that year.

The MSPAS reported that the leading causes of morbidity in children under 1 year of age in 1999 were acute respiratory infections (12.2%), diarrhea (8.9%), bronchitis (5.6%), skin diseases (4.7%), and pneumonia and bronchopneumonia (3.1%). Total hospital discharges in this age group came to 37,505, and the main causes of hospitalization were specific respiratory disorders of the perinatal period (19.4%), pneumonia and bronchopneumonia (17.5%), premature birth (6.1%), and fetus and newborn affected by premature rupture of membranes (5.4%). The leading causes of in-hospital mortality were premature birth (24.6%), perinatal respiratory distress syndrome (20.5%), congenital malformations (11.5%), bacterial sepsis of the newborn (10.6%), and pneumonia and bronchopneumonia (10.4%).

Among children 1–4 years of age, data from DIGESTYC showed a total of 232 registered deaths in 1999, which were due to communicable diseases (33.6%), external causes (26.7%), and other diseases (30.2%). Of the deaths caused by communicable diseases, 39.7% were due to influenza and pneumonia, 25.6% to diarrhea and gastroenteritis of presumed infectious origin, 14.1% to streptococcal septicemia, and less than 7% to other causes. Of the deaths due to external causes, 61.3% were attributed to transport accidents, 19.4% to accidental drowning and submersion, and 6.5% to assaults and homicide.

According to the MSPAS, the leading causes of morbidity in this age group were acute respiratory infections (35.3%), intestinal parasitism (8.3%), diarrhea (7.2%), and acute bronchitis (5.4%). The hospital discharge diagnoses were bronchopneumonia (19.3%), diarrhea (11.3%), febrile convulsions (5.6%), and asthma (4%). The most common causes of hospital deaths were pneumonia and bronchopneumonia (15%), congenital malformations (12.1%), diarrhea (7.3%), sepsis (5.8%), and severe malnutrition (4.8%).

Whereas in 1988 chronic malnutrition affected 31.7% of children in this age group, by 1998 this percentage had declined to 22.8%. Today, low height-for-age affects at least one out of every five children under 5 years old. A national survey conducted in 1998 found that 18.9% of the children over 1 year and under 5 had some degree of anemia.

Schoolchildren (5–9 years)

According to the MSPAS, the 228 deaths reported in 1999 among children 5–9 years old were due mainly to external causes (43.9%), communicable diseases (20.7%), and tumors (5.3%), with other causes accounting for less than 5%. Mortality from external causes included transport accidents (62.8%), accidental drowning and submersion (25%), and assaults and homicide (3%). The causes of death from communicable diseases included influenza and pneumonias (50%), streptococcal septicemia

(27.1%), and diarrhea and gastroenteritis of presumed infectious origin (14.6%).

The MSPAS began to register morbidity and mortality separately for this age group in 2000. The leading cause of morbidity was acute respiratory infections, which accounted for 34.3% of all initial consultations, followed by intestinal parasitism (10.2%), acute bronchitis (2.9%), diarrhea (2.7%), urinary tract infection (2.1%), infectious skin diseases (2%), otitis media (1.6%,) anemia (1.3%), asthma (1.2%), dermatitis (1.4%), and other causes (40.7%).

In 2000 there were 334,924 hospital discharges. The leading diagnoses were classic and hemorrhagic dengue (10.4%), fractures (8.3%), cranial trauma (5.5%), pneumonia and bronchopneumonia (5.4%), appendicitis (4.4%), infectious skin diseases (4.1%), asthma (4.0%), diarrhea (3.0%), urinary tract infections (2.9%), and intestinal parasitism (2.8%); the remaining 49.3% were for other reasons. The most frequent causes of hospital mortality were hemorrhagic dengue (20.7%), pneumonia and bronchopneumonia (12.1%), head trauma (10.3), septicemia (10.3), malignant neoplasms of the encephalon (6.9%), Hodgkin's disease (6.9%), anemia, AIDS, liver failure, and disseminated intravascular coagulation (3.5% each), with 19% corresponding to other causes.

Adolescents (10–14 and 15–19 years)

The adolescent population, which stood at 1.3 million in 2000, was estimated to represent 21.4% of the country's total. Males predominated slightly over females (50.7% vs. 49.3%). According to data from the Multipurpose Household Survey, 52.8% of the adolescents were urban residents. FESAL-98 found that specific fertility in the group aged 15–19 years old fell from 125 live births for every 1,000 adolescents during 1983–1988 to 116 per 1,000 in 1993–1998. Nine percent (123,364) of the country's adolescents were illiterate. FESAL-98 also found that youth between 10 and 17 years of age constituted 16% of the nation's total workforce, and of this group, 71.0% were male. While male workers were predominantly rural residents (77.9%), 40.8% of the female workers lived in urban areas (40.8%).

In 1999 adolescents accounted for 16% of the 1.2 million office visits at MSPAS facilities, with 67.4% of them corresponding to females. Eighty-five percent of the adolescents sought treatment for infectious or contagious diseases. Of the hospital discharges recorded by the MSPAS in 1999, 17% (52,696) were adolescent patients, and of these, 76% were females. Thirty-six percent of the office visits of adolescents aged 15–19 were related to sexual and reproductive health, as were 88% of the diagnoses associated with hospital discharges in this age group.

Of the prenatal visits during 2000 under the MSPAS monitoring program, 21.5% (23,634) were made by adolescents. Adolescent deliveries increased from 15,903 (21% of all births) in 1997 to 26,240 (34%) in 1999, and in 2000 the figure was 22,293 (27%).

The population aged 15–24 accounted for 26.7% of the HIV/AIDS cases recorded up through December 2000, compared with 37.5% for the group aged 25–34. Of the reported cases among adolescents, 53.7% of them were in males.

In 1999, according to figures from the Salvadorian Institute for Child Protection, 75% of the 5,000 adolescents who committed traffic infractions were addicted to drugs of some kind. The substance most frequently used was marijuana, followed by crack cocaine and cocaine. A UNICEF study reported that 9 out of 10 youths who belonged to gangs were using or had used some type of drug.

Of all the hospital deaths registered at MSPAS facilities in 1999, 4.6% (355) corresponded to adolescents, and 59% of these were males. Intracranial trauma was the cause of 19% of the hospital deaths in teenage males, while 27% of the deaths in adolescent females were due to intoxication or poisoning.

Adults (20–59 years)

According to MSPAS figures, there were 7,883 deaths in the group aged 25–59 years, due to the following: external causes (32.4%, 41.5 per 100,000 population), diseases of the circulatory system (12.5%, 16.0 per 100,000), tumors (11.8%, 929 cases), communicable diseases (11.7%, 923 cases), and other causes, 31.6%. Among the external causes (2,523 cases), the most frequent were assaults and homicide (48.7%), transport accidents (33.3%), and self-inflicted injuries (10.0%). Other causes accounted for less than 5% of all deaths. Among the diseases of the circulatory system (987 cases) were acute myocardial infarction (48.7%), cerebrovascular diseases (22.4%), congestive heart failure (17.4%), and ischemic heart disease (5.2%), with other causes accounting for less than 3.0% of the deaths. The most frequent communicable diseases were HIV/AIDS (33.7%), streptococcal septicemia (26.4%), influenza and pneumonia (20.8%), diarrhea and gastroenteritis of presumed infectious origin (7.9%), and tuberculosis (7.5%), with other causes representing less than 2.0%. The group of "other diseases" (2,491 cases) included mental and behavioral disorders (24.6%), liver diseases (19.2%), renal failure (17.3%), diabetes mellitus (8.8%), and other causes (less than 5%).

In 1999 the most frequent reasons for consultations by the group aged 15–44 were acute respiratory infections (12%), urinary tract infections (6.7%), stress headache (2.5%), diarrhea (2%), and other (less than 2%). In the group aged 45–59 there were 452,728 consultations, most frequently for acute respiratory infections (956.48 per 100,000 population), urinary tract infections (467.6), primary arterial hypertension (351.6), diabetes mellitus (204.1), diarrhea (204.1), and other (less than 2.5%).

The leading diagnoses associated with the 162,310 hospital discharges in the group aged 15–44 were complications of pregnancy, delivery, and the puerperium (11.5%), urinary tract infection (2.1%), acute appendicitis (1.6%), intracranial trauma (1.5%), and abnormal vaginal or uterine bleeding (0.9%). In the

group aged 45–59 there were 25,941 discharges, and the leading diagnoses were chronic renal failure (6%), diabetes mellitus (4.6%), abnormal vaginal or uterine bleeding (3.4%), primary arterial hypertension (2.8%), and diarrhea (2.1%). The three leading causes of hospital deaths in the group aged 15–44 were intracranial trauma (11.3%), pesticide poisoning (10.7%), and AIDS (7.4%). For those 45–59 years old, the main causes were chronic renal failure (9.9%), septicemia (6.2%), and liver failure (5.3%).

The Elderly (60 years and older)

In 1999 there were a total of 10,573 deaths in the population aged 65 and older, which represented 42.8% of all mortality in the country. Of these deaths, 37.2% were due to diseases of the circulatory system, 14.1% to communicable diseases, 13.4% to malignant neoplasms, 5.1% to external causes, and 30.2% to other causes. Circulatory diseases represented 72.4% (3,936) of all deaths in persons over 60 years old, with 43.4% due to acute myocardial infarction, 28.0% to congestive heart failure, 18.2% to cerebrovascular diseases, and 6% to other causes. Mortality due to communicable diseases represented 40.8% (1,493) of the total, with the leading causes being influenza and pneumonia (56.3%), streptococcal septicemia (29.4%), diarrhea and gastroenteritis (9.2%), and other causes (less than 3%). Mortality from tumors represented 51.7% (1,414), and the most frequent were malignant tumors of the stomach (19.2%), prostate (10.5%), and the cervix uteri (9.9%). According to data from DIGESTYC, there were a total of 2,768 in-hospital deaths in 1999, distributed as follows: cardiovascular diseases (14.3%), respiratory diseases (10.9%), cerebrovascular accidents (9.2%), chronic renal failure (5.6%), and head trauma (3.4%).

The five leading reasons for outpatient consultations in the group aged 60 and over were acute respiratory infections (incidence: 1,074.6 per 10,000 population), arthritis (623.6), primary arterial hypertension (616.6), urinary tract infections (509.9), and diarrhea (271.2).

Family Health

The Multipurpose Household Survey estimated that there were a total of 1,383,145 households in 1999, 71.2% of which were headed by men and 28.8% by women. Urban households had an average of 4.2 members, and rural households an average of 5. While 41.3% of the households were below the poverty line, 47% of the population were living in a state of poverty; of the latter, 38% were urban residents and 60% lived in rural areas. The mean household income was US$ 399.30 a month, and urban households received 1.3 times more than those in the countryside. The economically active population had an average monthly income of US$ 237.60, with men earning 14.4% more than women. In addition, 19.4% of the households received family remittances from abroad.

Workers' Health

In 1999 a total of 4,180,826 outpatient consultations were made, 66.7% of them by direct beneficiaries and 33.3% by indirect beneficiaries. Of the total, 81.5% were for conditions associated with ordinary risks, 0.9% for work-related risks, and 3.4% for maternity. The rate of consultations in the population attended was 4.6 per beneficiary, and the rate of dental consultations was 0.4 per beneficiary. The Salvadorian Social Security Institute (ISSS) provides coverage for 14.6% of the total population; since 1996 it has covered not only direct beneficiaries but also spouses or partners and children under 6 years of age.

The 10 main reasons for outpatient consultations were acute rhinopharyngitis, arterial hypertension, diarrhea and gastroenteritis, prenatal care, acute pharyngitis, other respiratory tract infections, gynecological examination, morbidity of unknown origin, unspecified lumbago, and urinary tract infections. The principal reasons for hospitalization in 1999 were pregnancy, delivery, and the puerperium; diseases of the digestive system; diseases of the genitourinary system; injury and poisoning; diseases of the circulatory system; tumors; factors bearing on the state of health; diseases of the musculoskeletal system; diseases of the respiratory system; and endocrine, nutritional, and metabolic diseases.

According to data compiled by the ISSS, a total of 19,266 work-related accidents were reported in 1999; 39.1% of them occurred in the manufacturing industries; 16.6% in the sector of community, social, and personal services; 15.6% in retail and wholesale businesses, hotels, and restaurants; 12.2% in the construction industry; and 9.1% in the real estate industry and services rendered to businesses.

The Disabled

According to the results of a survey conducted in 2000 by PAHO and the German Technical Cooperation Agency (GTZ), the overall prevalence of disability in El Salvador was 8.5 per 1,000 population, and the rate was higher in men (8.5) than in women (8.1).

The most commonly encountered disabilities were impaired vision (42%), difficulty walking (31.2%), difficulty grasping objects (15.5%), difficulty hearing (15.3%), difficulty speaking (11.9%), mental retardation (9.4%), epilepsy (6.9%), and deafness (6.2%). With regard to their education, 46.3% of the disabled population did not know how to read or write, 22.8% had gone no further than third grade, 14.1% had finished sixth grade, and 7.2% had completed ninth grade. Only 25.2% of the disabled were employed (66.1% of them were women and 33.8% men). Data from the 2000 Survey of Disabled Persons show that 47.2% had temporary jobs, 17% were employed in public service or private enterprise, 14.7% were self-employed, 6.5% were working at domestics, and 6.4% worked at home.

Indigenous Groups

In 1999, the indigenous population was estimated at 684,613, or 11.3% of the country's total. The majority (94.4%) were Nahuat-Pipil, trailed by the Lenca (4.1%) and Cacaopera (1.5%). The last group had the lowest levels of health and quality of life. The indigenous population is found in 7 of the country's 14 departments: Ahuachapán (4 municipalities), Sonsonate (14), La Libertad (5), San Salvador (4), La Paz (8), Morazán (3), and Santa Ana (1). The predominant language is Nahuatl, although children and young people speak it less frequently. According to a study conducted in 1998 by the National Coordinating Council for El Salvador's Indigenous Peoples, the households had an average of 5 members; 76% were headed by men and 24% by women, and 69% of their members were between 15 and 44 years of age. Among women of reproductive age, 10.5% were using contraceptive methods, and the prevalence of pregnancy was 9%. Only 26% of all pregnant women had prenatal care, and 70% of the deliveries were attended by midwives. Vaccination coverage for tetanus toxoid was 20%. Fifty-nine percent of the population was illiterate, and unemployment was 24%. For the most part, the people's homes were made of adobe (57.8%) and had earthen floors (86.4%) and straw roofs (78%). Only 33% had the benefit of electrical service, and 64% used oil lamps or candles for lighting. Water was obtained by 91.6% of the population from wells, rivers, or both; 60% had latrines, whereas 37% had no sanitary facilities at all. The proportion of the indigenous population below the poverty line was 61.1%, and 38.3% were living in extreme poverty. Only 1.3% received family remittances from abroad. The predominant illnesses were communicable diseases (acute respiratory infections, acute diarrheal diseases, and intestinal parasitism).

By Type of Health Problem

Natural Disasters

In 1997 and 1998, the effects of El Niño made for an unpredictable rainy season and an extremely arid dry season. In 1998, at the peak of the rains from Hurricane Mitch, around 31 October and 1 November, two rivers, the Río Grande de San Miguel and the Lempa, overflowed between San Vicente and Usulután. This flooding caused 239 deaths, and 57,777 people suffered related consequences. The damage to aqueducts and water supply systems was estimated at US$ 124.37 million. In November 1999 heavy rains again caused the lower Lempa and La Paz rivers to overflow, and 11,334 people from 48 communities in six departments were affected.

In June 1998 the environment was accidentally contaminated as a result of the mishandling of 42 barrels containing liquid organochlorine pesticides. Toxic gases emanated for 1.5 km in every direction and affected 36 people. In September and October 2000 a mass poisoning caused by the ingestion of sugar cane liquor adulterated with methanol affected 167 people and caused 93 deaths, for a case fatality rate of 56%. The average age of the victims was 44, although they ranged between 16 and 85 years, and 98% of them were men.

An earthquake of 7.6 magnitude on the Richter scale struck El Salvador in January 2001. This seismic event was followed only a month later by a second temblor of 6.6 magnitude. As of 2 February 2001, the National Emergency Committee (COEN) had reported a death toll of 827, representing a mortality rate of 13.18 per 100,000 population for the country as a whole. The department of La Libertad had the highest death rate, at 85.77 per 100,000 inhabitants. In addition, 4,520 people were injured, and 1,160,316 had damage to their property and homes. It is estimated that 18.48% of the country's population experienced some type of damage. The departments in which the most people were affected were Usulután and La Paz, in which 100% and 77% of the inhabitants, respectively, experienced losses. A total of 224,068 structures were affected, and of this number 41.1% corresponded to homes that were destroyed. The second earthquake added to the loss and destruction caused by the first one. As of 21 February 2001, COEN reported 315 deaths as well as 3,399 people injured and 252,622 affected by some form of damage. The death rate for the country as a whole was 5.0 per 100,000 inhabitants. The area most affected included the departments of Cuscatlán, La Paz, and San Vicente, where mortality was 81.3, 19.8, and 54.0 per 100,000 inhabitants, respectively.

Vector-borne Diseases

Malaria remained stable and even showed a slightly downward trend. In the four years of 1997 through 2000 there were 5, 11, 9, and 9 cases, respectively, of *Plasmodium falciparum* malaria, none of which were resistant to chemotherapy. In addition, there were 2,714 cases caused by *P. vivax* (45.9 per 100,000 population) in 1997, 1,171 (19.4) in 1998, 1,221 in 1999, and 599 in 2000. The 14 departments in the country are considered areas of malaria transmission. Morbidity is concentrated in five departments: La Unión, Sonsonate, La Paz, Ahuachapán, and Usulután. The distribution by age group in 2000 was as follows: 0 in infants under 1 year old, 7.1% in children aged 1–4 years, 25.8% in the group aged 5–14, 57.7% in those aged 15–44, and 9.4% in the population 45 and over. The male-female ratio was 1.5:1. The annual parasite index that year was 0.12 per 1,000, and the annual *P. falciparum* index was 0.0014. No deaths from malaria were reported during the period. The country has adopted a "Roll Back Malaria" strategy, the principles of which were reiterated in November 2000. The basic principle is early diagnosis and immediate treatment of all clinical cases.

Dengue has been showing endemic characteristics, with epidemics in the last four years and a rising trend in the hemorrhagic form. In 1997 a total of 396 cases of classic dengue were

recorded, representing an incidence of 6.7 per 100,000 population. In 1998 there were 1,686 cases of classic dengue (incidence of 27.9 per 100,000), plus 2 cases of hemorrhagic dengue, and the dengue-3 serotype was isolated. In 1999 cases of the classic form were down to 556 (9.0), but there were also 70 cases of hemorrhagic dengue, and the serotype was dengue-2. The year 2000 saw a new epidemic of dengue, with 16,697 clinical cases and an incidence of 266.0. Of the total cases, 3,248 (19.5%) were confirmed in the laboratory and 411 were classified as dengue hemorrhagic fever/dengue shock syndrome. There were 26 deaths, primarily in children aged 5–9 years (49.1%). The dengue-2 serotype Jamaica strain was isolated.

Up to 2000 there had been no systematic campaign against dengue based on control of the vector. That year preventive measures were undertaken, which included enlisting community involvement through messages to the population. In addition, workshops were offered for physicians in the MSPAS, ISSS, and Armed Forces network on the physiopathology, clinical diagnosis, and treatment of dengue. Also, in response to the epidemic of 2000, efforts were undertaken to reduce breeding sites and to expand the provision of medical care.

Despite the apparently low morbidity of Chagas' disease, entomological surveys have demonstrated high levels of risk due to the presence of the infectious agent. In 1997 a nationwide epidemiologic survey of *Trypanosoma cruzi* infection sampled 2,500 houses in 205 localities scattered throughout 14 departments of the country. In addition, 8,000 blood samples from schoolchildren aged 7–14 and 4,000 from adults were examined by enzyme-linked immunosorbent assay and direct immunofluorescence. The index of dwellings infested with *Triatoma dimidiata* was 23.7%; the dispersion index, 63.5%; the density index, 78.8%; the colonization index, 48.7%; and the index of *Triatoma dimidiata* infected with *T. cruzi*, 17.6%. The serologic index in schoolchildren was 0.4%, and in adults it ranged from 1.9% in Santa Ana to 8.9% in Sonsonate. In half the localities studied the infestation indices were higher than 20%. An entomological assessment of 262 municipalities by the vector control program found a *T. dimidiata* infestation index of 17.4% (21.1% in rural areas and 12.2% in urban areas). In a quality control exercise based on 15 blood samples provided by the Salvadorian Red Cross and 75 from Honduras, the results were 100% in agreement. All the blood units at the central blood laboratory of the Salvadorian Red Cross were screened for Chagas' disease.

Diseases Preventable by Immunization

A total of 233 cases of eruptive febrile diseases were reported in 1999 and 633 in the year 2000. A follow-up measles eradication campaign, conducted from February through March 2001, was successful despite the complications resulting from the two earthquakes. Vaccination coverage at the national level reached 98% of all children under 5 years of age.

The country continues to be free of poliomyelitis. Even though for the last five years vaccination coverage against this disease has been over 95% in children under 1 year of age, it is planned to conduct a vaccination campaign for all children under 5 years old during the first quarter of 2002 in order to reduce the susceptible population.

There were 4 cases of whooping cough in 1998, 3 in 1999, and 8 in the year 2000.

Neonatal tetanus has virtually ceased to be a public health problem in El Salvador. There have been some cases of the disease in adults, however, and tetanus vaccination has therefore been extended to include additional population groups considered to be at risk. There were 3 cases of neonatal tetanus in 1999 and 3 in 2000. There were 7 cases of the disease in 1998, 5 in 1999, and 15 in 2000.

Intersectoral action to sustain present levels of coverage and to strengthen epidemiologic surveillance has made it possible to achieve most of the indicators required by the Region for the eradication of poliomyelitis and measles. The surveillance of diseases preventable by immunization also includes rubella and congenital rubella syndrome. Although there have been a few cases of pertussis, they have been sporadic. Rubella has become endemic in recent years, but the number of cases has been relatively low thanks to the administration of the trivalent MMR vaccine to adolescent and young adult populations since 1996, when all schoolchildren were vaccinated under the Healthy Schools Program.

Pursuant to the PAHO/WHO recommendation to incorporate new vaccines into the national immunization scheme, in 1999 the MMR and hepatitis B vaccines were given to infants under 1 year, and the Td vaccine was administered to women of reproductive age. Starting in 2002, a pentavalent vaccine will be administered to all children under 1 year of age.

Intestinal Infectious Diseases

Between December 1999 and April 2000 a cholera outbreak produced a total of 788 cases of the disease, 157 in 1999 and 631 in 2000. This outbreak was largely concentrated in the departments of San Salvador, La Libertad, La Paz, and Santa Ana, and the age groups most affected were those 80–89 (28.9 per 100,000), 70–79 (9.7 per 100,000), and 60–69 (8.3 per 100,000). The male-female ratio was 1.1:1. In 1999 there were 3 deaths, for a case fatality rate of 1.9%. In 1999 the age groups most affected were those 60 and over, with a rate of 18.3 per 100,000; for persons between 20 and 59 years old, it was 5.9 per 100,000; and for the entire population, it was 2.6 per 100,000. In 2000 the overall incidence was 9.4 per 100,000, with the following distribution by age groups: under 1 year, 2.4%; 1–4 years, 5.4%; 5–9 years, 6.4%; 10–19 years, 9.8%; 20–59 years, 50.2%; and 60 and over, 25.8%. No deaths were reported.

In weeks 50 to 52 of 2000, an increase was reported in cases of rotavirus diarrhea in children under 5 years; the causal agent,

identified by the United States Centers for Disease Control and Prevention, in Atlanta, was the type 1 virus.

Chronic Communicable Diseases

With respect to tuberculosis, in 1997 the country adopted the strategy of directly observed treatment, short course (DOTS). Starting that year with 10% of the health establishments on a pilot basis, the program reached its goal of 100% coverage in 2000. Over this period, the number of cases of all forms of tuberculosis ranged between 1,600 and 1,700 a year, with an annual incidence of between 27 and 28 per 100,000 population. New cases diagnosed by positive reaction to acid-alcohol fast bacilli ranged between 882 and 1,070, for a corresponding incidence of between 14 and 17 per 100,000 population. In recent years there has been an increase in reported cases thanks to active case-finding of respiratory symptomatics (any person 15 years of age or older presenting cough, with or without expectoration, for more than 15 days). Of the new cases of pulmonary tuberculosis diagnosed in 2000 on the basis of a positive smear, 96% were in the age group of those 15–29 years old, and 62% were in males and 38% in females. BCG vaccination coverage of children under 5 years was maintained at levels of 95% to 99%. There are 1 to 4 cases of tubercular meningitis every year, for an incidence of between 0.025 and 0.2 per 100,000 population in this age group. The treatment scheme used is the one that has been standardized worldwide; it was given to 10% of the patients in 1997, 54% in 1998, and 94% in 1999, as more health promoters became trained and the hours of service were extended. The treatment was 68.6% effective in 1997 and 82% effective in 1999, partly as a result of the dropout rate falling from 11.3% in 1997 to 8.8% in 1999.

Activities in the areas of leprosy diagnosis and early multidrug therapy have been stepped up over the last three years. In 2000, there were 56 cases, with 7 new cases diagnosed in the northern area of the country. The prevalence rate was lower than 1 per 10,000 population.

Acute Respiratory Infections

Acute respiratory infections are the leading cause of morbidity and mortality in El Salvador. In 2000 a total of 1,585,154 cases were reported, for an incidence of 252.3 per 1,000 population, and with 52% of those under 5 years of age being affected. The incidence of pneumonia and bronchopneumonia was 44.7 per 1,000, with 38.3% of infants under 1 year of age affected, 27.4% of adults aged 20–59 affected, and 18% of children 5–9 years old affected. These diseases were the second leading cause of mortality among all registered hospital deaths (480). Moreover, they were the fifth-ranking cause of death in infants under 1 year (144), the leading cause in children aged 1–4 (31), the second leading cause in the group aged 5–14 years (14), the eighth-ranking cause in the group aged 45–59 (28), and the second most important cause in the population 60 and over (225).

Zoonoses

There was one case of human rabies in San Miguel in 1999, and one in San Vicente in 2000. Canine rabies fell from 123 cases in 1998 to 35 in the year 2000. The departments most affected were La Libertad, Ahuachapán, Cuscatlán, and San Miguel. In cats, there were six cases each in 1999 and 2000. There were also eight cases in cattle in 2000.

HIV/AIDS

A total of 3,482 cases of AIDS were reported in 2000, corresponding to a rate of 8.16 per 100,000 population, the highest rate since the beginning of the epidemic in 1984. Of these cases, 80.5% were among urban residents and 19.0% in persons living in the countryside; 73.3% were in males and 26.7% in females. Sexual transmission has accounted for 89.5% of the cases (78.4% in heterosexuals, 6.1% in homosexuals, 5.0% in bisexuals); vertical transmission, 4.8%; and transmission by blood transfusion, 0.5% over the last seven years. The population aged 15–39 years was most affected, with 67.4% of the cases; those aged 50 and over had 10% of the cases; and there were 630 cases among those 12–24 years old. In women of reproductive age there were 683 cases of AIDS and 906 cases of HIV (Figure 4). The group aged 20–29 was most affected. The departments with the highest number of cases per 100,000 inhabitants were San Salvador (89), Sonsonate (40), Santa Ana (32), San Vicente (31.4), La Libertad (28), and Cuscatlán (27). The MSPAS and the ISSS began to offer antiretroviral treatment in the last quarter of 2000. During 1997–2000, epidemiologic surveillance for HIV at control sites found infection rates of 0.3% among pregnant women and of 21.6% among street children (1997).

Sexually Transmitted Infections

The frequency of curable sexually transmitted infections rose slightly between 1997 and 2000, with an average of 45,652 cases a year and an incidence in 2000 of 88.9 per 10,000 population. The most common diseases that year were candidiasis (55.9%), trichomoniasis (27.8%), and gonorrhea (5.7%). Congenital syphilis accounted for 0.2% of all cases.

Nutritional and Metabolic Diseases

According to FESAL-98, chronic malnutrition in children 5 years of age, based on height-for-age, was 23.3%. This figure was virtually unchanged from five years earlier, when FESAL-93 found the proportion to be 22.8%. Chronic malnutrition in preschool children increased with age, from 11.2% in infants under 12 months to 30.6% in children 48–59 months old. As for acute malnutrition, only 1.1% of the children had weight-to-height levels that were two standard deviations below the expected norm (2.3%). Overall malnutrition defined in terms of weight-for-age was 11.8% among children under 5 years old.

In a nutritional evaluation of schoolchildren conducted by the MSPAS in 1997, serum retinol levels were found to be over 30

µg/dL in 91% of the children, between 20 and 30 µg/dL in 8% of them, and under 20 µg/dL in 1%. These figures, when compared with the findings for 1992, showed improvement in the control of vitamin A deficiency thanks to the country's sugar fortification program. In the sugar crops of 1995–1996 and 1996–1997, 86% of all domestically consumed sugar was fortified, and this proportion rose to 91% in 1997–1998 and 90% in 1998–1999. Household surveillance was initiated in 1995, and the MSPAS reported that in 1995 and 1997, 80% and 87%, respectively, of the sugar samples examined contained retinol. In a national study, 72% of sugar samples collected in 1998 were found to contain vitamin A at levels of at least 5.0 µg retinol/g sugar; this same percentage was found again in 1999, and the figure rose to 97.4% in the year 2000.

FESAL-98 found iron deficiency anemia in 18.9% of children aged 12–59 months, with little variation in terms of area of residence or of sex. With regard to age distribution, the prevalence of anemia fell from 41.7% in infants 12–17 months old to 8.4% among those aged 48–59 months. No differences were observed between the sexes. The prevalence of anemia in mothers 15–49 years of age was 8.8% at the national level, with little variation according to area of residence. Regarding the enrichment of wheat flour with iron, folic acid, and B complex vitamins, surveillance of households in 1997 showed that 100% of a series of French-bread samples contained levels of at least 40 mg/k of bread. In 1998 the proportion was 97.65%; in 1999 it was 99.15%, and in 2000 it was 100%.

The first national study of urinary iodine excretion in schoolchildren, conducted by the MSPAS in 1996 and 1997, indicated progress in the control of iodine deficiency disorders. In a sample population of 2,400 schoolchildren aged 6–14 years, the median level of urinary iodine excretion was 15 µg/dL (150 µg/L). These results are attributable to the iodization of salt.

In 1998, 94% of the country's children had been breast-fed at some time; 26% were breast-fed during the first hour after they were born, and 56% during their first day of life. Between 1993 and 1998 the average duration of breast-feeding under any chronological scheme increased from 15.5 to 17.1 months.

In the area of food surveillance, an assessment of 1,523 national and imported food products conducted in 2000 showed that 2.1% were contaminated with bacteria and 1.9% had some form of physical or chemical contamination.

Diseases of the Circulatory System

According to information for 1999 from MSPAS and DIGESTYC, one of the most frequent cardiovascular disorders in the population aged 45 and over was primary arterial hypertension, which was the third most common reason for consultation. Data from hospital discharges show that the problem of cardiovascular diseases is greater in persons aged 60 and over due to such causes as congestive heart failure, ischemic heart disease, and primary arterial hypertension. The death records from medical facilities showed that acute myocardial infarction accounted for 2.8% of all deaths in the population 45–59 years of age and 5.5% of the deaths in the group aged 60 and over. Heart failure was responsible for 4% of the deaths, and chronic ischemic heart disease for 2.1%.

In terms of general mortality in the country as a whole, information from DIGESTYC indicated that 22% of all deaths were attributable to diseases of the circulatory system. The population 65 years old and over was most affected, with 72.4% of the cases, and the three leading causes were acute myocardial infarction (44.6%), congestive heart failure (25.5%), and cerebrovascular diseases (19%). Diseases of the circulatory system caused two deaths during pregnancy.

Malignant Neoplasms

According to DIGESTYC, neoplasms were responsible for 2,736 deaths in 1999, or 11% of all deaths in the country. The population most affected was the group aged 65 and over, with 51.7%, followed by ages 45–64, with 31.7%. The four main sites of fatal malignant tumors were the stomach (16.7%); the cervix, body, or unspecified parts of the uterus (14.6%); prostate (6%); and liver and intrahepatic bile ducts (5.9%), while other tumors accounted for 37.4% of the deaths from malignant neoplasms. The category responsible for the fewest deaths was malignant tumors of the encephalon (2.5%). Women had a higher mortality rate (58.6%) than men.

Accidents and Violence

Minors under 18 years of age accounted for 5% of all recorded cases of kidnapping in 1999, but by 2000 this proportion had increased to 27%. Records of the National Civil Police show that 18,210 transport accidents occurred between January and September 2000, and in 9% of these there was evidence of alcohol abuse. According to a study by the Supreme Court's Institute of Legal Medicine, there were 3,800 traffic accidents and 1,420 deaths, making for a mortality rate of 23.1 per 100,000 population. Of these deaths, 79.7% of the victims were males. Accidental falls accounted for 10.7% of all deaths, for a mortality rate of 3.7 per 1,000 population: 86% of the deaths were in males and 14% in females, and the groups most affected were ages 60 and over and ages 10–14, 50–54, and 35–39. Drowning caused 303 deaths, for a rate of 4.9 per 100,000 population, and 80% of the victims were males. Electrocution killed 36 persons, all of them men. Fires and burns caused 33 deaths, for a mortality rate of 0.5 per 100,000 population, and 57.6% of the victims were men. Accidental blunt trauma was the cause of 22 deaths, with males representing 63% of the victims, for a mortality rate of 0.4 per 100,000 population. Asphyxiation by the aspiration of gastric contents occurred mainly in the population under 18 years of age, in which there were 8 deaths (61.5% of the total from this cause). Within this age group, the highest percentage was in infants under 1 year old, followed by children between the ages of

1 and 4 years, and, in third place, those aged 10–14 years. Asphyxiation due to a foreign object was the cause of 7 deaths (5 in men and 2 in women). There were 20 cases of accidental poisoning from the ingestion of toxic substances, for a mortality rate of 0.3 per 100,000 population (75% of the deaths in men and 25% in women). In terms of age distribution, 35% of the victims were minors—5% under 1 year old, 20% between the ages of 1 and 4, and 10% aged 5–9 years—and 25% were 60 years of age or older. Six in-hospital deaths were attributed to the ingestion of toxic substances or accidental poisoning from the inhalation or absorption of toxic substances. Nine persons were killed by accidents with firearms, 7 men and 2 women; the groups most affected were ages 20–24 (44.4%) and 15–19. In 1999 there were 2,544 victims of homicide, for a mortality rate of 41.3 per 100,000 population; of the total number, 92.3% were men and 7.7% were women.

Oral Health

A survey conducted by the MSPAS and the Ministry of Education in 1999 showed that 91.2% of 12-year-old schoolchildren and 90.3% of those 15 years of age had no signs of fluorosis. The prevalence of caries was 43.6%. The average DMFT index was 1.3 at 12 years of age and 2.4 at age 15. In 2000 a survey of caries and dental fluorosis in 2,000 children aged 6, 7, 8, 12, and 15 years old enrolled in public schools found a prevalence of caries of 61%. In the group of 6-year-olds, 28.2% had completely healthy teeth. The need for immediate treatment of deep caries was observed in 20.6% of the children.

Emerging and Re-emerging Diseases

In 1999, 40 cases of leptospirosis were reported, for a rate of 0.65 per 100,000 population. The cases occurred in the departments of Cabañas (11), San Salvador (15), Santa Ana (5), San Vicente (1), Usulután (3), Morazán (1), La Libertad (2), Sonsonate (1), and Cuscatlán (1). The age distribution was as follows: 32.5% in the group aged 5–14 years, 50% in those aged 15–44, 12.5% in the 45–64 age bracket, and 5% in those aged 65 and older.

In a study of meningitis conducted in three tertiary-level hospitals in 1998–1999, it was found that 60% of the causal microorganisms isolated were *Haemophilus influenzae* type b, 38% were *Streptococcus pneumoniae*, and only 2% were *Neisseria meningitidis* serotype A. It was recommended that the *Haemophilus influenzae* type b vaccine be used.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Government's program for 1999–2004, "The New Partnership," sets forth policy lines in six strategic spheres of action: Partnership for Workers, Partnership for Solidarity, Partnership for Security, Partnership for the Future, Effective and Participative Government, and Consolidation of Economic Stability. The Partnership for Solidarity is intended to foster the objectives of local participation, decentralization of government administration, and effective access to basic health services. In the area of health, it envisages the following specific actions: initiating a reform of the sector that is aimed at building an equitable, effective, and participatory national health system; decentralizing and introducing market incentives into health services delivery; and providing incentives for local projects in the areas of health promotion, disease prevention, and basic sanitation and environmental health that will encourage organized and sustained participation by the community and local governments. The National Council on Health Sector Reform was created in 1999 and entrusted with the task of preparing a consensus document on health sector reform that incorporates proposals from the country's various social sectors. Chaired by the Minister of Health, the Council is composed of representatives of the ISSS, nongovernmental organizations, private health service providers, professional associations, chambers of commerce, users, and institutions engaged in the development of health human resources. At the end of 2000, the Proposal for Comprehensive Health Reform was presented to the President of the Republic. The document identifies nine general lines of action for reforming the health system, defines the corresponding principles and values, and lays out the strategy for the implementation of reform in the short, medium, and long term.

The lines of action are aimed at consolidating the national health system, ensuring implementation of a comprehensive care model characterized by the joint delivery of services, developing an administration model in which the Ministry of Health plays a steering role, institutionalizing social participation and promoting decentralization as the transverse axes of the health system, investing in health human resources as the central element of change and management of the health system, strengthening the intersectoral approach in an organized response to health challenges, and guaranteeing the provision of essential health services for the entire population. At the same time, recognition was given to the need for an in-depth public debate on the subject of financing and on the legal framework for the sector, issues on which consensus has yet to be reached.

Leadership for the reform is being provided by the National Council on Health Sector Reform, with guidance by the MSPAS, although its steering capacity may currently be insufficient in terms of the sector's demands. The MSPAS has framed the task in two broad stages: first, reform of administrative and technical processes within its own structure (1994–1998), and second, extension of the reform to all the institutions in the sector (1999–2004), with appropriate follow-up.

The Constitution of the Republic guarantees all citizens of El Salvador, especially marginalized and overlooked populations, the right to health care, and this intention is reflected in the deci-

sion to apply the principle of equity to health care delivery. The MSPAS is reviewing the basic legal instruments that govern the sector. A new set of general regulations for hospitals, made official in 1996, is in the process of being executed, and a Health Code has been drafted and is in the stage of technical analysis, after being submitted for review by a broad range of experts throughout the nation. In addition, the Law on Organ Transplants and Tissues, recently approved by the Legislative Assembly, will regulate activities in this area. Quality assurance is the subject of another new project, and national policy is being developed on this subject, as well as on equal opportunities for the disabled and on human resources development. Workshops have been convened to review the standards and responsibilities of the Division of Environmental Protection, and work is under way on the standardization of epidemiologic surveillance.

Using various media, the MSPAS has disseminated a statement of principles on people's rights and duties in regard to health. Programs and strategies have been designed to increase health care coverage for children and women of reproductive age. The recently created Healthy Schools Program, which includes rural areas, reached 100% of the country's public schools. A law has been approved, along with the associated regulations and policies, on equal opportunities for the disabled. In addition, approval was given to the Community-based Rehabilitation Program. The right of indigenous populations to health care was promoted. The document "Proposal for Comprehensive Health Sector Reform" envisages, as a first step, the guarantee of essential health services for rural and for marginalized urban populations.

The MSPAS has defined and assumed a commitment to institutional modernization as a basis for health sector reform, reshaping the sector's organization and management at all levels and promoting a new structure that separates the functions of steering, regulation, and health service delivery. The guidelines for the proposed organization and functions designed to strengthen the steering role of the MSPAS call for clarifying the political, legal, and financial implications in order to ensure the effective development of the new model of decentralized management. The conceptual and operational framework has been established for the integrated basic health systems (SIBASIs), the relevant strategies have been designed, and the geographic scope and demographic coverage of the SIBASIs have been defined.

The SIBASIs comprise the basic decentralized structure of the national health system. The structure consists of a network of integrated primary and secondary level services that rely on the conscious and effective participation of citizens and on responsibility shared with other sectors, and the objective is to improve the level of health of the target populations. The strategy, which will be implemented gradually until the entire structure is consolidated, is based on the premise of centralizing the normative and regulatory role in the steering agency and leaving the decentralization of operations to the manager-providers and the national reference centers. There are certain critical elements in the decentralization process that depend on the steering role: the modernization process itself; the development of an up-to-date legal framework that covers the proposed organizational and administrative reforms, especially the decentralization of financial and budgetary operations; the resolution of labor disputes; the guarantee of broad and effective citizen participation; and the assurance of ongoing financial support from the government and external cooperation agencies. Outpatient and hospital-based services are separate within the new network of decentralized services, and management commitments have been signed with the MSPAS at the central level regarding production volume and the quality of care to be provided in SIBASI facilities. So far, deconcentration has been implemented in only the MSPAS and ISSS networks.

Projects have begun to establish the legal framework that will allow for flexible modalities of social participation in the identification, prioritization, programming, implementation, and monitoring of health actions. In this connection, a national-level workshop brought together representatives from the 28 officially recognized SIBASI units to explore possible areas for social participation in health. The following principal activities are envisioned for social participation: creation of mechanisms for strengthening community health groups, identification of new avenues for intersectoral approaches, fostering of awareness and community contact in the SIBASI units, community monitoring of health service management, development of the corresponding legal framework, and definition of the profile of individuals to serve on the community monitoring teams. So far, 11 of the SIBASI units have set up community consultation committees.

Changes have taken place in health services delivery, especially at the primary care level, based on analysis of the demand at the respective establishments and the health profile of the population in the surrounding area. Starting at the primary care level, risk groups and vulnerable populations have been identified as targets for social and preventive programs. Most of the MSPAS establishments are now implementing consultations for blocks of time and by specific appointment. In addition, they have extended their weekday hours until 7 p.m. and are planning to offer care on weekends and holidays. The MSPAS has made significant progress in terms of modalities of integrated health care, such as the enlistment of nongovernmental organizations and offices of local mayors as direct providers of health care to specific populations in SIBASI areas.

Within the MSPAS model for health management, in which the management function rests ultimately with the SIBASIs, 11 systems have been defined at the central level: finance; general services; supply; human resources; social communication; management; information; control; planning, research, and development; health services delivery; and regulation and legislation. In some cases, steps have been taken to contract for the management of SIBASI public services with outside entities, such as the

Salvadorian Association for Rural Health, ASAPROSAR (a nongovernmental organization), Cemento de El Salvador, CESSA (a private company), and the municipal councils in the case of the SIBASI in Metapán (Santa Ana Department). The incorporation of nongovernmental organizations into the SIBASIs in Morazán and Sonsonate has been a valuable experience that has opened up new possibilities for the delegation of responsibilities and tasks related to health services delivery to third-party providers within the framework of management contracts.

The Health System

Institutional Organization

The health sector is composed of three subsectors: the public subsector, consisting of the Ministry of Public Health and Social Welfare (MSPAS), the Teachers Welfare system, and the Military Health system; social security, consisting of the ISSS and the Armed Forces Social Security Institute (ISSFA); and the private subsector, which includes both for-profit and not-for-profit health services. In the 1990s the predominant organizational structure in most of the institutions was the centralized model, with an organization that was both bureaucratic and professionally structured. The Plan for Modernization of the State was launched during the 1994–1999 administration and has been further implemented by the current administration. Under this plan, the MSPAS introduced changes in its organizational and management model based on the decentralization and deconcentration of health services delivery and administration. The ISSS also made some organizational changes, especially in its hospital management model and in the delivery of integrated and preventive outpatient services. The institutions in the for-profit private subsector for the most part continue to follow the entrepreneurial model and predominate in the area of open medical practice, while in the not-for-profit subsector the services tend to be provided by nongovernmental organizations, which receive external financing, public subsidies, and private funding and work in specific geographic areas or on particular health problems.

In 2000 the MSPAS created a new organic administrative and functional structure when it established the 28 SIBASIs. The Ministry's health services are organized by levels of complexity, and both the curative and preventive approaches are used. Its service network at the national level increased from 427 establishments in 1996 to 610 in 2000. It has 30 hospitals, with a total of 4,677 hospital beds, 357 health units, 171 "health houses" (*casas de salud)*, 52 rural nutrition centers, and a clinic for its employees. This network offers three levels of care at increasing levels of complexity: primary, which focuses on prevention and the provision of low-complexity services and includes rural nutrition centers, health *casas*, and health units; secondary, which provides hospitalization (national general hospitals) and also offers preventive programs; and tertiary, which provides curative services in hospitals that offer specialized care.

The ISSS provides health care to workers in public and private institutions and enterprises and also to ISSS retirees. Its service network, consisting of 10 hospitals, 35 medical units, and 24 community clinics, provides in-hospital medical care, outpatient care, and preventive services. The other public sector institutions offer medical care and hospitalization.

The for-profit subsector has clinics and both general and specialized hospitals in the capital and other major cities. The Metropolitan Hospital, Diagnostic Hospital, and Women's Hospital are the most important. The main providers of health insurance are Pan-American Life, Aseguradora Suiza Salvadoreña (ASESUISA), and Salud Total, which are corporations. The private hospitals sell services to the ISSS and the Teachers Association. The not-for-profit private institutions offer preventive medical services in the country's rural areas and hospital services in the capital through nongovernmental organizations. The main hospital of this kind is the Pro-Familia Hospital. The public and private institutions relate to the MSPAS on specific matters. Creating the SIBASIs made it possible to expand the health services networks and enlist the participation of all local institutions that offer health services in the areas covered by these systems.

Organization of Regulatory Actions

Health Care Delivery

The delivery of health services by private providers, the practice of health-related professions, and the licensing of pharmacies and other regulated services are overseen by the Public Health Council of the MSPAS through Surveillance Boards. The MSPAS does not supervise the delivery of private services, but it solicits epidemiologic information from the providers.

The Ministry of Education accredits institutions that prepare public health professionals, on the basis of the curricula for the respective degree programs. Currently, the University of El Salvador, through its School of Medicine, validates the postgraduate medical specialties practiced in the tertiary level hospitals of the MSPAS. The licensing, regulation, and control of medications and cosmetics is overseen by the Public Health Council through its Surveillance Board for the Profession of Chemists and Pharmacists. The MSPAS sets technical standards for pharmacotherapeutic products and is responsible for quality control of drugs.

Environmental Quality

The growing degradation of the environment is noticeable, especially as seen in the contamination of most of the surface water sources, the deforestation of hydrographic basins, erosion and frequent washouts caused by rains, air pollution in the metropol-

itan area of San Salvador, and the poor quality of housing in the country's rural areas.

Reported cases of acute pesticide poisoning numbered 930 in 1997, 1,745 in 1998, 2,298 in 1999, and 2,349 in 2000. The rise in incidence is attributable to improvements in the reporting and registration systems. The departments that had the most cases in 2000 were Santa Ana (379), La Libertad (229), Sonsonate (219), and Ahuachapán (168); 70.2% of the cases were in males, and the population 20–59 years of age was the most affected (60.1% of the cases), followed by the group aged 10–19 (26.6%). The case fatality rate fell from 12.6% in 1999 to 10.8% in 2000 thanks to improved diagnosis and prompt treatment. A total of 253 victims died that year. Suicide attempts accounted for 44% of all cases of poisoning. Accidental and work-related poisoning accounted for 27.9% and 26.9%, respectively. The main pesticides involved in poisonings were the organophosphates, the carbamates, the phosphamides, and the bipyridyls. The National Toxicology Information Center, based at San Rafael Hospital, assists in the handling of problems related to chemical poisoning.

Organization of Public Health Care Services

Delivery of Services

The MSPAS has defined its integrated programming along three matrices: the first organizes the programs by population groups (care of children, adolescents, and adults; women's health; and health of older adults); the second, by health problem or damage (oral health, tuberculosis, vector control, HIV/AIDS, immunization, and environmental health); and the third, by the focus of action (the individual, family, community, and environment). The ISSS carries out prevention and health promotion activities that, among others, include health education, mental health, adult preventive care, reproductive and child health, and community health.

Emphasis is placed on preventive health. Since 1995, coverage with DPT, polio, BCG, and MMR vaccines has been at least 95%, and in 2000 the reported coverage for DPT3 was 99%; for the third dose of polio vaccine, 98%; and for MMR, 97% (Figure 5). Importance is also given to the detection and treatment of tuberculosis and the prevention of HIV/AIDS, as well as the preventive programs included in the Healthy Schools strategy. Approximately 55% of pregnant women receive prenatal care in MSPAS establishments; in the year 2000, 74% of the deliveries took place in institutions and the remaining 26% were overseen by traditional birth attendants, many of whom had been trained. Also during 2000 the area of mental health received special attention. At the end of 2000 a program was implemented to reduce cervical cancer. The MSPAS regulates activities in the area of food surveillance in coordination with the Ministry of Agriculture and Livestock and also the Ministry of Economics and the Ministry of the Treasury; with the municipalities and universities, each within the lines of authority established by law; and with the private sector.

Potable Water and Sewerage Services

The water supply and sanitation sector consists primarily of the National Aqueduct and Water Supply Administration (ANDA), created as an autonomous agency in 1961; the municipalities; and numerous nongovernmental agencies. ANDA provides water supply and sewerage services in 181 municipal seats, which represent most of the urban population in the country. There are 71 municipal seats in which water and sewerage services are provided by the municipalities. In rural areas, the communities themselves administer many of the services. In recent years the water resources sector and the water supply subsector have undergone reform. A general water law has been proposed, together with legislation on the provision of water and sanitation services, the modernization of ANDA, and the creation of a national water resource council and an agency to regulate the delivery of services. It is expected that these draft laws will soon be approved.

In June 1998 the Salvadorian Compulsory Standard for Drinking Water Quality went into effect. This standard establishes recommended criteria for water quality and processing procedures, meters, and minimum sampling frequency, as well as standardized methods to be used by municipal or public services responsible for overseeing the delivery of water for human consumption. Considerable progress has been made in drinking water coverage in the principal urban areas: 93.5% of the urban population has access to potable water services, and 86.4% of urban residents have the benefit of some form of sanitation service. On the other hand, only 26.2% of the rural population has access to any water supply service, while 49.6% have adequate sanitary excreta disposal. As it can be seen, there is a glaring difference between conditions in the urban and rural populations.

Although water service coverage is quite high, the quality of this service falls short. It has been estimated that 82.6% of the water supply systems provide intermittent service. Annual investments in water and sanitation have averaged about US$ 22 million—considerably less than the amount needed to bring urban and rural coverage up to 95%. During the years under review, the MSPAS has formed a national network for the production of sodium hypochlorite to disinfect water supplies (PURIAGUA). Of the country's 262 municipalities, 208 have at least one system for generating chlorine solution.

Solid Waste Services

There is no master plan at the national level for the adequate management of solid waste. The approval of special regulations for the comprehensive management of solid waste is an impor-

tant first step toward the establishment of a legal system covering solid waste management.

Since 1999 a sanitary landfill has been providing service for 10 of the 14 municipalities in the metropolitan area of San Salvador, receiving approximately 1,200 tons a day. This initiative is the result of a joint undertaking by the private sector and the municipalities. Some municipalities in the interior of the country have begun to build their own sanitary landfills—mechanized in the more populous ones, and manual in those with smaller populations. Most municipal seats in the interior do not have any formal arrangements for the final disposal of solid waste. In 1998 it was estimated that 64.2% of the urban dwellings in the country had the benefit of trash collection service.

Pollution Prevention and Control

According to measurements taken between 1998 and 2000 in the metropolitan area of San Salvador, the levels of nitrogen dioxide and particulates smaller than 10 microns are the parameters that most often exceed the WHO-recommended levels. In 1999, measurements were taken starting in March. The dry season ended in May, and that was the month in which air pollutants reached their peak; they were lowest after July, when the rainy season was fully under way. It is estimated that 70% of the emissions in the air come from the vehicles in circulation, which are generally very old.

Organization of Individual Health Care Services

The MSPAS covers 80% of the population; the ISSS, 15%; and private providers, 5%. In terms of services to individuals, the MSPAS provides 97% of all vaccination coverage. It also provides 70% of all medical, emergency, dental, and nursing consultations; the ISSS provides 15%; and the private sector (including both nongovernmental organizations and for-profit services), the remaining 15%. In addition, 69% of the hospital discharges were from MSPAS facilities; 21% from those of the ISSS; and 10% from the private sector.

With regard to output of the services per 1,000 population, the MSPAS and the ISSS reported that in the year 2000 there were a total of 2,112 consultations and checkups attended by a physician. In addition, there were 119 consultations and checkups attended by health professionals other than physicians; 299 consultations and checkups attended by dentists; 246 emergency consultations; 1,979 laboratory tests; and 242 X-rays taken. These are combined numbers from the two institutions and do not include private providers, nongovernmental organizations, and others in the private sector.

In 1999 the leading reasons for consultations reported by the MSPAS were, in descending order: well-baby checkups, acute respiratory infections, prenatal care for normal pregnancies, early detection of cervical cancer, and intestinal parasitism. Home visits made by MSPAS were for preventive purposes. In that same year, the MSPAS reported 321,986 hospital discharges, and the ISSS, 82,703. The MSPAS had a bed occupancy rate of 89.9%, and the ISSS, 75.5%; for the MSPAS the average stay was 5 days, and for the ISSS, 5.2 days.

For the MSPAS, the leading reasons that discharged patients had been hospitalized were delivery care; complications of pregnancy, delivery, and the puerperium; pneumonia and bronchopneumonia; diarrhea; and respiratory disorders of the perinatal period. In the ISSS the five main reasons for the hospitalization of discharged patients in 2000 were single spontaneous delivery, with no further specification; maternal care due to uterine scar; chronic renal failure, unspecified; calculus of gallbladder without mention of cholecystitis; and incomplete abortion, unspecified, without complications.

Blood Banks

The recently formed Committee on the National Blood Bank Network includes representation from various sectors and disciplines. The Central Laboratory has a section devoted to blood banks as well as a budgetary allocation for clinical laboratory studies and blood banks. With regard to national policy in this area, a law has been drafted focusing on blood safety and all aspects of transfusion, including education programs aimed at recruiting volunteer donors, the operation of blood banks, and standards for the rational use of blood and blood components in the medical practice of transfusion. During 2000 the National Blood Bank Network of El Salvador recorded 76,096 donations: 12.0% from volunteer donors, 87.6% from family and replacement donors, and the remaining 0.2% from autologous and apheresis donors. Paid donations were not reported. Of the 76,096 units received, 100% of them were screened for HIV, hepatitis B antigen, hepatitis C virus, syphilis, and Chagas' disease. The breakdown of units found to have positive markers for these infections was as follows: 101 for HIV; 280 for hepatitis B antigen; 115 for hepatitis C virus; 777 for syphilis, and 1,889 for Chagas' disease. The components were processed into 11,134 units of whole blood, 66,992 units of packed red cells, 36,226 units of frozen plasma, 8,392 units of cryoprecipitate, and 41,374 units of concentrated platelets.

Health promotion is one of the five themes for action that run through the current model of comprehensive care for individuals. Officials now consider that it is urgent to move health care services in the direction of health promotion, the prevention of risks and diseases, and the strengthening of community participation. Steps have already been taken to incorporate actions focused on health promotion into the comprehensive care programs for individuals, and it has been recognized that it is essential to implement these actions, consolidate them, and systematize them so that the principles behind them will guide all new undertakings designed to reduce inequities in health.

The healthy environments movement elicited the spontaneous endorsement and commitment of local governments, community organizations, and national coordination bodies concerned with this problem. A border partnership initiative called Collective Borders, which brings together the mayors of towns in the border area (Trifinio) shared by Guatemala, Honduras, and El Salvador, has included exchanges for training in such areas as vaccination campaigns, the improvement of housing, healthy markets, and the strategy of food and nutritional security. The National University has also promoted a strategy for cultivating a healthy environment. The El Salvador Municipalities Corporation has designated health as one of the pillars on which its work is founded.

The country's Social Development Plan incorporates the Healthy Schools Program (PROES) as part of its effort to promote the provision of integrated basic social services in such priority areas as education, health, nutrition, and infrastructure, focusing its activities on the most vulnerable schoolchildren in the country's rural areas. The program has five lines of action: research, improvement of health conditions, upgrading the quality of educational services, school feeding programs, and physical infrastructure and delivery of services. Between 1995 and 1999 PROES reached 100% of the rural school population.

Health Supplies

The per capita expenditure on medications was about US$ 8 in 1998. There is a basic list of approximately 550 drugs that are required to be used in MSPAS facilities. About 80% of the population has access to the medications included on the list. The MSPAS distributes them by population groups in the geographic area of each establishment.

Nearly two-thirds (63%) of the public hospitals in El Salvador are over 30 years old, and they need to replace their equipment, renovate their infrastructure, and update their technology. Natural disasters such as earthquakes and floods have wreaked havoc with their infrastructure and equipment. The earthquake in early 2001 damaged nearly half the country's hospital beds and one-fourth of the outpatient network. Eight of the 30 hospitals in the MSPAS national network are physically or functionally obsolete, or both, and are highly vulnerable. Another 7 of the 30 hospitals suffered damage in their functional or structural components and need repair, remodeling or reconstruction, replacement of equipment, and attention in other areas. The MSPAS has calculated that the cost of rebuilding and rehabilitating those parts of the national health establishments network that were damaged by earthquakes in January and February 2001 would be about US$ 250 million.

Human Resources

El Salvador has 7,298 registered physicians. In the last five years the ratio of physicians to population rose from 9.1 per 10,000 inhabitants to 12.11 per 10,000. Similar growth rates have also been seen in the other health professions, though in smaller numbers. The ratio of nurses to physicians went from 0.3 at the beginning of the decade to 0.5. The largest increase in specialists was seen in the field of public health; in recent years three courses have been offered in this specialty, from which close to a hundred professionals graduate each year. There is one health professional for every 321 inhabitants and one health technician for every 865 inhabitants.

In the nation's corps of physicians, only 24.7% do not have a permanent contractual relationship with an institution, while this proportion is 85.5% for dentists, 37.5% for nurses, 69.9% for pharmacists, 29% for clinical laboratory technicians, and 54% for radiology technicians. In 1999 there were 21 health degree programs registered with the Ministry of Education, and they accounted for 15.7% of the university student population. The master's degree in public health has been awarded to 100 professionals in the last five years. Of the vacant positions open to physicians, 36% corresponded to contracts for 2 to 4 hours of work a day, and 8% of the physicians in the public health system received no remuneration. As of 1999 the ratio of general physicians to specialists was 2.3 in MSPAS establishments and 2.6 in the ISSS network. The Medical College of El Salvador reported that in the year 2000 the ratio of general physicians to board-certified specialists was 0.08.

According to the MSPAS, the percentage of unemployed physicians, based on the number of professionals registered with the surveillance boards, was 24.7%; the proportion of dentists was 85.6%; nurses, 37.5%; pharmacists, 69.9%; clinical laboratory technicians, 29%; and radiology technicians, 54%.

Health Research and Technology

There are no policies for the evaluation of technology in the health sector, nor is there any government agency in charge of this. "Quality circles" have been created, especially in hospitals, to assess the utilization of resources, and steps have been taken to promote the establishment of treatment protocols, external processes to determine the extent to which users' needs are met, and internal procedures to evaluate performance of the services and other areas. The Public Health Council is responsible for sanitary regulation, based on the Health Code. One of the foremost functions of the MSPAS is normative, along with its responsibilities for the management of public health resources and the delivery of services. The MSPAS sets standards for scientific and technological research and coordinates with other appropriate agencies on the regulation and control of technology transfer in the area of health.

Health Sector Expenditure and Financing

In 1998, health sector spending amounted to the equivalent of US$ 1,041.5 million, or 8.3% of GDP, and the corresponding expenditure per capita was US$ 166. Public spending represented 41.8% of the total, and private spending, 58.2%, with households contributing 97.0% of the latter.

External Technical Cooperation and Financing

In 1997, external cooperation accounted for 18.8% of the financial flows, and the main donors were the United States of America, Sweden, the Netherlands, Germany, Spain, the European Union, and multilateral agencies such as PAHO/WHO, UNFPA, UNICEF, and the system of international development banks, represented by the IDB and the Central American Bank for Economic Integration.

FIGURE 1. Gross domestic product, annual growth (%), El Salvador, 1991–2000.

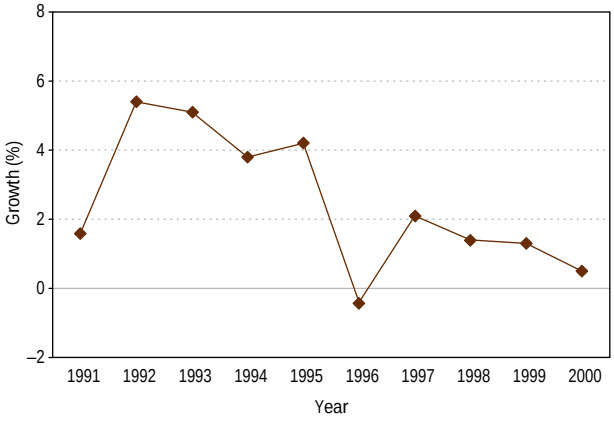


FIGURE 2. Population structure, by age and sex, El Salvador, 2000.

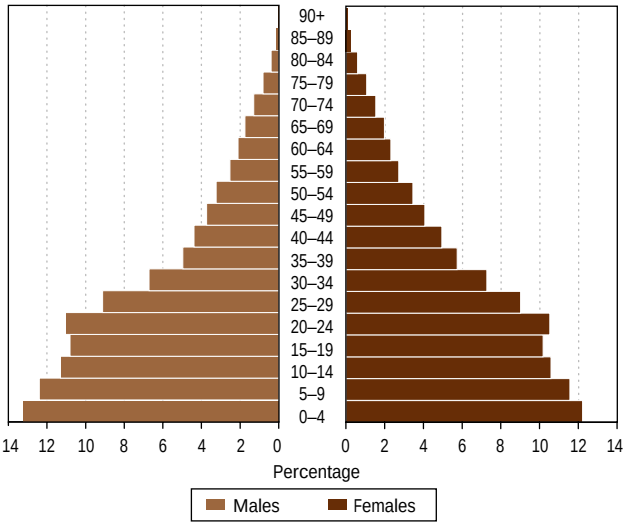


FIGURE 3. Distribution of infant mortality, El Salvador, 1999.

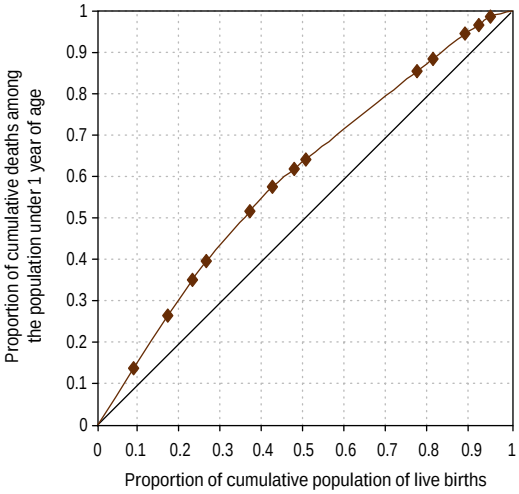


FIGURE 4. AIDS incidence, by sex, with male-female ratio, El Salvador, 1994–1999.

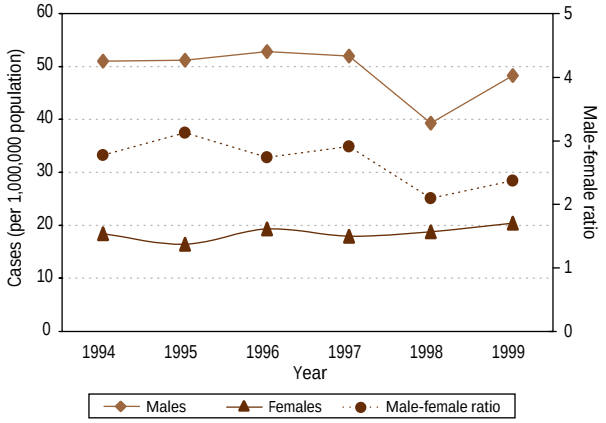
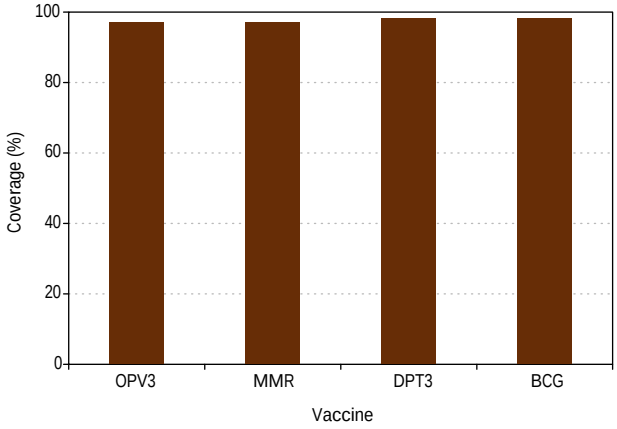


FIGURE 5. Vaccination coverage among the population under 1 year of age, by vaccine, El Salvador, 2000.



FRENCH GUIANA, GUADELOUPE, AND MARTINIQUE

INTRODUCTION

Health Policies and Plans

Since 1946, French Guiana, Guadeloupe, and Martinique have formed part of the French Overseas Departments (FODs). While geographically distant from France, their political and administrative organization into departments and regions coincides with that of the rest of France. They are members of the European Economic Community denominated as ultraperipheral regions. As such, they benefit from special protection measures and receive program funds designed to assist developing European regions.

The health policies of the FODs are fashioned along the lines of the national policy of the Ministry of Labor and Social Affairs of France (MES), which represents the State in overseas health systems to ensure that the interests of the public are satisfied and the health of the general population is improved. The health system drafts legislative and regulatory measures related to social protection issues, and stipulates the level of funding that each participant will receive and the standards required to safeguard the population's health. Accordingly, the system has the authority to monitor and act as trustee for social security funds and public health establishments. Lastly, it has responsibility for health planning, which includes conducting studies on program planning and the use of hospital equipment.

Regional priorities are set during a conference of health professionals and decision-makers and representatives of institutions and users. The conference assesses the population's health requirements and every five years produces a regional plan to organize health care in accordance with public health priorities. Other ministries, such as those of the Interior, Environment, Agriculture, Youth and Sports, and National Education, also play a part in health and social affairs through special programs on health promotion and disease prevention and control.

The Health System

The French State is responsible for general public health, but the competencies specifically pertaining to health are divided between the State level and the local administrative units. Following passage of the decentralization laws of 1982 and 1985, the MES gained responsibility for the decentralized services, which are separated into regions (22 Regional Directorates of Health and Social Affairs) and departments (96 Departmental Directorates of Health and Social Affairs). The regional and national directorates draw up and implement local health policies, undertake health surveillance, and participate in policy development for public and private hospitals, human resources development, and the organization of networks of health professionals.

Although they come under the same laws as the other French departments and are an integral part of the decentralized services of the MES, the FODs have a special form of administrative organization. In 2000, the regional level was disbanded and the FODs of the Americas Region became single-department regions under the coordination of three Directorates of Health and Social Development. These Directorates have assumed the former attributions of the Regional and Departmental Directorates. Their mission consists of regional health policy formation, health risks management (such as those related to disease, the environment, and health care), and organization and design of health care establishments.

The population is protected against financial risk associated with health problems through a universal health insurance plan that forms part of the social security system. Mutual and private insurance companies offer supplementary protection. Coverage also extends to the unemployed in the event of illness. This type of health insurance enables the State to cover the cost of medical care for even the poorest sectors of the population.

The health insurance system makes direct contributions to the health establishments, finances health education and prevention programs, reimburses medical expenses to the insured, and pays the medical expenses of health providers (pharmacies and laboratories) that have entered into service contracts. The system is funded by compulsory contributions, which are deducted from wages and salaries. The social security system also reimburses the insured for the cost of consultations and treatment based on rates negotiated with care providers. Many service users opt to purchase additional health insurance to cover expenses that are not reimbursable by the social security system with the *ticket moderateur*. Through the third-party-pays principle, the companies provide direct payment to health professionals under contract for the non-covered portion.

A law passed in 1992 provides that anyone residing in France or in the FODs is entitled to health care, and guarantees financial assistance to cover the cost of medical treatment as needed. The departments arrange access to medical care for their residents. Depending on the type of health care, they pay the full cost or a *ticket moderateur*, which covers a proportion ranging from 0% to 65%. The State pays the full cost of health care for the homeless.

Medical care establishments are a key player in the health system. Residents of French departments have unrestricted access to a variety of primary and secondary medical services. Public and private health establishments are distinguished by their different financing systems; in the case of public establishments, funding is determined by costs versus income, while State-contracted private facilities utilize a rate-setting system. Generally speaking, public hospital facilities provide regular and emergency care, medical teaching and training (through university hospital centers), and community health education and prevention activities. They are obliged to accept all patients and employ only salaried staff. These establishments are also responsible for quality care assessments, which are conducted through the National Agency for Health Assessment and Accreditation.

Hospital policy is governed by Regional Hospital Agencies, which were created by statute on 24 April 1996. Their mission is to define and implement policy on the provision of hospital care, administer regional budgets and resource allocation, and oversee the activities of all health establishments, whether public or private.

Organization of Regulatory Actions

In order to strengthen health safety monitoring, a law was passed on 1 July 1998 to create the French Agency for the Safety of Health Products, whose role is to enforce laws and regulations in this area, and the French Food Safety Agency, which helps to ensure safety in the field of nutrition from production to final distribution to the consumer. A third entity, the French Environmental Health Safety Agency, is in the process of being constituted.

In the area of epidemiological surveillance, the same 1998 law established the Institute for Health Surveillance, whose mission is to supervise and monitor the overall state of health of the general population, as well as the National Committee for Health Safety, which coordinates the policies of the above agencies.

Health Sector Expenditure and Financing

The national social affairs organizations play an important part in financing social protection, given that local contributions are insufficient to cover costs of the health services.

External Technical Cooperation and Financing

French Guiana, Guadeloupe, and Martinique are obliged to take supplementary measures in certain areas of health planning, particularly in the case of very specialized health care services for which the population of the FODs is too small to attain the critical mass of activity necessary to guarantee the required level of safety (heart surgery, pediatric surgery, and brain surgery, for example), or special health problems common to the three departments (such as drug addiction, chronic renal insufficiency, sickle cell anemia, and AIDS). The departments also maintain a relationship with PAHO, mainly through the Caribbean Program Coordination headquartered in Barbados, and take part in subregional health programs through the Interministerial Fund for the Caribbean. Health establishments, particularly the university hospital centers in Fort-de-France and Pointe-à-Pitre, coordinate certain cooperation activities directly with the neighboring states or health establishments, which are implemented through agreements on training, telemedicine, and technical and continuing education missions.

FRENCH GUIANA

OVERVIEW

French Guiana occupies around 91,000 km^2 of northern South America and is located between 2 and 6 degrees latitude. The northern part of the territory stretches along 350 km of the Atlantic coastline; to the west, the Marouni River delimits the border with Suriname, and to the east and south, the borders with Brazil are delimited by the Oyapock River and the Tumuc-Humac mountains, respectively. It has an equatorial climate with temperatures ranging from 22 °C to 30 °C. The jungle, which covers the majority of the territory, hosts a wide variety of animal and plant species, in addition to exploitable minerals and natural essences found in abundance. Only 5% of the territory is populated.

The European Space Center, which was established in Kourou in 1964, has contributed to the economic development of the department. According to research conducted by the National Institute of Statistics and Economic Studies (INSEE), between

1995 and 1997, space activities accounted for 50.5% of French Guiana's total economy activity. Other important activities are small- and large-scale fishing enterprises and gold mining. French Guiana has a factory-based economy that is largely dependent on imports.

The economically active population accounts for nearly 28% of the total number of inhabitants. More than three of every four people are wage earners. Unemployment stands at 25% and a third of the unemployed have been out of work for over a year.

French Guiana's special demographic situation is one of the main determinants of the population's health status. The population continues to grow at a particularly rapid rate, even though a slight deceleration has recently been noted. Over the past decade, it grew 37%, increasing from 114,768 inhabitants in 1990 to 156,790 in 1999. It is likely that the 1999 census figures underestimate the true size of the population, due to illegal immigration, which is difficult to quantify. Immigrants make up nearly 40% of the department's total population; of this number, as many as half may be illegal. The immigration phenomenon, combined with an ever-increasing birth rate, which is the highest of all the French departments (29.8 births per 1,000 population in 1997 and 30.9 per 1,000 in 1999), explains this rapid population growth which, according to INSEE estimates, will most likely double over the next 20 years. The fertility rate, more than double that of mainland France, is the highest of all the French Overseas Departments: in 1999 it stood at 119.4 births per 1,000 women aged 15–49 years.

The population, which is characterized by its considerable diversity, is composed of Guyanese Creoles (around 40% of the population); Amerindians, who are divided into six different ethnic groups, with a population of 4,500 people (Arawaks, Palicurs, Galibís, Wayanas or Roucouyennes, Oyapis or Wayampis, and Emerillons); Maroons (Saramacas, Bonis or Alukus, and Djukas), numbering some 4,000 people; H'mongs, who arrived in 1977 and make up a population of 2,000 people grouped in the municipalities of Cacao and Javouhey; inhabitants from the French mainland, who comprise around 12% of the population; and other inhabitants (Brazilian, Chinese, Haitian, Lebanese, and Surinamese), who account for another 40% of the population. Recent immigration is mainly from Brazil, Guyana, Haiti, and Suriname.

French Guiana has a young population. According to the 1999 census, 34% is under 15 years of age and 50.2% is under 25. The average population density, calculated on the basis of that census, is approximately 2 inhabitants per km^2; however, the population is very unevenly distributed throughout the territory. More than 9 of every 10 people live on the coast, and 78% of them live in urban areas.

Throughout the department, the housing situation continues to be a cause of great concern. An estimated 2,520 new houses are needed each year, yet half that amount are actually built. More than 8,000 applications are made for housing and waiting lists can be up to two years. Six thousand dwellings are estimated to be unsanitary.

Mortality and Morbidity

In 1997, life expectancy at birth was 72.4 years for men and 78.7 years for women. Infant and perinatal mortality rates have fallen considerably since the 1970s. In 1997, the figures were 11.1 per 1,000 live births and 19.5 per 1,000, respectively. During the 1996–1998 period, the average infant mortality rate was 10.3 per 1,000 live births.

Each year, an average of 500 people die in French Guiana; in 1997, the crude mortality rate was 3.8%. According to a 1998 study on the causes of death (Table 1), the four broad groups of causes in men as well as women were external causes of injury and poisoning, diseases of the circulatory system, neoplasms, and infectious or parasitic diseases.

The only indicators available on morbidity are those related to annual hospital visits, thereby providing only partial information on this aspect of the population's health. Normal deliveries and complications of pregnancy and childbirth account for nearly one quarter of all hospitalizations. The other causes, in order of importance, are traumatic injuries; poisoning; digestive disorders; infectious and parasitic diseases; sign, symptoms, and ill-defined conditions; and diseases of the circulatory system. Combined, these account for nearly half of the causes of death. Conditions originating in the perinatal period account for 2.5%, and mental illness, 1.8%.

In short, mortality and morbidity in French Guiana are due both to causes typically associated with developed countries (principally cardiovascular diseases) and those more specific to developing countries (injuries, infectious diseases, perinatal mortality). The improvement recently observed in some indicators, however, should not overshadow the fact that considerable disparities remain and that there is the risk that some diseases may reappear or worsen. Insufficient data prevent an accurate as-

TABLE 1. Distribution of causes of death, by sex, French Guiana, 1998.

	Both sexes		Males		Females	
Causes	No.	%	No.	%	No.	%
Injuries and poisoning	191	29.4	145	35.0	46	19.5
Diseases of the circulatory system	116	17.8	71	17.1	45	19.1
Neoplasms	92	14.2	56	13.5	36	15.3
Infectious and parasitic diseases	71	10.9	43	10.4	28	11.9
Certain conditions originating in the perinatal period	18	2.8	7	1.7	11	4.7
Other causes	162	24.9	92	22.2	70	29.7
Total	650	100	414	100	236	100

sessment of these disparities, even though they are highly visible between the various socioeconomic levels and geographical zones, which, in turn, are important determinants of lifestyle and relative access to medical care and disease prevention measures.

Rapid demographic growth, increased poverty (for the period 1994–1995, INSEE estimates indicated that close to 30% of the population was living in conditions of poverty), and the concentration of the population principally in periurban areas are all major contributors to the increase in violence, drug addictions, sexually transmitted infections, and the persistence of diseases preventable through healthier behaviors.

Moreover, settlement in new areas, displacements of large sectors of the population, geographical isolation, or its counterpart, overcrowded and unsanitary living conditions, are risk factors favoring the maintenance of endemic diseases and giving rise to emerging and re-emerging diseases.

HEALTH PROBLEMS

By Population Group

Children

In 1999, the perinatal mortality rate was 18.9 per 1,000 live births in infants weighing more than 500 g at birth (compared to 30 per 1,000 in 1995); however, this reduction is beginning to slow down. The improvement observed in this indicator is mainly due to the drop in the number of early neonatal deaths (from 10 per 1,000 live births in infants weighing more than 1,000 g in 1995 to 1.8 in 1998), which may be attributed to improved care at health establishments. Prematurity is one of the leading neonatal risk factors (13.8% of children in French Guiana are born prematurely).

The infant mortality rate has also fallen, from about 15 per 1,000 live births at the beginning of the 1990s to 11.1 per 1,000 in 1998.

In 1998, 68 infants under 1 year died. Conditions originating in the perinatal period were the leading causes of death in this age group (29%), followed by congenital anomalies (21%) and external causes of injuries and poisoning (16.1%). During the review period, the only infectious disease leading to death in this age group was AIDS.

The leading causes of death in children 1–4 years of age in 1998 were external causes (injuries and poisoning), which were responsible for 13 deaths (8 boys and 5 girls) of a total of 25 deaths; the rest were due to traffic accidents. The other causes include diseases of the respiratory system (5 deaths) and neoplasms (2 deaths).

Schoolchildren and Adolescents

According to current health regulations, children must have a systematic medical examination at 6 years of age, before entering primary school, at 12 and 16 years, upon entering secondary school, and upon enrolling in a vocational education program. The most common diseases are dental conditions, visual disorders, and osteoarticular conditions. A study conducted in schools in 1997 revealed that 22% of the students examined had some kind of dental problem (principally caries), 11.8% had visual disorders, and 7% had an osteoarticular condition. No significant differences were found between the sexes.

A survey in 1997 of 3,184 adolescent schoolchildren averaging 15 years of age revealed their concerns and state of health. This group expressed concern over sexuality, violence, drug addiction, and sexually transmitted infections, particularly AIDS. Among the young people who were sexually active, fewer than one in two used condoms regularly and only one in seven used contraception. One of every five girls had already had at least one pregnancy. More than one-fourth of the young people interviewed had been in a road accident, usually when driving a two-wheeled vehicle. One of every five young people had been the victim of aggression, generally in the street, and 40% of the cases occurred at school. Twelve percent of young people had been sexually assaulted and in more than half the cases by someone they knew. One of every 10 young people smoked or had smoked cigarettes in the past; one in five had tried some type of illicit drug (sniffed glue or smoked marijuana), and one in two drank alcohol occasionally. Twenty-six percent of girls and 1% of boys said they had suffered from depression; 20% of girls and 7% of boys had had suicidal thoughts, and 16% of girls and 7% of boys had attempted to commit suicide.

In the 5–14 years age group, the leading cause of death was external causes (injuries), which caused 8 of the 11 deaths registered in 1998. The other causes were neoplasms (1 death), pneumonia (1), and diseases of the digestive system (1).

Adults

In 1998, the leading causes of death among people aged 15–64 were external causes of injury and poisoning (40.7% of all deaths, and affecting men and women at similar rates), followed by neoplasms (16.1%), infectious and parasitic diseases (15.4%), and diseases of the circulatory system (11.7%).

The main external cause of injuries among both men and women is traffic accidents. Adult deaths from infectious diseases are due primarily to AIDS (35 out of 42 deaths were due to infectious diseases). The age group most affected by HIV/AIDS was 30–39 years, with nearly 40% of the cases.

In young adults, the most frequent chronic afflictions, recorded in the social welfare system because they require specialized care, are mental disorders and severe immune deficiencies. Among older adults, diabetes, hypertension, and neoplasms are the most common chronic diseases.

The maternal mortality rate increased during the period 1993–1997 in comparison with 1987–1990 (79.3 and 64.6 per 100,000 live births for each period, respectively). In 1999, 4,547 births were registered; 9.4% of the mothers were under 18 years of age and 3.2% were over 40. First-time mothers represented

22.4% of the total, and 28.2% of mothers had been pregnant more than four times. On average, the women had six prenatal visits, but 15.6% had fewer than four. Caesarian section accounted for 17.2% of the deliveries, and 117 multiple births were recorded (2.6% of the total). Sixty-seven pregnancies in 1997, 79 in 1998, 64 in 1999, and 61 in 2000 were voluntarily aborted.

Drug addiction is a problem that primarily affects 25–35-year-olds. In 1994, 233 of every 100,000 inhabitants were called in for questioning regarding the use of narcotics. This rate is similar to the rest of the national territory. Men accounted for 9 of every 10 cases and over two-thirds of drug users were unemployed. Cocaine is the drug used the most (90%), mainly in the form of crack cocaine or coca paste (76%).

The Elderly

In 1998, diseases of the circulatory system and external causes of injuries and poisoning were the leading causes of death in men and women aged 65 and over (28.0% and 17.6% of deaths, respectively). Most deaths from diseases of the circulatory system were due to cerebrovascular disease, heart failure, and hypertension. The neoplasms responsible for most deaths in older men were malignant tumors of the prostate (7 deaths in 1998), of the respiratory system (6), and of the digestive system (3), particularly the stomach. Cancers of the respiratory system (4), the uterus (2), and breast (1) and leukemia (2) caused most deaths from neoplasms among women in this age group. Chronic diseases in this age group are severe hypertension, cancer, and diabetes. The ratio of beds available for older adults is 86.5 per 1,000 population.

Family Health

In 32% of homes, the head of household is a single parent, and in 75% of cases, it is the mother. In 27% of two-parent homes, both parents were unemployed; in one-third, both parents were economically active.

The Disabled

In the under-20 age group, 232 people receive special education subsidies (3.7 per 1,000). In the 20–59 years age group, 1,034 people receive a disability subsidy (15 per 1,000). These figures correspond to any type of disability (physical or mental) and are constantly increasing, probably due to the fact that they are now easier to detect. There are very few places that take in mentally and physically disabled adults; all of the institutions combined have capacity for 89 persons. There are 1.7 beds/places per 1,000 persons under age 20, which is well below France's figure of 8.6 per 1,000.

By Type of Health Problem

Natural Disasters

In April 2000, some 10 people died as a result of a landslide caused by the collapse of Cabassou hill, near Cayenne.

Vector-borne Diseases

Malaria is endemic in French Guiana. During 1997–2000, the annual prevalence of the disease has ranged from 4,500 to 5,000 cases. The annual incidence oscillates between 100 and 300 cases per 1,000 population. Over 90% of cases correspond to zones with a high risk of transmission located along rivers and affect less than 10% of the population. Along the Marouni River, to the west of the department, cases caused by *Plasmodium falciparum* predominate (9 of 10 cases) and the annual incidence is about 200 cases per 1,000 population. Along the Oyapock River, cases due to *P. vivax* are more frequent and account for between 50% and 80% of all cases.

In the coastal zone, 300 cases of malaria are reported each year, of which only 10% can be considered autochthonous cases. This disease is transmitted in very limited areas on the outskirts of the cities where people come and go from the neighboring transmission zones or countries. The main vector of malaria is *Anopheles darlingi*, whose larvae are found in large bodies of water throughout the territory. The proliferation of gold mining activities, internal migration, and difficult access hamper malaria control in zones where it is permanently being transmitted. Cooperation activities have been undertaken with Brazil and Suriname within the framework of the "Roll Back Malaria" initiative.

Dengue is endemic and epidemic in French Guiana; it is transmitted more in the coastal area, where the main towns are located. Serious epidemics of hemorrhagic dengue were observed for the first time during the periods 1991–1992 and 1997–1998. Since then, some 15 cases have been registered each month and laboratory confirmed. The dengue-3 virus was identified for the first time in December 1999. In 2000, 186 cases were serologically confirmed; the National Reference Center isolated dengue-1 from one sample, dengue-2 from 40 samples, and dengue-3 from 28 samples. Over that same period, four cases of hemorrhagic dengue were observed. Towards the end of that year, two epidemic foci were detected in two remote municipalities (Kourou and Roura-Cacao), which were limited to those areas. Specific activities aimed at informing the population about dengue are under way (television programs, public information sessions) and agents of the dengue prevention and control service make informational house visits.

Although the last case of yellow fever registered occurred in 1902, in 1998, an isolated case was observed in an Amerindian woman in a village in Marouni, who had never left the region.

Diseases Preventable by Immunization

In the last few years, no cases of poliomyelitis, diphtheria, or tetanus have been reported. There is no surveillance system for measles or rubella. The measures adopted consisted of setting up a surveillance system and treating presumed cases and the surrounding area, as well carrying out follow-up vaccination campaigns for children under 7 years of age.

Vaccination coverage is not systematically evaluated and regulated; the most recent survey, conducted in 2000, found that BCG coverage among 1-year-olds in the coastal zone was 83%, and in municipalities in the interior it ranged from 40% to 67%. The first vaccination is recommended at 1 month of age. DPT3 coverage at 1 year of age was 68%. In the municipalities in the interior, these figures ranged from 9% to 60%. The day the survey was conducted on the coast, one-third of the children had received their complete course of hepatitis B vaccines.

Coverage with the MMR vaccine at 24 months was 69% on the coast and varied between 43% and 61% in the interior. Follow-up vaccinations are given before the age of 7 and average coverage is around 80%.

According to the above-mentioned vaccination survey, yellow fever vaccination coverage rates ranged from 78% to 93% among the different age groups in the coastal areas, and from 3% to 91% depending on place and age in the interior. In 1998, 28,700 vaccines were administered against this disease; 21,050 were administered in 1999 and 22,000 in 2000.

Intestinal Infectious Diseases

The last reported case of cholera was in 1994.

In 2000, three cases of typhoid fever (*Salmonella typhi*) were reported; in 1998–1999, there were 28 cases.

In French Guiana, intestinal infectious diseases are a serious public health problem. Difficult access to good quality water in some areas, insufficiency or lack of sanitation services, and poor food conservation are determining factors in the persistence of a large number of intestinal infectious diseases. These, together with malaria, are the leading reason for visits to health centers in the interior by children under 5 years of age. Between 1991 and 1997, the mortality rate was 60 deaths per 100,000 children in this age group.

Chronic Communicable Diseases

The incidence of tuberculosis in 2000 was 39 cases per 100,000 population. A total of 62 cases were registered (36 men and 26 women, for a male-female ratio 1.4:1). The age group most affected is 20–59 years; approximately two-thirds of patients were foreigners (in 2000, 47.5% were from Haiti, 15.3% from Brazil, 13.6% from Suriname, 8.5% from Guyana, and 15.1% from other countries). Most (71%) had the pulmonary form of the disease and one cases of meningeal tuberculosis was observed in a 64-year-old man with HIV. Of the 60 serologically confirmed cases, 21 (including a child under 5 years of age), were co-infected with HIV (35%); 14 people had been treated for tuberculosis.

Leprosy has been endemic in French Guiana since the 18th century, but the annual number of cases has been steadily dropping and has stabilized in the last five years. Every year, some 10 new cases are detected, and the annual incidence is currently 5.7 per 100,000 population. In 2000, there were 28 patients on the active list of the Center for the Prevention of Leprosy. Most cases (19) originated in the Marouni valley and the others were scattered throughout the coastal municipalities. Forty-five percent of the cases are the paucibacillary form and an average of 20 patients are treated each year. Although its evolution over the last 20 years seems to indicate that the Guyanese Creole focus on the coast is disappearing, new foci are emerging in the west of the department, where the Maroon community lives.

Acute Respiratory Infections

Deaths from respiratory conditions are largely due to pneumonia and bronchopneumonia, which mainly affect men. These deaths have increased 23% since 1990. In 2000, 127 samples arrived at the Influenza Surveillance Center at the Pasteur Institute in French Guiana. The first arrived from Martinique, in January, and the epidemic reached its peak between February and March. Isolated cultures showed the circulation of the type A(H3N2) influenza virus, which is closely related to the A/Sydney/05/97 strain. In May, influenza type A(H1N1) virus was isolated in French Guiana.

Zoonoses

Rabies transmitted by the vampire bat *Desmodus rotundus* is a problem in French Guiana. Sporadic cases of rabies regularly occur in bovine cattle (most recently in 1999). In 1990, there was one exceptional case of bat-to-dog rabies transmission. No case of human rabies has been reported.

HIV/AIDS

As of 31 December 2000, 794 cases of AIDS had been diagnosed (494 men and 300 women) in French Guiana since the beginning of the epidemic. The male-female ratio of cases (1.65:1) has remained stable throughout the epidemic. In 1999, the incidence rate was 34.4 cases per 100,000 population. The evolution in the number of cases since 1991 indicates that the decrease in incidence that commenced in 1996 is slowing down. Between January and December 2000, 45 new cases were declared (provisional data). The most affected age group is 30–39-year-olds, followed by 40–49-year-olds.

Figure 1 shows the distribution of new AIDS cases, deaths, and the number of people living with AIDS in French Guiana during the period 1992–2000.

Cases of pediatric AIDS have dropped considerably since the start of the epidemic. Prior to 1996, they represented 10% of the cases registered in French Guiana. Since 1998, only one case of vertical transmission of HIV has been reported, despite the increase in the number of deliveries by HIV-positive women.

In French Guiana, the heterosexual mode of HIV transmission predominates, accounting for more than 9 of every 10 cases in 1999 and 2000. The percentage of people who knew they were

HIV positive prior to being diagnosed with AIDS has remained relatively stable at around 50%. According to French law, screening for HIV is compulsory at all blood banks. There is a good screening network throughout the department, but this is generally performed late and the relationship between screening and medical care is still not clear.

There are still some weaknesses in the department's AIDS prevention activities. The lack of prevention strategies adapted to the different populations and the lack of training; limited capacity to establish networks; limited number of stakeholders involved; and lack of participation by young people outside the school environment might explain the weakness of preventive actions, both in terms of quantity and quality.

Medical care for people who have contracted HIV is satisfactory. Access to care has improved considerably in recent years, through the improvement of the quality of the different establishments and the strengthening of links with stakeholders outside the hospital environment. The health system is currently monitoring a third of the people infected with HIV. However, the use of modern strategies and therapeutic procedures and the development of new tests (genotypic tests) make it necessary to continuously adapt professional practices and organization and to improve coordination among participants.

Nutritional and Metabolic Diseases

Protein-energy malnutrition is found in some isolated areas of the department, above all in the Marouni region. An evaluation was necessary due to the recent increase in the number of persons with protein-energy malnutrition hospitalized in Saint Laurent du Maroni, but the results are still unknown.

Diseases of the Circulatory System

In 1991, 300 chronic diseases of the circulatory system were recorded, most of them arterial hypertension, stroke, cardiac insufficiency, and sequelae of myocardial infarction. Between 1990 and 1995, the number of deaths from ischemic cardiopathies increased and deaths due to cerebrovascular disease decreased.

Malignant Neoplasms

The leading neoplasms responsible for adult deaths were, in decreasing order, malignant neoplasms of the respiratory system, the upper respiratory system, and the digestive system. Death from cancer tends to occur in old age; two of three cancer deaths occur in persons over 65 years of age (approximately twice as many as in women).

The leading sites in cancer mortality in men under 65 years of age are the trachea, the bronchus, and lung; the upper respiratory system, and the esophagus. Beyond age 65, prostate and stomach cancers are also important causes of death. Uterine and breast cancers are the leading causes of cancer death among women, regardless of age.

Accidents and Violence

To illustrate the high prevalence of traumatic injuries in French Guiana, it is important to note that every year the number of traffic accidents is considerable, despite the low density of the highway network. Fatal accidents occur mainly in the 25–44 years age group (45%), which tends to use cars (83%), while serious injuries mainly occur in users of two-wheeled vehicles (51%). The rates of suicide and attempted suicide are also high. In 1998, suicides were the third leading external cause of death among 15–44-year-olds, after traffic accidents and other accidents and their sequelae. The most affected groups were men aged 15–34 years and women aged 45–64 years. These deaths occur mainly in men, at a ratio of 3:1.

Oral Health

A school-based study revealed a 22% prevalence of cavities among students. Due to the absence of a special long-term oral health program, no more information is available on this health problem.

Emerging and Re-emerging Diseases

Since 1996, there has been one case of meningococcal meningitis per year (serotype B or C).

Since 1996, the incidence of Q fever has also increased. Most cases occurred in Cayenne and its environs, and for the past four years, there has been an annual average incidence of 37 cases per 100,000 population. The *Coxiella burnetii* reservoir is not, as is usually the case, a domestic or farm animal and could be a wild reservoir.

According to the National Referral Center for Arboviruses, in 2000, some cases of infection due to Venezuelan equine encephalitis complex viruses were detected. Two patients presented had IgM-positive antibodies for Tonate virus, but the virus itself could not be isolated.

RESPONSE OF THE HEALTH SYSTEM

Organization of Public Health Services

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Epidemiological surveillance is based on the national system for compulsory reporting of diseases and on special surveillance of certain diseases. Notification of HIV, hepatitis B, or tetanus infection is mandatory. Diseases subject to surveillance and special measures are dengue, enteric diseases, fevers without apparent cause, and measles. A sentinel network composed of the emergency services, city doctors, health centers, and laboratories supports this surveillance.

There are 10 laboratories in French Guiana (8 private and 2 public), one French blood bank that checks the quality of dona-

tions and performs serologic tests, and a reference laboratory at the Pasteur Institute with limited analytic capacity.

Potable Water, Excreta Disposal, and Sewerage Services

The Directorate of Health and Social Development is responsible for monitoring the quality of piped water. Monitoring frequency depends on the amount of water extracted at the source and the number of people served. In 1999, 86% of the population had access to running potable water. In urban areas, the bacteriologic quality of water is good at all the distribution stations. There are still some physiochemical problems, particularly with aluminum content, by-products of chlorination (trihalomethanes), and mercury from gold mining activities. In rural areas, water treatment is incomplete and the maintenance of facilities is unsatisfactory. Water quality depends largely on the quality of the source (surface or groundwater) and the maintenance of facilities.

Municipalities are legally responsible for non-communal sanitation. The Departmental Directorate of Health and Social Affairs is charged with monitoring the wastewater discharged into the environment from the communal treatment stations. In the coastal cities, there are communal sanitation services, but generally speaking, the stations are small and the collection rate is still low. Autonomous sanitation services are also frequently used. Due to the soil quality and failure to maintain the facilities, purification is unsatisfactory. Communal sanitation does not exist in rural areas.

Solid Waste Services

Hazardous waste is disposed of incinerators in public hospitals (Cayenne and Saint Laurent du Maroni), at the Pasteur Institute, and in a private clinic in Cayenne. All the facilities must be certified to be in compliance with French and European standards for gaseous emissions (e.g., carbon monoxide, volatile organic compounds, ash, and dioxins). Neither the clinic nor the Saint Laurent hospital has been certified, but they continue to operate while they await the repair of the Cayenne Hospital incinerator. The Pasteur Institute incinerator will process the Institute's waste, and, under contract with the veterinary services, may incinerate certain slaughterhouse wastes.

Two garbage dumps have been authorized to accept domestic waste, one in the municipality of Cayenne, with intermunicipal functions (covering the municipalities of Grand Cayenne), and the other in Camopi. These dumps operate as sanitary landfills. In the 20 remaining municipalities of the department, rudimentary dumps continue to be used. Garbage dumps that are not any control are still scattered throughout the territory.

Food Safety

In 1999, a food security unit was created for the department, with representatives of different health, fraud deterrence, veterinary surgery, legumes protection, and customs services. Controls have been established for food imports, processing of animal products, commercial and social restaurants, and markets. This unit is also charged with handling national and local alerts and investigating cases of food poisoning and infection.

Organization of Individual Health Care Services

The health system is based on four pillars: the public and private hospital sector; urban medicine; health centers; and disease prevention and vaccination centers located along the coast. Generally speaking, the health care supply is insufficient.

Hospital care is offered by three hospitals that participate in the public service; since 1 January 2000, one of them manages the curative activities of the communal medical centers. Three small private clinics in Cayenne provide medical, surgical, and obstetric services (short stay). A fourth hospital, near Cayenne, provides only follow-up care. Table 2 shows the health care supply by bed per 1,000 population, as of 1 January 2000.

The health centers or communal medical centers, previously called dispensaries, must respond to the needs of 20% of the population living in isolated areas. There are currently 21 centers and health posts that depend on the hospital center in Cayenne.

The coastal disease prevention and vaccination centers were communal medical centers until the end of the 1990s, when some physicians began to open independent practices. There are also specialized disease prevention centers (sexually transmitted infections, leprosy, tuberculosis) in Cayenne. Three entities specialize in drug addiction care in the main cities and there is an outpatient facility to treat alcoholism.

Health Supplies

No drugs are produced locally; most are imported from continental France by three wholesalers. Due to high airfreight costs, drugs are transported almost exclusively by sea, which complicates storage and distribution. Product refrigeration is also a problem due to the fact that not all transporters have refrigerated containers. Air transport is used when necessary, but customs regulations impose additional restrictions. Pharmacists and pharmaceutical laboratories must stock considerable amounts of drugs. In an emergency, drugs can be supplied from Martinique or Guadeloupe.

TABLE 2. Beds per 1,000 population and percentage corresponding to the private sector, French Guiana, 1 January 2000.

Type of bed	Ratio	Private sector (%)
General medicine	1.92	30
Surgery	1.16	48
Gynecologic/obstetric	0.84	35
Follow-up care	0.22	100
Psychiatry (beds and placements)	0.64	0
Long-term care	0.39	0

There is no local distributor that stocks reagents. The laboratories become tributaries of the transporters with cold chain facilities. The hospitals generally charter the containers.

The distribution of drugs and biomedical products is hampered by problems of air transport, which is limited in the interior. The other transportation methods involve very long dispatch periods and do not enable the cold chain to be maintained. Sometimes, due to the limited capacity of the laboratories, biological samples must be sent to France. These samples are sent by plane, but they are always subject to the security measures imposed by national and international regulations as well as air transporters.

Human Resources

In addition to improving the organization of hospital care, the Regional Hospitalization Agency is in charge of hiring specialists. The human resources available are shown in Table 3. Some medical specialties are not sufficiently represented, which is the case with psychiatry (there are only eight psychiatrists in the entire department), infectious diseases or diabetes care, nor are they sufficiently well organized, which is the case with perinatology. In some cases, such as heart surgery, neurosurgery, and pediatric surgery, there simply no specialists in a particular area. The services that depend on other specialties, such as anesthesiology, pediatrics, resuscitation, and radiology, are weak because of the scarcity of these specialists in the department. The private sector is concentrated fundamentally in the coastal cities and the limited number of physicians prevents services from being provided to a broader segment of the population.

A nursing school that operates in Cayenne under the auspices of the Andrée Rosemon Hospital prepares and State certifies some 20 nursing professionals a year. Given the proven needs and the rate at which these professionals are emigrating, this number is insufficient. Continuing education for professionals (medical and paramedical) is conducted within the framework of agreements reached between the national medical insurance funds and the organizations that represent these professionals. At the same time, various regulations refer to the obligation to provide continuous training for health professionals, by setting objectives and modalities for conventional professional training as well as the financing modality granted by the medical insurance funds. Financial difficulties prevent compliance with the requirement to provide continuous training for paramedical staff. Accreditation courses are offered only in France, which makes it difficult for paramedics from French Guiana to participate in them. Within the hospital sphere, training of professionals is the responsibility of each referral center, which is responsible for preparing a continuing education program.

Given the confirmed needs in the area of health, French Guiana's medical and paramedical demography shows real capacity to absorb medical and paramedical professionals. Destabilization and reduction of health staff may be attributed to the lack of a local faculty of medicine and the significant desertion of young paramedics once they have completed their training (the significant turnover of the population of French Guiana and student interest in going to France are factors in this phenomenon).

TABLE 3. Health human resources, by type, French Guiana, 1 January 2000.

Type	No.	Private sector	No. per 10,000 population
General practitioners	132	67	8.4
Specialists	87	40	5.5
Dentists	39	39	2.5
Midwives	45	0	2.9
State-titled nurses	500	60	31.8
Masseuses/physiotherapists	43	35	2.7
Pharmacists	53	…	3.4

Health Research and Technology

The Pasteur Institute of French Guiana has laboratory analytic capacity for medical biology, environmental hygiene (water and foodstuffs), medical entomology, parasitic immunology, and retrovirology; it also has a primatology center and an epidemiology laboratory. The Pasteur Institute is the national reference center for arboviruses and malaria drug resistence and is the influenza surveillance center.

The main research programs focus on immunology and cutaneous leishmaniasis, HTLV-1, HIV molecular epidemiology, participation in a multicenter study on plasmodia and studies related to insecticide resistance by vector mosquitoes. The university parasitology and mycology research center, certified in 1998 by the National Institute for Medical Research of France, prepared a four-year plan. Its priorities include malaria, Chagas' disease, cutaneous leishmaniasis, and toxoplasmosis.

External Technical Cooperation and Financing

Together with Suriname, a cooperation project was prepared in order to consolidate epidemiological surveillance, communicable disease monitoring and prevention, and strengthening of central laboratory diagnostic capacity. This project will commence as soon as a technical cooperation assistant sent by the Ministry of Foreign Affairs arrives in Paramaribo.

A meeting organized in Brazil within the framework of the "Roll Back Malaria" initiative permitted the establishment of a coordinated plan of action in the border region of Oyapock. These actions include the exchange of epidemiological information, joint training, strengthening vector control activities, and entomological and drug resistance studies.

For three years, the Cayenne hospital center has been running a cooperation program on medical emergencies. In 2000, the Pasteur Institute of French Guiana prepared a program on hepatitis C in conjunction with Haiti. The first part consisted of an epidemiological study to measure the importance of this disease and identify specific risk factors in Haiti. The second part was related to the implementation of serologic diagnostic techniques at the Gheskio centers through the training of technicians.

GUADELOUPE

OVERVIEW

Guadeloupe, a French Department in the Lesser Antilles, is an archipelago of eight inhabited islands covering an area of 1,750 km^2. The two largest islands, separated by a sound, are Basse-Terre, a mountainous island to the west, and Grande-Terre, which has no significant mountain relief, to the east. The other islands, known as "dependencies," are the Les Saintes and Marie-Galante to the south, La Désirade and the islands of Petite-Terre to the east, and the French section of Saint Martin and Saint Bartholomew, some 230 km to the north.

According to the March 1999 census, Guadeloupe has a population of 422,496 inhabitants, 9.2% more than 1990 (Figure 2). There were an estimated 7,352 births in 1999 (13% more than in 1998). The population is young, although there are now signs of aging due to the contraction of the under–20 age group and the increase in the group aged 60 and older. The average age of Guadeloupians is currently 34.2 years, which is 3 years more than the average age in 1990. The population age gap is widening due to the decline in fertility (the total fertility rate was halved between 1992 and 1999) and migration.

Women represent 51.9% of the department's total population, but they tend to be older overall. They account for 49.3% of the group under 20 years of age and 60.1% of women aged 75 years and older. This is due to Guadeloupian women's life expectancy at birth, which exceeds that of men (73.3 years) by 7 years.

The proportion of foreigners declined from 6.5% of the total population in 1990 to 5% in 1999. Haitians are the largest group, followed by immigrants from Dominica and immigrants from the Dominican Republic. In Saint Martin, the population stabilized at 29,000 inhabitants in 1999. Half the foreigners in the department continue to be concentrated in the municipality of Saint Martin.

The concentration of the population in the main urban areas and the development of periurban areas—trends begun in the 1980s—continued in the 1990s. For example, the number of municipalities in Pointe-à-Pitre, where 41% (170,000 persons) of the archipelago's population live, increased from four to seven. Five of these municipalities have over 20,000 inhabitants.

In 2000, the school-age population numbered 117,091 (5,591 more than in 1994). The number of preschool-age children continues to increase and schooling rates are 100% for 3-year-olds and 20% for 2-year-olds. The rate of access to high-school education by young people aged 17–23 was only 64% in 2000; the rate of graduation from high school continues to increase (70.4% in 1999). The University of the Antilles and French Guiana enrolled 11,076 students in that same year (12.5% more than in 1994).

In 1999, the economically active population numbered 191,400, an increase of 18,900 over the 1990 figure; this increase is attributable primarily to demographic changes. Women account for 49% of the economically active population.

In 1999, as in 1990, 59% of the population aged 15 and older participated in the labor market. For all ages between 25 and 60 years, active employment rates for men were lower in 1999 than in 1990, whereas those of women were higher. Generally speaking, the labor market situation deteriorated between 1991 and 1999. Unemployment, which increased considerably in nine years and had a greater impact on men than on women, was 34.2% in 1999.

In Guadeloupe, people become economically active later in life because schooling lasts longer; the active employment rate of adolescents aged 15–19 decreased from 15.5% in 1990 to 6.1% in 1999, affecting more males then females. The number of beneficiaries of the Minimum Insertion Income (a subsidy through which financial aid and social security benefits are provided for residents in the French territory over the age of 25 whose earnings are insufficient) continues to rise, and in 2000, reached 27,460 (if spouses are added to the number of beneficiaries, the number of people receiving this benefit reaches 52,000). Half the beneficiaries are under 35 years of age and they generally live alone.

Since 1 January 2000, the law on universal health insurance coverage has enabled everyone living in France on a permanent, regular basis to benefit from social security for his or her health expenditures. It also provides supplementary benefits in the event of illness for people with limited earnings.

Mortality

The crude mortality rate was 6.2 per 1,000 population in 1999. Data corresponding to broad groups of causes are only available for the period 1993–1995. Death rates for the period 1993–1997 (standardized according to the total population of France) are shown in Table 4.

HEALTH PROBLEMS

By Population Group

Children

Perinatal mortality fell to an average of 7.3 per 1,000 total births during 1998–2000. The rate of stillbirths remains high: 6.4 per 1,000 births in 1997 and 6.0 per 1,000 in 2000.

TABLE 4. Mortality rates (per 100,000 population) by broad groups of causes (adjusted to the population of France), Guadeloupe, 1993–1997.

Group of causes	Males	Females
Diseases of the circulatory system	366.1	278.2
Neoplasms	283.6	131.1
Injuries and poisoning	131.9	40.2
Diseases of the respiratory system	76	33.1
Diseases of the digestive system	60.2	33.9
Infectious and parasitic diseases, including HIV/AIDS	42.9	23
Endocrinological diseases and immune disorders	42	44.4
Mental disorders, including alcoholism	41.5	14.5

Infant mortality increased slightly, from 7.9 per 1,000 live births in 1995 to 10.1 per 1,000 in 1998. The main causes of death in the population under 1 year in 1995–1997 were perinatal conditions (54%), congenital anomalies (15%), and accidents (8.9%). During that same period, mortality in children aged 1–4 was due to accidental causes in 54% of cases, infections in 8.5%, and congenital malformations in 5.7%.

Eighty-nine percent of 3-year-olds are enrolled in preschools and are in good health. According to a report by the General Council on the period 1999–2000, 10 of every 1,000 children suffered from confirmed hearing deficiencies, and 18 of every 1,000 had confirmed visually impairment (5 of every 1,000 had strabismus).

Schoolchildren and Adolescents

According to the census, 5–14-year-olds accounted for 16.9% of the population. School attendance is compulsory at those ages. A study of the causes of death in this age group found that between 1995 and 1997, external causes and injuries caused half (51%) of all deaths (60% of male deaths and 35% of female deaths), followed by neoplasms (16%) and diseases of the nervous system (10%).

Of the chronic diseases that are fully reimbursable by social security, 4.2% occur in this age group. Severe chronic respiratory insufficiency and mental disorders account for over two-thirds of chronic illnesses covered under this regimen. The school health services place considerable importance on dental caries, respiratory conditions, and osteoarthritic disorders.

According to the census, 15–24-year-olds accounted for 14.5% of the population. During 1995–1997, external causes and injuries were the leading cause of mortality in this group (75% of male deaths and 67% of female deaths). Traffic accidents caused more than half of all deaths due to injuries (53% of male deaths due to injuries and 67% of female deaths due to injuries). Neoplasms are the second leading cause of death (10%), followed by diseases of the circulatory system (4%) and infectious diseases (4%). Four percent of all chronic diseases are registered in this age group, with mental disorders and chronic respiratory insufficiency predominating.

According to a study conducted through cluster surveys of students in the last year of the first cycle and students in the last year of the second cycle of secondary school, 6.5% of those in the first group and 15% of those in the second group are habitual smokers (at least one cigarette a day). Twenty-one percent of the first group and 17% of the second do not drink alcohol; 13% of both groups drink alcohol at least twice a week and have been drunk three times in one year. More males (19%) than females (7%) drink; beer is the alcoholic beverage most consumed.

According to the annual study by the Directorate of Research, Assessment Studies, and Statistics of the Ministry of Labor and Social Affairs (DREES) on the treatment of drug addition in one of the department's health and welfare facilities, the percentage of persons under age 25 followed up on for illicit drug consumption rose from 47% in 1994 to 56.8% in 1999.

Adolescent pregnancies are a concern. In 1999, 2.9% of pregnancies corresponded to girls under the age of 18.

Adults

In 1999, the 25–60 years age group (202,122 individuals) represented 48% of the population. An analysis of the data on mortality kept by the National Institute of Medical Research (INSERM) for the period 1995–1997 shows that deaths in people 25–64 years accounted for 28% of overall mortality. This proportion varies considerable by sex: 35% of male deaths and 20% of female deaths. Among 25–64-year-olds, the three leading causes of death are responsible for nearly two-thirds of total mortality: external causes and injuries (23%), neoplasms (20%), and diseases of the circulatory system (20%). For men, injuries are the leading cause of death (28%), followed by diseases of the circulatory system (19%), and neoplasms (17%); for women, neoplasms are the leading cause (27%), followed by diseases of the circulatory system (23%), and injuries (13%).

The aforementioned study also found that the 25–59 years age group accounted for over 44% of chronic disease cases. Diabetes, hypertension, mental disorders, and tumors make up three-quarters of all diseases whose costs are fully covered by the different insurance schemes. The most recent data on hospital morbidity are available from the 1992–1993 decennial survey of short-term services (medicine, surgery, obstetrics); they reveal that the conditions most frequently associated with hospitalization are, in order of frequency, arterial hypertension, diabetes, and alcoholism.

In 1999, the general fertility rate was 63.8 per 1,000 women of childbearing age. According to data from the family planning and education centers, 80% of women who consult a doctor use some kind of oral contraceptive, 9% use an intrauterine device, and 11% prefer other methods. Only 7% of the female population of childbearing age takes advantage of the consults offered by the family planning centers. In 1998, the abortion rate was 41 per 100 conceptions, a 30% increase over the 1994 figure. In 1999, 5,402 abortions were performed in public and private sector establishments in Guadeloupe.

During 1993–1997, maternal mortality remained stable at 46.9 deaths per 100,000 live births.

The Elderly

According to the 1999 census, there were 59,094 people over the age of 60 in Guadeloupe (14% of the total population). The number of persons over age 75 increased since the 1990 census and, in 1999, accounted for 11.7% of the population. In 1997, the life expectancy of Guadeloupians at age 60 was 19.8 years for men 24.3 for women.

Almost everyone aged 60 and older (99%) lives at home thanks to the protection afforded by a traditional way of life and the State's home care policy. Another factor in this high rate of home care for the elderly is the scarcity of institutions that offer long-term inpatient care to this age group and a scarcity of geriatric-care beds.

Mortality data for 1995–1997 reveal that people over 65 years of age accounted for two-thirds of general mortality (58% of male deaths and 75% of female deaths). Deaths from diseases of the circulatory system and neoplasms account for 61% deaths in this age group, with no differences by sex. This age group accounts for 46% of all chronic disease cases.

The Disabled

As of 1 January 1998, 5,600 people were receiving the benefit available to adults who are at least 80% disabled, or are 50%–80% disabled and cannot work. The Technical Commission for Vocational Guidance and Reclassification (COTOREP) granted 1,856 supplementary benefits to disabled adults in 1999 and 1,661 in 2000. In 2000, 666 workers were classified as disabled.

The Departmental Commission for Special Education determines if a child is disabled and defines a child disability rate. This rate determines the amount of financial aid to be given to the family and provides access to specialized services and programs. The CDES recorded 2,174 cases and granted 718 special education allowances in 2000.

By Type of Health Problem

Natural Disasters

Guadeloupe is situated in a high-risk zone for natural disasters. Hurricanes are a yearly threat (in 1999, Hurricane Lenny wrought considerable damage), and earthquakes, tremors, and volcanic eruptions also pose risks.

Vector-borne Diseases

Each year, there are seven to eight cases of imported malaria (mainly due to *Plasmodium falciparum*). It was determined that some 46% of the malaria cases registered in the last five years had visited Africa, 31% Latin America, and 2% another Caribbean country where malaria has not been eradicated. In nearly all the cases, no chemoprophylaxis was given, and when it was, the course of treatment was not completed. Certain species of *Anopheles* continue to be found in Guadeloupe.

In 1995, seven cases of hemorrhagic dengue were reported, causing three deaths. Since then, there has not been a serious dengue epidemic, nor have there been any more cases of hemorrhagic dengue. However, in the rainy season during the last quarter of each year, there is always an increase in the number of cases. During epidemics, more than 30% of serologic tests for the disease are positive. Prior to 1998, when the cost of the serologic test for dengue was not yet covered by the social security system, and prior to the adoption of the universal health insurance scheme, the Departmental Directorate of Health and Social Affairs (DDASS) reimbursed the cost of serologic tests conducted at the Pasteur Institute. At that time, the exhaustiveness of the tests prescribed was fairly good, but this is no longer the case. Nevertheless, in 2000, the Pasteur Institute of Guadeloupe began to use techniques that enable the circulating virus to be typified through C-reactive protein tests. Since August 2000, dengue-3 virus has been detected. Dengue surveillance is undertaken through a network of 37 sentinel doctors throughout the territory of Guadeloupe. The results are reported weekly.

Before 1995, the only form of schistosomiasis found in Guadeloupe was caused by *Schistosoma mansoni* (intestinal bilharziasis). A campaign to combat the mollusk vector (*Planorbis* genus) using its competitor (*Biomphalaria glabrata*) led to its eradication from the main transmission sites as of 1995. These sites continue to be the object of malacological surveillance. There have been no new cases of human infestation since then.

Diseases Preventable by Immunization

Among children born in 1998, coverage rates at 1 year of age are estimated at 87% for the third dose of the vaccines against poliomyelitis, diphtheria, tetanus, pertussis, and 74% for the third dose of the *Haemophilus influenzae* type b vaccine; 80% of them have received two doses of the hepatitis B vaccine.

Eighty-nine percent of children born in 1997 received a dose of the MMR vaccine before age 2, but only 79% received it as recommended (between their first and second birthday).

No new case of poliomyelitis or diphtheria has been recorded in the last few years. The last two cases of poliomyelitis date back to 1970.

The measles surveillance network did not register any serologically confirmed cases since its creation in 1992 and October 1996. Since the last epidemic in 1996–1997, another two imported cases have been investigated and serologically confirmed—one in July 1997 and the other in 1998. Since then, no other case has been registered.

A retrospective study of morbidity in hospitals, undertaken in the three pediatric services between 1994 and 1999, which continued to another study conducted with the same methodology, confirms the endemicity of pertussis (88 cases) since 1983, with

three epidemic outbreaks. The last outbreak occurred in 1994 and produced 11 cases.

Although no cases of neonatal tetanus have been seen in the last 10 years, tetanus is still a cause of concern, particularly among the elderly population. From 1991 to 2000, the DDASS recorded 15 cases, 6 of which occurred in people over 64 years of age.

In the absence of a study on seroprevalence in the general population, the population of women who gave birth during a given year are used to provide an indication of the rubella situation in Guadeloupe. The most recent calculation dates back to 1995, when 18% of women were not vaccinated against rubella. In 2000, some 540 doses of the vaccine were made available to maternity wards for postpartum vaccination of seronegative women. The rubella surveillance network has not notified any new cases. There is still no surveillance network for congenital rubella syndrome.

Until 1995, influenza-like syndromes as a whole were subject to surveillance by the network of sentinel doctors. In March 1996, influenza surveillance was initiated through a nasopharingeal search for the virus. This confirmed the existence of an epidemic at the beginning of October 1996 and established the presence of influenza virus type A (H3N2). In 1999, the influenza viruses in circulation were types A and B, and in 2000, type A.

The General Council's 2000 Annual Report of the Health Actions Service of the shows a 2.1% prevalence rate of the hepatitis B antigen among those who attended the sexually transmitted infections clinic, with a prevalence of 1.5% among people under 25 years of age. In 2000, 1.9% of pregnant women were monitored by the Mother and Child Protection Service. This service handles approximately 20% of pregnant women.

Guadeloupe has a detection and a monitoring network for hepatitis C patients, in which professionals from hospitals and outpatient services participate. In 2000, a national campaign was conducted to encourage health professionals to broaden their detection efforts.

Intestinal Infectious Diseases

Cholera did not affect Guadeloupe, above all due to the high quality of the water supply and monitoring of food products.

Chronic Communicable Diseases

The general incidence of tuberculosis has fallen to an average of 8.2 per 100,000 population between 1998 and 2000. Sixty percent of cases were contagious forms, which, upon direct examination, revealed the presence of Koch's bacillus. The male-female ratio for that same period was 1:4. In 2000, no case was detected in persons under age 15, probably due to the high rate of coverage with the BCG vaccine (95% among the population under 1 year of age). Approximately 69% of the people affected are between 25 and 54 years of age. In this age group, one of every two sufferers is a foreigner (37% of all cases).

The incidence rate of leprosy has remained low (0.24 per 10,000 population). According to the Annual Report of the Anti-Leprosy Service, in 2000, 10 new cases and 2 relapses were reported in people over 15 years of age. The predominant forms are bacillary, and all new cases, as well as the relapses, were given multidrug therapy. In 2000, the prevalence rate of cases receiving chemotherapy was 12.3 per 10,000 population, with a list of 404 active cases at the beginning of the year.

Acute Respiratory Infections

In the period 1993–1997, the general mortality rate from acute respiratory diseases was 20 per 100,000 population. In children under 5, the rate was 50 per 100,000.

Zoonoses

Between 1994 and 2000, no new case of rabies was reported in Guadeloupe.

Since 1998, the number of cases of leptospirosis appears to have been increasing: from fewer than 10 cases a year, it rose to 37 cases reported to the reference center in 2000.

HIV/AIDS

Currently, only AIDS cases are subject to compulsory notification. As of 1 January 2000, a total of 950 cases had been declared since the start of the epidemic in Guadeloupe. The prevalence of HIV infection is estimated at 1% of the Department's total population; the incidence rate in 1999 was over 111 per million population. Heterosexual transmission has also predominated; 30% of cases were in women (cumulative data), but the proportion in women is increasing (40% in 1999). The most affected age groups 30–39-year-olds (37% of total cases), followed by 40–49-year-olds (35%) and 20–29-year-olds (16%). There are some 30 cases of pediatric AIDS.

Only 52% of people were aware that they were seropositive before being diagnosed with AIDS. Among adults who knew they were seropositive before contracting the disease, 42% were receiving antiretroviral treatment. In Guadeloupe, antiretroviral treatment is accessible to all residents, even foreigners, in three hospitals: the Regional University Hospital in Point-à-Pitre (62% of patients); the Basse-Terre Hospital and Marigot Hospital in Saint Martin.

Sexually Transmitted Infections

The regular appearance of new cases of syphilis and gonococcal infections raises concerns as to the changes in behavior expected in view of the AIDS epidemic.

Nutritional, Metabolic, and Genetic Diseases

The prevalent form of diabetes in Guadeloupe is type 2 diabetes, whose principle determinant is obesity, except in the case of an ethnic group originally from India in which, as observed in their country of origin, a "genetic sensitivity" was found.

Sickle cell anemia is the most common genetic disease in Guadeloupe. One in every 8 inhabitants has the sickle cell trait. Neonatal detection is undertaken systematically by all maternity

wards in the archipelago. In 1990, the local health authorities acknowledged that sickle cell anemia is a serious public health problem. In response, a disease care program was implemented under the control of the Integrated Center for Sickle Cell Anemia, which later became the "Guy Mérault" Caribbean Sickle Cell Anemia Center. Every year, systematic neonatal detection identifies 700 newborn carriers of an abnormal hemoglobin gene, as well as 20 to 30 newborns with sickle cell anemia. In 2000, sickle cell anemia was detected in 20 newborns.

Diseases of the Circulatory System

Cardiovascular diseases are the leading cause of mortality. From 1995 to 1997, they caused 770 deaths a year, 32% of the total number of deaths. Mortality due to cerebrovascular conditions is particularly high (an average of 300 deaths per year). They account for 39% of deaths from cardiovascular disease, in men as well as women. Each year, health insurance schemes cover 100% of the costs of caring for 1,350 people with hypertension, which causes more hospitalizations than any other illness.

After the Regional Conference on Health held in 1997, a special program was created to combat arterial hypertension. This program has, on the one hand, made it possible to take account of the needs in order to formulate a regional scheme for the supply of health services, and, on the other, to create adapted prevention instruments, especially for secondary prevention, with a view to encouraging patients to continue and complete their treatment.

Malignant Neoplasms

Cancer, which was responsible for an average of 510 deaths per year from 1995 to 1997, is the second leading cause of mortality. Prostate cancer in men, cervico-uterine cancer in women, and cancer of the stomach in both sexes, are very frequent. With 710 cases a year on average, cancer accounts for 12% of the chronic illnesses that are fully covered by the health insurance schemes. Hospital admissions for cancer represented just 5% of total admissions.

Accidents and Violence

Traffic accidents are a priority public health problem. In the last 10 years, there have been more than 80 deaths each year from traffic accidents, and nearly 400 people have suffered serious injuries (requiring a stay of more than 6 days in hospital). Table 5 shows the number of accidents since 1996, as well as the fatality rate and morbidity associated with them. Most victims were adolescents or young adults (aged 15–44) and pedestrians and drivers of two-wheeled vehicles were the most vulnerable groups among them.

Since 1994, a telephone hotline has been in operation to take complaints of violence against children. Between 1998 and 2000, 1,749 calls were received, 208 cases went to court, and 1,256 were dealt with administratively.

In 1987–1997, 40 deaths from suicide were registered on average each year, with a male-female ratio of 3:1. At one end of the spectrum are young adults (with a death rate in excess of 20 per 100,000 population) and at the other are people over 70 years of age (more than 50.9 per 100,000 population).

TABLE 5. Mortality and morbidity due to traffic accidents, Guadeloupe, 1996–1999.

Year	Accidents	Deaths	Serious injuries	Light injuries	Deaths per 100 accidents
1996	782	83	405	715	10.6
1997	877	94	490	756	10.7
1998	811	104	498	653	12.8
1999	816	91	417	736	11.2

Behavioral Disorders

According to a study conducted among the general population in 1999, 32% of those surveyed suffer from anxiety, 15% suffer from depression, and 15% have psychotic disorders.

Alcoholism is a serious social and public health problem. Between 1995 and 1997, an average of 137 deaths each year were attributed to alcoholic psychoses, cirrhosis of the liver, and neoplasms of the upper respiratory system (mouth, pharynx, esophagus, and larynx). Alcoholism is the second leading cause of premature death (before the age of 65) and the third leading cause of hospitalization.

Between 1995 and 1997, an average of 167 deaths a year that can attributed to excess smoking were recorded (deaths from chronic bronchitis, lung cancer, and ischemic cardiopathies). While the male-female ratio observed for deaths from ischemic cardiopathies is 1:1, it is 1.9:1 in the case of death from chronic bronchitis. The larger number of male victims is worse in the case of lung cancer, with a male-female ratio of 5:1.

The number of drug addicts seen by the medical and social services, and people questioned about drug consumption or trafficking, is constantly increasing. The young population is the most affected (70% were under age 30 in 1999), mainly males (85.2%), and often out of work (in two-thirds of cases). In 1994, the two most consumed substances were marijuana (64%) and crack cocaine (26%), which are generally smoked. Crack cocaine consumption has increased in recent years. Drug addictions involving intravenous drugs or ecstasy are not very common.

RESPONSE OF THE HEALTH SYSTEM

The Health System

Institutional Organization

Guadeloupe's health system is broken down into 24 establishments: 11 of them belong to the public sector (1 regional university hospital, 5 hospitals, 1 psychiatric hospital, 3 local hospitals, and 1 long-term care hospital) and 13 are private, for-profit clin-

ics, which operate on Basse-Terre and Grande-Terre. At the beginning of 2000, the short-term medical, surgical, and gynecologic/obstetric care capacity was 1,072 beds in the public sector and 711 in the private sector. There were 512 beds in public and private hospitals for psychiatric patients, of which 73 are reserved for children and young people. There were 169 beds in public hospitals and 222 in private clinics for monitoring and rehabilitation. This puts the hospital bed/placement capacity at 2.2 per 1,000 population for medicine; 1.4 for surgery; 0.6 for gynecology/obstetrics; 0.9 for monitoring and rehabilitation; 0.6 for child and adolescent psychiatry, and 1 for general psychiatry.

Guadeloupe has 3 densitometers, 2 angiographs, 2 MRI scanners, and 1 CAT scanner at the Regional University Hospital and 30 hemodialysis units in hospitals (19 of which are in the Regional University Hospital in Point-à-Pitre). One private health care establishment in Basse-Terre has a lithotriptor.

There are also 27 private and 8 public biomedical analysis laboratories on the island, for a ratio of 1 laboratory per 10,000 population; and 143 pharmacies, which is slightly more than 3 per 10,000 population; and two wholesale distributors.

Organization of Public Health Services

Disease Prevention and Control Programs

The still high perinatal mortality rates led to the formulation and implementation of a five-year perinatal plan beginning in 1996, which includes 13 measures designed to improve the monitoring of pregnancy and birth conditions, and to find the causes of maternal death to enhance prevention. Several of these measures have already been put into practice: media campaigns to inform the general public and the creation of support services, dissemination of good clinical practice cards to professionals, and restructuring of maternity wards by the competent authorities in compliance with national regulations.

Epidemiological Surveillance and Public Health Laboratory Systems

The DDASS organized a sentinel epidemiological surveillance network with the cooperation of some 40 physicians in private practice and hospital physicians, general practitioners, and specialists. Every week, information is gathered by telephone on dengue, influenza-like syndromes, gastroenteritis, diarrhea, chickenpox, ciguatera poisoning, leptospirosis, and outbreaks of foodborne illness. This system complements the national system, which includes a list of 23 diseases subject to compulsory notification.

Potable Water and Sanitation Services

The DDASS subjects water for human consumption to strict and frequent health controls at three levels: catchment, treatment plant, and distribution network, in accordance with the standards set by the pertinent European agencies. Pollution of certain water sources has been observed since 1999, but the quality of the water distributed is generally good or very good (95.8% of the 1,600 samples analyzed in 2000 complied bacteriologically with the regulations). Water used for bathing and washing is also of good quality. In 2000, there were 23 communal purification stations for 36 municipalities. Due to the expansion of the municipalities and the dispersion of dwellings, it is both difficult and costly to design sanitation networks throughout the territory. In most cases, individuals resort to non-communal sanitation (septic tanks, small purification stations).

Solid Waste Services

Guadeloupe currently produces some 250,000 tons of domestic waste per year. All domestic and similar wastes goes to authorized dumps. There is a departmental system for treating hospital waste, which includes a plant for incinerating the waste produced by public and private health establishments. These wastes are estimated at 600 tons per year; the incinerator's capacity is 350 kg/hour.

Pollution Prevention and Control

In 1997 and 1998, the Regional Directorate of Industry, Research, and the Environment, which is in charge of controlling the air pollution caused by industrial establishments, has conducted pollution prevention campaigns throughout the urban zone of Pointe-à-Pitre. The campaigns showed that this city, where 80% of Guadeloupe's activity takes place, has very little air pollution, above all due to the natural ventilation from the trade winds that blow constantly. The values measured for nitrogen dioxide, sulfur dioxide, and ozone are well below the limits and reference values stipulated by the European standards on air quality.

Housing and Sanitation

According to the National Institute of Statistics and Economic Studies, in 2000, 79% of families lived in a single-family home (approximately 67% of the houses are made of brick, 29% are made of other traditional materials, and the rest are temporary dwellings). The remaining 21% live in communal housing. Approximately 3.8% of dwellings have no running water or electricity. In April 2000, the departmental housing plan for the underprivileged showed that 20% of the population lives in precarious or unsanitary conditions, 30% of the population receives the minimum social allowance, and 10% of the population (15,000 families) comes under both these categories.

Organization of Individual Health Care Services

Emergency Services

Emergencies are attended by two regional university hospital services in Pointe-à-Pitre and the general community hospital in

Basse-Terre/Saint Claude. This is complemented by mobile three units: emergency health care, treatment, and guidance—one of which is based at the Marigot hospital, for the northern islands. Center 15 (at the Regional University Hospital) coordinates the three mobile emergency and resuscitation services. Forty-four private companies provide land transport services for patients. Combined, these companies have 151 vehicles: 55 ambulances (3 in Saint Martin and 2 in Marie-Galante) and 96 special light vehicles (3 in Saint Martin and 4 in Marie-Galante). In the northern islands, two companies are authorized to transport patients by air within the region.

Blood Banks

The French Blood Establishment (EFS) selects donors through a general questionnaire followed by a detailed interview. Prior to distribution, all donated blood is systematically screened.

Specialized Services

There are two homes for workers with disabilities, five occupational homes and one specialized home, but there are no properly supervised workshops. There are only a few occupational assistance centers that admit people whose capacity is less than one-third that of a non-disabled worker. At the conclusion of the Regional Conference on Health, which dealt with disease prevention and health promotion among young people, a special action plan for the disabled was formulated.

The main activity to promote health among the elderly consists of an annual free vaccination campaign against influenza. Additionally, with the support of the network of senior citizens' clubs, a vaccination initiative against tetanus and poliomyelitis was conducted. Medical care and accommodation for the elderly includes 142 residential beds; 241 beds in retirement homes, 108 of which offer medical services; 350 beds for long-term medical care, and 433 placements for home nursing services. The ratio of beneficiaries receiving home care services are 25.6 per 1,000 population for home care and 33 per 1,000 population for domestic assistance.

As of December 1999, and in compliance with law 97-60 of 2 January 1997, 2,056 dependent persons over the age of 60 were receiving a special indemnity. Additionally, dependent persons, who for some reason cannot benefit from that special indemnity, receive in-kind assistance in the form of domestic assistance services. One of the topics around which the 1999 Regional Conference on Health was organized was the development and recognition of full citizenship for the elderly and the disabled.

Since 1994, a departmental service for the prevention of abuse has been in operation and a permanent telephone hotline is available to the public. The professionals who man the hotline are trained to gauge whether a child is in danger and to alert the services that have the authority to handle the case. Within the framework of child protection, the department has 404 placements at specialized institutions.

In 2000, there were 25 psychiatrists working in the public sector and 12 in private practice. There are also some 600 mental health professionals working in the psychiatric services in the public sector facilities. About 90% of adults who receive mental health care attend the Psychological Medical Center, which functions outside the hospital; 68% of patients are never hospitalized in the psychiatric hospital. In 1999, 1,300 patients were hospitalized (one-fourth of all cases); however, many of the hospital stays are forced (on average, 600 per year). The average length of stay is 39 days. At prisons, 874 detainees received psychiatric care in 1999. That year, 1,700 young people received medical attention and nearly half of these received a mental health assessment for the first time. A 20% increase in these figures was observed during the past five years. Nearly all cases were boys (62%) aged 5–9 (43% of them).

In 1999, the percentage of pregnant women who received little or no medical care remained high (3.8%). Approximately 70% of pregnant women had attended at least seven check-ups in 1999; approximately 2% had attended fewer than 3 prenatal check-ups. That year, almost all medical care during childbirth and the puerperium was conducted under the supervision of trained personnel; fewer than 1 delivery per 1,000 occurred at home, and 18.7% of deliveries were caesarian sections.

Health Supplies

All medicines and vaccines are imported from continental France and are available to the public.

Human Resources

Availability by Type of Resource

In 2000, the archipelago of Guadeloupe had 785 physicians (431 general practitioners and 354 specialists), 138 dental surgeons, 136 midwives, 1,500 State-titled nurses, 280 psychiatric nurses, 191 physiotherapists, 43 speech therapists, 8 orthopedists, and 229 pharmacists (165 of whom have a diploma authorizing them to prepare medicines). In 2000, there were 18.6 physicians, 45.3 nurses (State-titled, psychiatric, and obstetrical nurses and nurse-midwives), and 3.3 dentists per 10,000 population

Training

The University of the Antilles and French Guiana runs courses for the first years of medical school in Guadeloupe, as well as for the third cycle of medical studies, through an agreement with the University of Bordeaux II. There is also a nursing school and a school for training ambulance personnel. Other health professionals are trained in continental France.

Health Research and Technology

The National Institute of Medical Research has a unit dedicated to hemoglobinopathies in Guadeloupe, as well as a guiding council that enables local research proposals to be considered and promotes contacts with other research teams from the Institute.

Health Sector Expenditure and Financing

Financial resources for the health sector come from the central level ministries and local communities, the social security system, nongovernmental organizations, and the European Union.

MARTINIQUE

OVERVIEW

Martinique, the smallest of the French overseas departments (1,130 km^2), is situated in the central arc of the Antilles, between Saint Lucia to the south and Dominica to the north. It is equidistant from the coasts of Venezuela, Haiti, and the Dominican Republic. The Mont Pelée (1,397 m) volcano towers over the island, whose capital is Fort-de-France.

Martinique has a growing, albeit still weak, economy that largely depends on foreign aid (from continental France, the European Union). The agricultural sector is small and is based on sugarcane and banana production. Tourism, centered mainly on the hotel trade, is a key economic sector. Martinique has a foreign trade deficit; its main trading partner is continental France. There was a significant increase in per capita GDP between 1989 and 1997, from US$ 7,260 to US$ 12,240, for an average annual increase of 9%.

According the most recent census data (March 1999), Martinique has a population of 381,500 inhabitants. In the 1990s, net migration was negative. Between 1990 and 1999, the average annual population growth rate was 0.7%. The population age pyramid shows that the population that is still young on the whole (23% was under 15 years of age in 1999), but that is aging (Figure 3).

The birth rate (14.8% in 1998) hides a low fertility rate—1.9 children per woman in 1997—, which is below the replacement level. Women of childbearing age (15–49 years) represented 53% of the population, which partially explains this birth rate.

Martinique's population reflects the mixing that occurred among the indigenous Amerindians and the Blacks, Whites, and Indians who settled the island centuries ago. Unlike the other Caribbean islands, Martinique no longer has any autochthonous inhabitants. Foreigners are a minority (1% of the total population), and most are immigrants from Haiti and Santa Lucia. Though the population density is high (338 inhabitants per km^2 in 1999), it is unevenly distributed. Forty-four percent of the population lives in the four main municipalities, while some of the northern parts of the island are practically uninhabited. Martinique's municipalities are fairly extensive and heavily populated: 12 of the 34 municipalities have more than 10,000 inhabitants; two have slightly less than 1,000. Schooling is compulsory until age 16, and this regulation is strictly complied with.

According to the 1999 census, Martinique had 131,000 dwellings, 23% more than in 1990. Home remodeling and the growing number of families are the reason for the increased demand for housing. There has also been an effort to eliminate unsanitary dwellings. Fiscal policies encourage new home construction and are also increasing the amount of low-rental housing available.

In 2000, the economically active population (EAP) numbered 167,400 (103,700 were salaried workers); this is a 1.5% improvement the 1990 figure of 164,900. According to the International Labor Organization (ILO), unemployment remained high (26%), particularly among women (31%) and young people under 25 years of age (49%). More than 15% of the employed population works part time; more women work part time than men. Nearly 10% of the EAP is in "precarious" employment, in other words, under a short-term or temporary contract, or employed through a paid work-study program. At the beginning of 2000, over half the people who received the minimum insertion income (an allowance designed to facilitate social and professional insertion) lived alone, and approximately one-third were single women with children.

The family budget study conducted by the National Institute of Statistics and Economic Studies (INSEE) between 1994 and 1995, showed that nearly 15% of households in the country fall below the poverty line. The most disadvantaged groups are workers, retirees, and other economically inactive people as well as large families and single-parent households.

In 1997, life expectancy at birth was 81.3 years for women and 74.9 for men. The increase in life expectancy is largely due to the decrease in infant mortality, which stabilized in 1998 at 8.6 per 1,000 live births.

Mortality

Cardiovascular disease, cancer, and external causes of injury are the leading causes of mortality in Martinique. Between 1997 and 2000, there were an average 2,300 deaths per year (54% males, 46% females). Crude mortality rates by sex and broad groups of causes are shown in Table 6.

HEALTH PROBLEMS

By Population Group

Children

The number of births remained stable between 1997 and 2000 (around 5,700 a year). In 1995, infant mortality fell to its lowest

level, 5.8 per 1,000 live births; in 1998, there were 8.6 deaths per 1,000 live births. Total perinatal mortality in 1998 was 14.7 per 1,000 live births. According to maternity records, premature birth rate (10.8%) continued to rise in 2000, mainly because of its extreme prematurity component. The proportion of low birthweight babies (<2,500 g) is 11.4%; 2.4% weigh less than 1,500 g.

In 2000, 581 infants (10.6% of all births) had to be hospitalized in neonatology units. The neonatal mortality rate was 4.1 per 1,000 births. The leading causes of transfer to those units were prematurity and hypotrophy (50% of cases), and infection (17%).

Between 1995 and 1997, there were an average 40 infant deaths per year (less than 2% of all deaths), nearly all of which were due to conditions originating in the perinatal period and congenital anomalies. In the same period, there were an average of 12 deaths each year in children aged 1–4 (0.5% of the total); most were due to external causes of injury.

Schoolchildren and Adolescents

There are an average of 11 deaths per year in this population (0.5% of all deaths); half are due to external causes of injury and half to cardiovascular diseases and neoplasms. The French health care system covers the entire cost of health care for chronic, high-cost diseases. Mental disorders, asthma, and sickle cell anemia are the main illnesses fully covered by the social security system in the population under 15 years of age. The prevalence of these diseases is stable. Rheumatic fever has almost disappeared thanks to the public health programs implemented.

A study on hospital morbidity in short-stay public and private hospital services during 1992–1993 showed that hospital stays by persons under age 15 accounted for 17% of the total. Over half the stays in health establishments by this age group are due to three causes: diseases of the respiratory system (24%), diseases of the digestive system (18%), and injuries and poisoning (9%).

TABLE 6. Mortality, by broad groups of causes and sex, Martinique, 1995–1997 (average).

	Males		Females		Total	
Group of causes	%	Crude rate (per 100,000 population)	%	Crude rate (per 100,000 population)	%	Crude rate (per 100,000 population)
Diseases of the circulatory system	29	96	37	106	33	201
Neoplasms	25	84	22	61	24	145
External causes	11	37	5	15	8	52
Communicable diseases	4	14	3	7	3	21
Conditions originating in the perinatal period	1	3	1	3	1	6
Other causes	30	98	32	91	31	188

In 1998, a study was conducted on the prevalence of asthma and allergies. Doctors and nurses in charge of schoolchildren's health carried out a survey based on the International Study of Asthma and Allergies in Childhood (ISAAC), phase 1, with two school population samples. Each sample comprised 800 students, chosen according to the cluster survey method from groups aged 5–6 and 13–14. The survey showed that asthma and allergies are frequent among young Martinicans. In effect, 32% of 14-year-olds said they had wheezed at one time, and 21.5% had in the previous 12 months; 16.3% of these young people had already been diagnosed with asthma. The prevalence of allergies in the different geographic areas varies widely, most likely due to differences in the exposure to risk factors, particularly environmental and psychosocial factors.

Adults

Approximately 14% of the population is between the ages of 15 and 24 (7.5% aged 15–19 years and 6% aged 20–24 years). In 1995–1997, an annual average of 41 deaths was registered among 15–24-year-olds, with a male-female ratio of approximately 3:1. Traffic accidents and other violent deaths were predominant in males and represented 77% of all deaths in this age group, followed by tumors, which accounted for 4% of deaths. For females too, the leading causes of death were external causes of injury (31% of deaths in this age group), principally traffic accidents. Among 15–24-year-olds, the chronic diseases most frequently seen by the French health system are mental disorders, sickle cell anemia, and chronic respiratory insufficiency.

The age group 25–59 years age group accounts for 48% of the population. In 1995–1997, an annual average of 530 deaths was registered for the 25–64 years age group, with a male-female ratio of 2:1. The three leading causes of death in men were external causes of injury (accidents and suicide), accounting for 23% of deaths in this group, cardiovascular disease (21%), and cancer (21%). In women in this age group, the leading causes of death were neoplasms (34%) and cardiovascular diseases (26%); external causes of injury only accounted for 10% of deaths. The diseases that affect 25–59-year-olds and that are fully covered by the French health system are diabetes, hypertension, mental disorders, and neoplasms.

In 1995–1997, premature deaths (before age 65) accounted for 26% of all deaths, and affected more men (31% of male deaths) than women (20% of female deaths). Seventy percent of premature deaths among men and 67% among women were attributable to four broad causes: external causes of injury (accidents, suicide, violent deaths), neoplasms, diseases of the circulatory system, and deaths attributable to alcohol consumption. Diseases of the circulatory system and tumors affected more women than men, but the opposite was the case with injuries and alcoholism.

According to the 1999 census, women of childbearing age accounted for 53% of the female population. The total fertility rate in 1997 was 1.9 children per woman, a decrease from the 1990

rate of 2.1. Some 10 girls under the age of 15 give birth each year. Deliveries by girls under the age of 18 represent about 2% of the total. Over 99% of pregnant women attend at least one prenatal check-up. Nearly all deliveries take place at specialized facilities; in 2000, only 0.4% of women gave birth at home. Sixty-two percent of deliveries took place at public hospitals and 38% at private clinics. In 2000, 20% of deliveries were by caesarian section.

According to the latest data available, between 1987 and 1990, maternal mortality dropped from 54 deaths per 100,000 live births in 1987–1990 to 24 per 100,000 in 1993–1997. There were 2,300 voluntary abortions per year on average; in 1999, there were 30 voluntary abortions per 100 conceptions. Officially, the private sector in Martinique does not perform voluntary abortions.

The Elderly

In 1999, 17% of the population was over 60 years of age. In 1997, life expectancy at age 60 was 20.5 years for men and 24.5 years for women.

During 1995–1997, the three leading broad groups of diseases that were the leading contributors to mortality among the population over age 65 were the same for both sexes: cardiovascular diseases (53% in men and 41% in women), neoplasms (45% in men and 20% in women), and diseases of the respiratory system (12% in men and 8% in women). The most frequent diseases whose costs are completely covered by the social security system are hypertension, neoplasms, and diabetes. The frequency of hospital admissions increases with age; adults over 65 account for 23% of short-term hospitalizations.

The steps taken to eliminate unsanitary dwellings have enabled this age group to benefit from minimum sanitary conditions. Only 5% of people over age 60 have no toilet in their home and only 2% do not have piped potable water. Eighty-one percent of persons in this age group own their home. On average, 2% of people in this age group live in institutions (retirement homes, nursing homes, long-term care homes).

Family Health

The 1999 census revealed a continuing trend towards smaller families (2.9 people on average). It is less frequent than in the past for several generations to live under the same roof. In 1999, 25% of households consisted of just one person, 23% two people, 20% three people, 17% four people, and 15% five or more.

The Disabled

In 2000, the Departmental Commission for Special Education recognized 1,500 young people under age 20 as disabled and provided them with financial aid or placement in a specialized facility. The prevalence of disability among the population under age 19 is 13 per 1,000. The most frequent disorders are mental (36%) and other psychological disorders (21%). Eleven percent had motor disorders; 11% had metabolic and general functional disorders of the body; 10% had hearing impairments; and 4% had visual impairments. Some 100 children have multiple disabilities; more than half have placements in a specialized facility or receive outpatient follow-up care. Due to the lack of specialized facilities, some young people must be cared for far from home. In 2000, a group of 39 children was sent to facilities in metropolitan France and Belgium.

In the case of disabled persons over 20 years of age, the Technical Commission for Vocational Guidance and Reclassification (COTOREP) is in charge of deciding, in each French department, whether a person should be classified as a disabled worker, and determining their professional orientation and the financial aid they are entitled to. In Martinique, this Commission follows up on 15,000–20,000 people. In 2000, over 5,500 adults (2.6% of the disabled between the ages of 20 and 59) qualified for the disability allowance.

By Type of Health Problem

Natural Disasters

Martinique is susceptible to meteorological disturbances, mainly cyclones, and to earthquakes and volcanic eruptions. These catastrophes are included in prevention plans; public education about risk management is achieved through regular disaster mitigation awareness campaigns.

Vector-borne Diseases

In Martinique, all cases of malaria are imported (52% of patients come from Africa, 32% from French Guiana, and 14% from Haiti). The annual incidence of the disease remains low: 1–5 cases per 100,000 population. The Departmental Directorate of Health and Social Affairs (DDASS) registers the malaria cases identified by public hospital and private laboratories. A total of 57 cases were recorded between 1997 and 2000—19 each in 1997 and 1998, 13 in 1999, and 6 in 2000; three of every four cases were due to *Plasmodium falciparum*. The patients from French Guiana were infected with *P. falciparum* and *P. vivax* in equal proportions.

No cases of yellow fever were reported between 1997 and 2000. The Departmental Hygiene Laboratory administered 2,807, 3,293, and 3,227 vaccinations in 1998, 1999, and 2000, respectively; all the people who were vaccinated were traveling to countries where vaccination against yellow fever is compulsory.

Every year, there is a seasonal increase in the number of dengue cases, which reaches its height in the second half of the year. The annual incidence was 34 cases per 10,000 population in 1997, the highest since 1993 (2 cases per 10,000 population). In 2000, this figure dropped to 5 cases per 10,000 population, the lowest rate since 1995. The age-specific rates showed that the 15–24 years age group was the most affected (averaging 20 per 10,000 in 1996–2000) and the least affected was the 60 years and older age group (5 per 10,000).

Hemorrhagic dengue has only recently begun to appear in Martinique (1995). The extent of the epidemic in 1997 was totally unprecedented in the department—1,296 of 2,687 samples submitted for serologic confirmation were positive. Fifty-two cases were considered serious and were attributed to dengue, and there were nine deaths.

The DDASS conducts dengue surveillance through a reference laboratory that reports the results of serologic tests on a weekly basis, as well as through a network of sentinel doctors who report suspected cases detected during consultations. The serious forms of the disease are recorded by the DDASS in the hospital services. Between 1999 and 2000, three serotypes circulated in Martinique: dengue-1, dengue-2 and dengue-3. Dengue-3, which had not been seen for several years, was once again identified in December 1999.

No cases of schistosomiasis (intestinal bilharziasis) are no longer reported in Martinique, since the parasite's transmission cycle was interrupted following the disappearance of the mollusk vector (*Planorbis*). Currently, the human reservoir is small, although in the few cases diagnosed (5 in the year 2000 among the elderly population) the vitality of the *Schistosoma mansoni* eggs was observed.

Diseases Preventable by Immunization

For over 10 years, no cases of acute flaccid paralysis, poliomyelitis, or diphtheria have been reported to the health authority. The last study on vaccination coverage (June 2000), conducted among children aged 2 at the time of the study, showed that 99% had received the first three doses of the diphtheria, pertussis, tetanus (DPT) and poliomyelitis vaccines, and that 90% had received a booster. However, considering that the first dose is administered after age 2 months and that the minimum time between the two injections is 28 days, only 67% had been properly vaccinated against DPT and poliomyelitis by their second birthday.

Measles is one of the diseases subject to surveillance by the network of sentinel doctors. The cases registered are the clinically suspected ones, which mainly affect schoolchildren (average age 9 years). Measles is not considered a public health problem in Martinique; however, in recent years, public health authorities and professionals have conducted information campaigns to encourage the public and health professionals to vaccinate against the disease, and in particular to administer the second dose of the MMR vaccine. The aforementioned survey on vaccination coverage showed that 90% of children had received the second dose of the MMR vaccine. Nevertheless, considering that the first injection must be given after 12 months of age, only 78% of children had been properly vaccinated by their second birthday.

There have been no cases of neonatal tetanus since the end of 1970, but each year a few cases of tetanus (approximately 10) are reported in elderly persons, mainly due to the loss of the immunity acquired through vaccination, or due to failure to revaccinate.

Since the MMR vaccine began to be administered, vaccination coverage against rubella has progressed considerably; the proportion of children who were properly vaccinated by the age of 2 rose from 63% in 1990 to 73% in 1997 and 78% in 2000.

As of 1995, the network of sentinel doctors has been reporting influenza-like syndromes to the DDASS, and the Pasteur Institute monitors the serotypes detected. In 2000, 14,837 cases were reported. The public authorities support the drive to vaccinate against influenza: promotional campaigns are conducted and vaccination is free for anyone over 65 years of age.

The vaccination study showed that 85% of children who had reached the age of 2 at the time of the survey had received the first dose of the hepatitis B vaccine and 58% of them had been given three doses. The four-dose vaccination scheme is employed more frequently (77% of cases) than the three-dose course.

The prevalence of hepatitis C infection is calculated at 0.5% of the total population. The prevalence of hepatitis C in blood donors is 0.05%. Prevalence of hepatitis C infection is relatively low (9%) in patients infected with HIV, since the drug addicts on the island tend to use crack (coca paste) rather than intravenous drugs. Blood transfusions were responsible for infecting about half of those infected solely with hepatitis C; infection due to intravenous drug use or occupational exposure of health professionals to hepatitis C accounts for very few cases.

Infectious Intestinal Diseases

The microorganisms that cause foodborne illnesses are usually *Salmonella* and *Staphylococcus*. In 2000, there were six outbreaks of infectious food poisoning in Martinique, affecting some 280 people; however, it is suspected that not all foodborne infections are declared to the health authority. Since 1972, an inventory is being kept of the salmonellas isolated at the Departmental Hygiene Laboratory in Martinique: 172 in 1998, 143 in 1999, and 107 in 2000. In 2000, the most frequently identified serotypes were *Salmonella panama* (35%), *S. enteritidis* (10%), and *S. typhimurium* (6.5%).

The incidence of viral gastroenteritis is high and epidemics are the leading cause of diarrhea in Martinique. Viral gastroenteritis is not difficult to diagnose and treatment is essentially symptomatic. In 2000, 5,425 cases were reported; no precise etiology was attributed to them.

In the past 10 years, there have been fewer cases of hookworm and threadworm thanks to improved hygiene and preventive action and screening by the DDASS. For example, between 1988 and 1990, more than 100 cases screened were positive for hookworm, compared to just 13 in 2000. The situation varies somewhat in the case of threadworm; between 1988 and 1990, there were 30 cases per year on average, compared to 43 cases in 2000. Systematic

screening for these parasitoses is carried out in populations at risk (e.g., young people beginning military service, farm workers).

Chronic Communicable Diseases

Since tuberculosis is subject to compulsory notification, the health measures service of the DDASS undertakes surveillance of this disease. It is hard to calculate the evolution of the number of declared cases, since the number of cases each year are very limited. The trend observed since 1996 is stabilizing (13 cases in 1996, 18 in 1997, 25 in 1998, and 18 in 1999). Those affected are generally natives of Martinique, and 1 or fewer of every 10 cases are from neighboring islands. Most patients develop the pulmonary form of the disease.

The referral site for leprosy in Martinique is the "Etienne Montestruc" dispensary, which comes under the General Council and conducts screening, medical and social consultations, and home visits. In 2000, 2,711 people were screened, resulting in the detection of 8 new cases; 10 new cases were detected in 1999. The active list includes 450 patients, 52 of whom are receiving treatment (24 receive multidrug therapy and 28 single-drug therapy). The male-female ratio of patients receiving multidrug therapy is 2:1. The number of new cases of leprosy stabilized a few years ago. The risk of contracting leprosy is higher for people over 45 years of age.

Zoonoses

The metropolitan reference laboratory for leptospirosis (the Pasteur Institute) confirmed 60 cases through serology in 1999 and 43 cases in 2000, for an average incidence rate of 0.14 per 1,000 population. Few cases of the disease are reported; in 2000, only 12 cases were reported to the health authority. Identification of the serogroup requires a second sample, which is rarely taken; the *icterohaemorrhagiae* serogroup is the most common.

HIV/AIDS

The AIDS epidemic in Martinique is a priority public health issue. Figure 4 shows the evolution of the number of AIDS cases and deaths since 1990. It is important to note that AIDS is subject to compulsory notification and notification is adequate. However, HIV seropositivity is not notifiable. The use of the triple drug regimen since 1996 has reduced the number of new cases of AIDS as well as the number of deaths from AIDS. There are an estimated 50 new infections per year. Due to the decrease in the number of deaths and to the stable number of new infections, the prevalence of HIV infection in Martinique is increasing. For all cases reported since the start of the epidemic the modes of infection are as follows: heterosexual transmission—82% of females and 59% of males; homosexual and bisexual transmission—0% of females and 26.5% of males; transmission through intravenous drug use—4% of females and 7% of males; transmission via blood transfusion—5.6% of females and 2% of males; hemophilia—0.7% of females and 1% of males; and vertical transmission, 5.6% of females and 1.5% of males. The viral load is always measured. Approximately 450 seropositive people are being monitored, regardless of the stage of the disease; some 350 people receive double or triple antiretroviral treatment. In 1999, antiretroviral drug resistance tests were introduced.

Sexually Transmitted Infections

Martinique only has sexually transmitted infections clinic, but patients can also consult their own doctor. In 2000, of the 6,739 people who attended the clinic, 26% did for a problem related to a sexually transmitted infection. Infections due to mycoplasmas, *Gardnerella*, *Chlamydia*, and *Candida* are those most frequently diagnosed. No cases of syphilis have been detected.

Nutritional, Metabolic, and Genetic Diseases

For more than 10 years, no cases of protein or vitamin deficiency-related disease have been reported. On the contrary, the improved socioeconomic situation has led to a change in eating habits, and diseases such as obesity, diabetes, and hypercholesterolemia, which are linked to overeating, have increased.

Each year, an average of 68 deaths from diabetes are reported (3% of all deaths). They mainly occur in women (57%), particularly those over 65 years of age with type 2 diabetes. Diabetes, which is fully covered by social security, accounts for 21% of hospital admissions each year.

Sickle cell anemia is the leading genetic disease in the Antilles; systematic screening of newborns has been carried out since 1984. Each year, 1 of every 300 newborns (15–20 infants) has a phenotype associated with a larger sickle cell trait. Two studies revealed that 10% of the population carries the sickle cell trait. In 1998, a new study estimated the number of people with sickle cell anemia at 1,200 (0.3% of the population). The male-female ratio is 0.9:1 and the mean patient age is 26.6 years, with extremes ranging from a few months to 85 years. Coverage for sickle cell anemia has improved, and in 2000, an Integrated Sickle Cell Anemia Treatment Center was created to care for the sick and their families.

Diseases of the Circulatory System

Cardiovascular diseases are the leading cause of mortality in Martinique. The most recent figures (1995–1997) reveal a yearly average of 768 deaths (33% of all deaths). More women die (37% of female deaths) from these diseases than men (29%). The mortality burden of cardiovascular disease increases with age, accounting for 16% of deaths among persons aged 25–44 years, 25% of persons aged 45–64, and 34% of persons over age 65.

Of the diseases that are fully covered by social security, cardiovascular diseases represent 34% each year of all hospital admissions for chronic conditions, particularly hypertension and

cerebrovascular accidents. The latter are seen more frequently among Martinicans, particular after the age of 65. A prospective population study conducted in 1998–1999 by the ERMANCIA study group, cited close to 600 new cases within a one-year period. The study found that hospitalization rates are high (93.5%), most patients (94.7%) had been given a diagnostic scan, and mortality after a one-month stay is 18%. The ischemic form of cerebrovascular accidents is the predominant one and 80% of them followed a cerebral infarction. Hypertension was the most frequently identified risk factor in this study, as 69% of patients had high blood pressure.

Malignant Neoplasms

During 1995–1997, an annual average of 550 deaths from malignant neoplasms were reported. These are responsible for one in four males deaths and one in five female deaths. Between 1991 and 1995, there were, on average, more than 800 new cases of cancer each year. The most frequent cancers in men are prostate cancer (42% of new cases), stomach cancer (9.5%), and cancer of the upper respiratory system (6.7%), while the most frequent forms of cancer in women are breast cancer (22.5%) and cervical cancer (17.5%).

Accidents and Violence

From 1995 to 1999, there were an average of 52 deaths due to road accidents each year. In the last 10 years, the number of deaths has stabilized, but the number of serious injuries has continued to increase. Twenty-nine percent of all people who died in traffic accidents were users of two-wheeled vehicles, 53% were users of automobiles, and 17% were pedestrians. The majority of those severely injured in traffic accidents who used a two-wheeled vehicle were adolescents and young adults.

During 1995–1997, an average of 33 suicides per year were recorded (1.4% of total deaths). The proportion of deaths from suicide is higher in the 25–34 years age group, and higher in men than in women.

Behavioral Disorders

An annual average of 112 deaths (5% of total) from alcohol-related illnesses (cirrhosis of the liver, alcoholic psychosis, and alcoholism) were registered between 1995 and 1997, as well as neoplasms of the upper respiratory system (mouth, pharynx, esophagus, and larynx). The proportion of alcohol-related deaths is considerably higher in men (7.4% of male deaths) than in women (1.7% of female deaths). There are two specialized centers that provide outpatient treatment for alcoholics. They treat over 400 people each year. Other centers, some specialized, some not, as well as hospitals and private sector physicians also treat alcoholic-related illnesses. A school-based study conducted in 2000 on a representative sample of 1,422 schoolchildren revealed that alcohol is the psychoactive substance most frequently consumed by this population. Furthermore, 26% of middle school students (averaging 15 years of age) and 35% of high school students (averaging 18.5 years) have been drunk at least once. A general survey was conducted in all the French regions by the regional health observatories, in collaboration with independent general practitioners, to evaluate alcohol consumption by the general population. In Martinique, the survey included 1,939 people over 16 years of age who had visited a doctor at the end of 2000. The results of the study showed that 1.5% of women and 14.1% of men occasionally drank too much and 1.4% of women and 5.1% of men regularly drank too much. Additionally, 2.7% of women and 14% of men had become alcohol dependent.

Tobacco consumption in Martinique is still low, so the effects of smoking on health are much less marked, especially as regards morbidity and mortality related to respiratory and cardiovascular diseases. During 1995–1997, an annual average of 173 deaths (7% of all deaths) attributable to tobacco use (chronic bronchitis and obstructive pulmonary diseases; cancer of the trachea, bronchus, and lung; and ischemic cardiopathies) were recorded. The Martinique Tumor Registry calculated an annual average of 28 new cases of neoplasms of the lung during the period 1991–1995. In 2000, 6% of middle school students (average age15 years) and 10% of high school students (average age 18.5 years) were habitual smokers (at least one cigarette per day). The "Alcohol" survey conducted at the end of 2000 among 1,939 people aged 16 and over who had visited their general practitioner determined that in the 16–64 age group, 22.5% of males and 6.5% of females were regular smokers. These figures coincide with the results of the previous population surveys.

Regular school-based surveys show the prevalence of the use of illicit substances by young people. In 2000, 15% of middle school students (average age 15 years) and 22% of high school students (average age 18.5 years) had used an illicit drug at least once (usually marijuana). In comparison with the 1994 and 1997 surveys, there has been a considerable increase in drug use. The number of drug addicts seeking medical care is measured through an annual survey conducted in all the French departments. In November 1999, the health and social services saw 229 drug addicts. The typical drug addict is a 20–30-year-old unemployed male; the most frequently used drug is crack cocaine, followed by marijuana. Fewer than 2% of those interviewed used heroin and prescription drugs. This survey and the statistics of the specialized facilities show an increase in the number of drug addicts seen in the last 10 years.

Mental Health

Mental disorders in the general population are better known now thanks to a descriptive survey conducted in 2000 among 900 people representative of the general population of Martinique aged 18 and over. The Specialized Hospital Center for Mental Health, the University Hospital of Fort-de-France, the Drug Addiction Center, the Nursing Care Training Institute, and the Regional Health Observatory took part in this survey. The questionnaire used revealed that 32% of respondents, either at that time or previously, had one or more psychiatric disorders. Among

the most frequent were isolated episodes of depression within the previous two weeks (13% of respondents), current risk of suicide (11%), general anxiety during the previous six months (10%), and recurrent depressive disorders (6%). The prevalence of certain disorders differs according to sex or age. Women suffered depressive episodes, anxiety disorders, risk of suicide, or bulimia more often than men, while dependence on alcohol or illicit substances is more frequent in men. Bulimia, dependence on illicit substances, and risk of suicide are seen more often in young respondents (under age 35). Hospital care for adults with mental illnesses is provided at the only specialized hospital on the island (370 beds). In 2000, 130 forced official hospitalizations and 240 hospitalizations at the request of a third party were recorded; procedures for compulsory hospitalization are strictly controlled.

RESPONSE OF THE HEALTH SYSTEM

The Health System

Institutional Organization

Table 7 shows the supply of medical care in Martinique. In 1999, a new regional health organization plan defined guidelines for hospitalization over the next five years. The five broad priorities remained the same: perinatology, follow-up and rehabilitation, care for the elderly, oncology, and development of outpatient surgery.

Organization of Regulatory Actions

A regional health conference has been organized each year since 1996. The priorities set in 2000 were AIDS, addictions, hypertension, and diabetes. Additionally, strategic health programs were implemented in the areas of perinatology, AIDS, drug addiction, poverty, and autism, in keeping with national priorities.

Organization of Public Health Services

Health Promotion

The Martinican Health Education and Promotion Committee is an entity interested particularly in health promotion and communication. There are also numerous associations that undertake activities geared to certain diseases or population groups.

Potable Water and Sanitation Services

A regulatory plan for water management organizes all the uses of water with a view toward sustainable development: irrigation; water for consumption, fishing, and recreational purposes; wastewater treatment; and conservation of water sources. The quality of water for consumption is monitored and evaluated through the application of European standards at the sources and catchment areas, treatment facilities, and distribution networks. In general, water is of good quality and cases of polluted drinking water are few. In 2000, pollution from phytosanitary products (mainly chlordecone), was found in various water sources, which required special treatment or the closing of catchment areas.

TABLE 7. Health care supply (number of beds), Martinique, 1 January 2000.

Type of care	Public sector	Private sector	Total
Short-term care	1,642	202	1,844
General medicine	1,033	7	1,040
Surgery	445	149	594
Gynecology/obstetrics	164	46	210
Monitoring and rehabilitation	272	151	423
Functional reeducation	103	15	118
Convalescence/metabolic disorders	55	136	191
Other follow-up care	114	0	114
Long-term care	210	0	210

Domestic wastewater management is achieved through zoning regulations in order to define and apply environmentally sound, more efficient, and profitable treatment procedures either alone or in combination. Industries, particularly distilleries, install treatment units.

Spas are monitored and evaluated through the application of European standards. In 2000, bathing was not forbidden at any of the 50 monitoring points, and 49 of them complied with the European standards. If at any time a site fails to comply with the standards, temporary restrictions are imposed.

Solid Waste Services

Almost the entire population has domestic solid waste collection service. The four garbage dumps have reached their capacity and should be closed and rehabilitated.

Pollution Prevention and Control

Martinique is fortunate in that its trade winds help to disperse air pollutants. Few industries on the island release pollutants into the air. Automobile emissions are the main source of air pollution, which is concentrated in cities and along large highway interchanges. In 2000, an air quality surveillance network was established in Fort-de-France and the population is informed daily of the air clarity index.

The standards for automobile manufacturers (catalytic converters) or the oil industry (unleaded gasoline), as well as the planning of a high-capacity public transportation system, should help reduce the harmful efforts of automotive transport, which has increased steadily in recent years.

Different zoning regulations have been or are being established regarding the noisiest elements of the transportation infrastructure, such as the international airport, highways, and freeways, with a view to restricting or banning the construction of housing that would be exposed to high noise levels. In addi-

tion, acoustic screens are installed along the noisiest routes. The municipal and State services handle complaints about noise near dwellings or from industrial or artisanal activities. Sound pollution awareness campaigns are conducted regularly.

Disease Prevention and Control Programs

Everyone working in the health system takes disease prevention measures; all topics are dealt with and actions are often coordinated as part of specific plans (e.g., hypertension, diabetes, asthma, alcoholism). A wide variety of tools are used in prevention activities (e.g., screening, public information messages, and television announcements). Numerous prevention activities are carried out at schools, too.

Vector control activities in Martinique are primarily aimed at eliminating *Aedes aegypti*, the vector mosquito of dengue. The strategies employed are public health education, environmental sanitation, and chemical treatment of the vector's breeding areas (e.g., cisterns and pooled water). Health education is imparted through visits to homes (some 100,000 per year) and schools and through neighborhood associations.

Epidemiological Surveillance and Public Health Laboratory Systems

Martinique has a laboratory network and a network of sentinel doctors. Many diseases are subject to surveillance (gonococcal disease, chlamydiosis, other sexually transmitted infections, dengue, influenza, gastroenteritis, measles, chickenpox). However, surveillance is based on reports by sentinel doctors on presumed cases of disease and not on laboratory-confirmed cases. Some communicable diseases must be reported to the health authorities. Since 1997, an Interregional Epidemiological Intervention Unit has been operating for Guadeloupe, French Guiana, and Martinique. This unit acts in conjunction with the National Health Surveillance Institute to strengthen the activities of the decentralized services of the Ministry of Health in two broad areas: control of communicable diseases and the effects of environmental pollution on health.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

In 1999, the Regional Hospitalization Agency prepared a regional plan for emergency care, based on five guiding principles: improved access to health care, provision of better information on the system to users, distribution and coordination of emergency care among the different establishments, and periodic outcomes assessments. The new provisions include putting into service a single free telephone number to answer users' queries.

Specialized Services

Functional rehabilitation is part of the five priorities of the five-year regional plan of the health organization defined in 1999. When available services within this specialty were found to be lacking, a decision was made to promote the development of technical nuclei specializing mainly in cardiac and pulmonary rehabilitation.

As of 1 January 2000, there were 140 dentists in Martinique (37 per 100,000 population). The supply of services in this specialty has evolved very little and dentists in private practice, as well as other health professionals, are concentrated in the island's main municipalities. The social security system reimburses the cost of basic dental care, but dental prostheses are paid for by the patient, and it is therefore the poor who are most disadvantaged in this area. Universal medical coverage, in force since 1 January, guarantees better care for the poor in this area. Since 1997, oral health provisions stipulate one free preventive dental check-up for young people aged 15–18 years, as well as full reimbursement of any expenditure resulting from a diagnosis during that check-up. Regular school-based caries prevention programs are also conducted.

The new five-year plan for the organization of psychiatric health services, approved in 1999, defined three broad objectives: improve access to medical care, ensure the continuity of health care, and care for special population groups.

Perinatology is one of the priorities of the health organization's new departmental plan formulated in 1999. At the end of 2000, a regional perinatology network was set up to link those involved in pregnancy care, delivery, and neonatology.

The University Hospital at Fort-de-France has 30 beds for surgery and performs heart surgery for French Guiana, Guadeloupe, and the patients from other Caribbean countries.

Martinique's gerontologic policy is defined both by the guidelines of the regional geriatric organization's health plan formulated by the Regional Hospitalization Agency and the General Council's Gerontologic Scheme. This plan envisages the specific organization of hospital care for the elderly by improving emergency care, enhancing geriatric medicine for acute cases, monitoring health care units, and coordinating the different forms of gerontologic care. The need for medical supplies and equipment for the elderly is considerable, above all because there is a shortage of suitable facilities and because demographic changes are increasing the number of very elderly people.

Martinique has five medical-educational institutes for disabled children (426 slots); one facility for the hearing impaired (99 slots); two home health care and special education services (672 slots), and a day-care hospital for autistic children (15 slots). There are still no facilities for the visually impaired, but a teaching facility for people with motor or sensory impairments will be opened soon.

Services for disabled adults are less advanced; in 2001, there was only one educational home, with 25 slots, and a specialized home recently built to accommodate 40 people. Some improvements have been made to facilities that run supervised work programs, since there are five work assistance programs and four supervised workshops, with a total of 368 slots. The Departmental Plan for the Disabled approved by the General Council defines the health care policy for this population.

Health Supplies

Equipment

The provision of X-ray machines is sufficient, both in the public and the private sectors. The are also three scanners (two in the public sector and one in the private sector) and a nuclear magnetic resonance machine, which was installed in the University Hospital in Fort-de-France of in 1998.

FIGURE 1. New AIDS cases, deaths due to AIDS, and number of persons living with AIDS, French Guiana, 1992–2000.

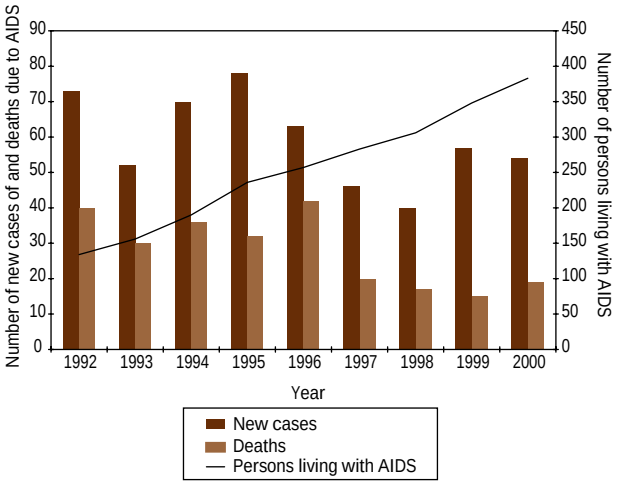


FIGURE 2. Population structure, by age and sex, Guadeloupe, 1999.

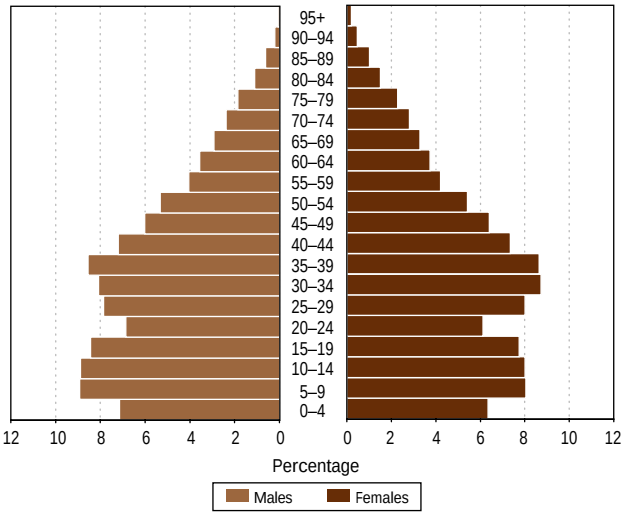


FIGURE 3. Population structure, by age and sex, Martinique, 1999.

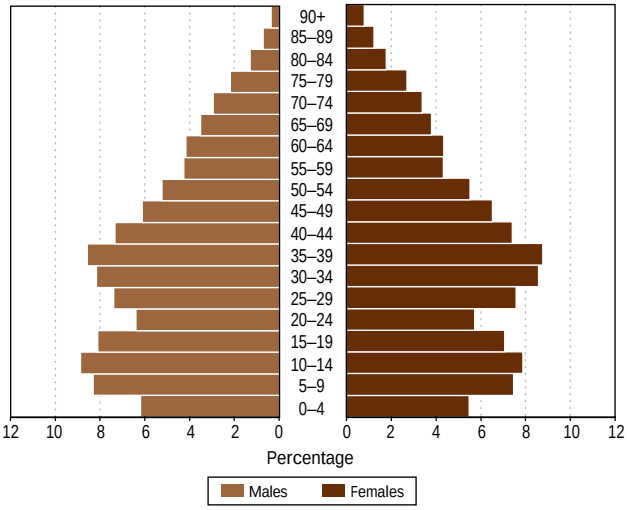
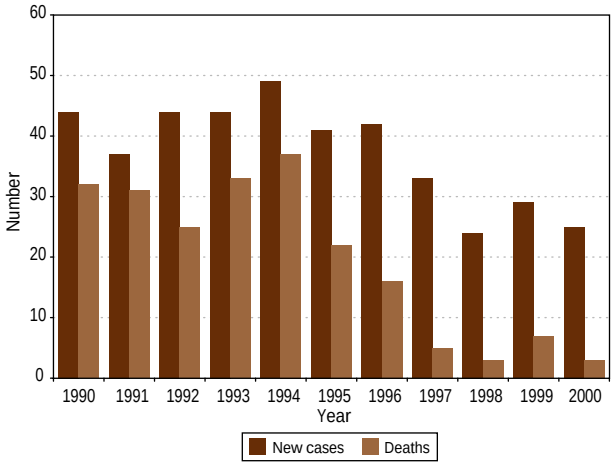


FIGURE 4. New AIDS cases and deaths due to AIDS, Martinique, 1990–2000.



GRENADA

OVERVIEW

Grenada lies at the southern end of the Windward Islands and encompasses the islands of Grenada, Carriacou, and Petit Martinique. The country spans 344 km^2 of land and is divided into six parishes.

Grenada is governed as a parliamentary democracy. It has a bicameral legislature comprised of an elected House of Representatives and an appointed Senate. Executive powers are vested in the Prime Minister as Head of Government and in the Cabinet. The Head of State is the Governor General, who represents the British Crown. There are several political parties.

The country's health service delivery faces many challenges, primarily an increase in noncommunicable diseases, and greater demand for new technology with its attendant escalating costs.

The Government basically operates in a centralized way. Since 1996, however, a multipartite consultation committee regularly meets with governmental and nongovernmental organizations, trade unions, and the private sector to debate issues of national significance.

The Ministry of Finance's Planning and Development Division coordinates Grenada's national development efforts, which are guided by a strategic plan that responds to economic considerations and includes sections on social development issues, such as health care and gender equity. The Division prepares, in collaboration with various pertinent ministries, including the Ministry of Health, a three-year public sector investment program.

The Ministry of Finance has opened discussions with a wide range of stakeholders to establish a social development management information system that will more effectively monitor the country's social development and progress. Nationwide, the system's indicators will focus on human resource development, quality health care, poverty reduction and elimination, rural development, sustainable use of the physical environment, and gender equity.

Preliminary data from the Ministry of Economic Affairs suggested that economic activity in Grenada remained buoyant in 2000, with real gross domestic product (GDP) growth expanding by 6.4%, following growth rates averaging 5.5% during 1996–1999 (see Figure 1). The GDP in constant 1990 prices was US$ 333 million in 2000 (about US$ 1,216 per capita), which represents a 7.8% increase from the 1999 figure, when it was US$ 1,128 per capita. The rate of inflation as measured by the change in consumer price index was 2.5% in 2000 compared to 1.0% in 1999.

The continued economic expansion in 2000 reflected strong performances in the construction, communication, manufacturing, and banking sectors, which grew 9.2%, 14%, 13%, and 10%, respectively, making them the most buoyant sectors. Tourism accounted for US$ 16 million in 1995 (8.2% of GDP) and US$ 19 million (7.5% of GDP) in 2000, representing an increase of 21%. In the services sector, real growth was recorded in the telecommunications, banking, insurance, and wholesale and retail sale sectors. Central government current operations resulted in a US$ 67.8 million surplus, greater than the one in 1999.

In 1998, the labor force comprised some 41,015 persons, 23,171 males and 17,844 females. The unemployment rate fell from 12.5% in December 1999 to 11% at the end of December 2000; the rate for men was 11% and for women, 21%.

According to data from the National Insurance Scheme, 4,624 persons registered with the scheme for the first time in 2000, more than doubling the number of newly registered employees in 1999. Of these newly registered employees, 25% were under the age of 20 and 35% were 20–24 years old.

A 1998 poverty assessment survey revealed that 31% of the population is poor. Adults living on less than US$ 1,231 a year are considered to be below the poverty line; 13% of all persons living in Grenada are indigent, and 20% of persons living below the poverty line are unemployed. More than 64% of the poor have no secondary-school certificate, and 51% of individuals living below the poverty line are under the age of 20; of these, 40% are under 5 years old and 38% are schoolchildren.

The Government estimated Grenada's adult literacy rate at 88.6% for 2000, with similar rates among males and females.

In 1999, Grenada's estimated mid-year population was 100,703, 50.4% female and 49.6% male; the population growth

rate was 0.06% annually. According to the 1991 census, the parishes with the largest population were St. George's and St. Andrew's with 31,994 and 22,425 persons, respectively. The population is 90% Black, 3% East Indian, 1% White, and 6% other. The 1991 census showed that 33.5% of the urban population resided in the capital, St. George's.

The population structure in 1999 was very young, with 46.9% falling below the age of 20 years (Figure 2). Life expectancy was estimated at 68 years for men and 73 years for women. Live births have declined from 2,096 in 1996 to 1,791 in 1999. The crude birth rate decreased by 14.1%, from 21.3 per 1,000 persons in 1996 to 18.3 per 1,000 persons in 1999. The crude death rate decreased from 8.2 per 1,000 persons in 1998 to 7.9 per 1,000 in 1999. The rate of natural population increase fell from 13.4 per 1,000 persons in 1996 to 10.4 in 2000. The total fertility rate during 1996–2000 averaged 2.8 children per woman of childbearing age, down from 3.2 children during 1992–1995.

Mortality

Between 1996 and 1998, the most important cause of death from defined causes was malignant neoplasms, with 123, 101, and 148 deaths in 1996, 1997, and 1998, respectively, and corresponding rates of 124, 102, and 148 per 100,000 population. In 1999, the leading cause of death was diseases of pulmonary circulation and other forms of heart disease, with 131 deaths and a rate of 130 per 100,000 population. There were 712 deaths in 2000 (376 males and 336 females). The leading causes of mortality in 2000 were diseases of the circulatory system, with 299 deaths and a rate of 297 per 100,000 population, followed by neoplasms, with 105 deaths (104 per 100,000), and diseases of the respiratory system, with 65 deaths (65 per 100,000). External causes accounted for 31 deaths (31 per 100,000 population); other causes of note included diabetes (23 deaths) and suicide (13).

The quality of mortality data deteriorated between 1996 and 1999, as the percentage of deaths attributed to ill-defined causes increased from 11.2% to 22.3%.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Between 1997 and 1999, there were 142 deaths in children under 1 year old, with 61% of those deaths occurring within the first month of life. The leading causes of death were congenital anomalies of the heart and circulatory system, hypoxia, birth asphyxia, other respiratory conditions, slow fetal growth, and fetal malnutrition.

The infant mortality rate varied over the reporting period, ranging from a high of 19.5 per 1,000 live births in 1998 to a low of 12.5 in 1999. The neonatal death rate was 12.3 per 1,000 live births in 1996 and 12.5 in 1997; in 1998, it decreased to 6.7, but rose again in 1999 to 9.6. In 2000, there were 25 deaths in children under 1 year old, with 64% of those deaths occurring within the first month of life. The leading causes of death were respiratory and cardiovascular disorders and infections specific to the perinatal period.

Low birthweight babies decreased from 9.7% of total births in 1996 to 8% in 2000.

Of the 5,391 infants who visited public clinics between 1996 and 2000, 1,884, or 34.2%, were breast-fed exclusively for the first 3 months of life. In that same period, between 1% and 2% of children visiting clinics were found to be either underweight or overweight. No information is available for children who visit private doctors.

Between 1997 and 1999, there were 17 deaths among children 1 to 4 years old, with the leading causes of death being diseases of the nervous system, diseases of the respiratory system, and diseases of the digestive system. In 2000, 1 child in this age group died; the cause of death was malformation of the circulatory system.

Schoolchildren (5–9 years)

During 1996–1999, there were 17 deaths among children 5–9 years old; there were no deaths in this age group in 2000.

Adolescents (10–14 and 15–19 years)

In 1999, the estimated population between 10 and 19 years old was 25,305, and most were attending primary or secondary schools. Data for 1996 showed that 2,503 teenagers were employed.

In 1998, teenage mothers accounted for 13.4% (or 240) of all births, a decrease from 18.3% in 1992; the number of births fluctuated from 11 in 1996, to 36 in 1998, and to 24 in 2000. Teenage pregnancies fluctuated from 21% in 1997 to 17% in 2000. Among teenage mothers in 1998, 78.1% were having their first child and 16.5% were having their second.

In 2000, there were four deaths in the age group 10–14 years old and nine deaths in the age group 15–19 years old.

Adults (20–59 years)

Between 1996 and 2000, an estimated 80% of pregnant women attended prenatal clinics held in community health facilities; they were seen primarily by a nurse. Between 1996 and 2000 the number of women registered for their first visit at or before their 12th week of pregnancy increased by 8%, and 80% of those who attended did so by the 16th week of pregnancy or later.

In 1999–2000, approximately 900 new mothers requested family planning from district health services; of those, 50% sought advice on family planning options, 25% requested con-

doms, 7% requested sterilizations, and the remainder mainly sought advice regarding intrauterine devices or contraceptive injections. The Grenada Planned Parenthood Association also provides family planning services: it provided services to 1,266 women in 1996, compared to 1,729 in 1995. Many pregnant women visit private practitioners prior to attending the public prenatal facilities.

In 1998, 30.1% of mothers delivered their first baby, 20% delivered their second child, and 15% delivered their third, a pattern similar to that observed in 1997. In 1998, 27% of births were to women aged 20–24 years old, a decrease from the 29% figure in 1992.

The Elderly (60 years and older)

In Grenada, information on the elderly is collected for persons 65 years and older. In 1998, seniors made 3,417 first visits to community health services; women accounted for two-thirds of these visits. Nutritional deficiencies are not usually reported, but at the General Hospital in 1997, there was one case of nutritional deficiency and anaemia in a senior. Of all adults who reported having arthritis, 54% were in the 65 years and older age group. The elderly experienced 27% of neoplasms, 49% of circulatory disease cases, and 45% of diabetes cases; 14 cases of pneumonia were reported in this age group.

Family Health

Women represent 51% of persons under the poverty line. Moreover, 52% of female heads of household live below the poverty line; 21% of female heads of household below the poverty line are unemployed.

Workers' Health

Information provided by the National Insurance Scheme for 1998/1999 revealed that of the 272 injuries reported in those years, most occurred in construction (95), followed by those occurring in retail trades (38), restaurants and/or hotels (35), and manufacturing (25). Approximately 85 of the injuries reported in the construction sector resulted in injuries to eye, finger, foot, hand, and head; in some instances, these were disabling injuries. It appears that the most prevalent types of accidents occurring in the construction sector are those related to the improper use of machinery and equipment and a lack of personal protective equipment. Of the combined injuries reported for the retail trade and the hotel/restaurant sector, most (43) were to the foot, finger, and hand.

The Disabled

People with physical and mental disabilities and their families receive support from the National Council for the Disabled, which continues to be the main body responsible for activities pertaining to this population group.

By Type of Health Problem

Vector-borne Diseases

In 2000, there were 17 confirmed cases of dengue fever. Grenada's effort to combat dengue is mainly carried out through an integrated vector control approach that relies less on chemicals and more on health education programs that encourage the public to maintain a clean and healthy environment. Source reduction and biological control with a heavy emphasis on community participation are being increasingly used.

Diseases Preventable by Immunization

In 2000, 97% of children under 1 year old were immunized against diphtheria, tetanus, whooping cough, and poliomyelitis and 92% were immunized against measles, which represented an improvement in coverage over previous years (see Figure 3). The immunization program is coordinated by a senior community health nurse who ensures that proper monitoring is conducted. There have been no cases of neonatal tetanus reported since 1980. There were 625 women (42%) immunized at or before their first prenatal visit, and 572 women (38%) completed their tetanus toxoid immunization cycle in 2000. In 2000, the Ministry introduced hepatitis B and *Haemophilus influenzae* type b vaccines for children under 1 year old. In 1999, Grenada conducted a campaign to eradicate congenital rubella syndrome and rubella among persons 21 to 45 years old. The campaign achieved a 62% coverage, and efforts are under way to achieve total coverage. There have been no reported cases of measles since 1990; an active measles surveillance system is in place to maintain this success.

Chronic Communicable Diseases

The incidence of bacilloscopy-positive tuberculosis cases in 1996 was 4.0 per 100,000, compared to 2.2 in 1998. There were no cases of tuberculosis or leprosy in 2000, and only three cases of leprosy between 1985 and 1999. Between 1997 and 1999, there were nine cases of tuberculosis.

Zoonoses

As a way to reduce the incidence of rabies and interrupt its transmission from mongoose to man, the Environmental Health Department vaccinated more than 7,248 farm and domestic animals in 2000.

HIV/AIDS

There were 43 AIDS cases reported between 1996 and 2000. The cumulative total was 121 cases; 88 of these were male and 33 were female. In 1997, the male-to-female ratio was 1.6. Figure 4 shows the AIDS incidence in Grenada, by sex, from 1994 to 1997. There were 101 adult deaths and 5 pediatric deaths. In 2000, 18 new infected cases were reported, and 5 children were born to

HIV-infected mothers. The number of positive pediatric cases remained at 7, with 5 children waiting to be tested. All pediatric cases have been linked to vertical transmission during pregnancy.

Sexually Transmitted Infections

There were 47 cases of gonorrhea reported in 2000. The true incidence of this disease is extremely difficult to determine, however, given that diagnosis and treatment are based on a syndromic approach (clinical). The surveillance system incorporates data from both private and public physicians.

Nutritional and Metabolic Diseases

The Food and Nutrition Council works closely with the ministries of Health and of Agriculture to implement joint programs. In 1996, the Council launched a project to monitor iron-deficiency anemia in pregnant women and children. Results showed that the prevalence of anemia in pregnant women was 25% in 1997 and 16% in 1999, while among new mothers the figures were 9% and 8%, respectively. The prevalence of anemia among 1-year-olds was 63% in 1997 and 57% in 1999. Pregnant women, new mothers, and 1-year-olds had the highest prevalences of anemia in St. Patrick's parish.

Diseases of the Circulatory System

In 2000, cerebrovascular diseases accounted for 96 deaths, ischemic heart disease for 55, and hypertensive disease for 14. Together they comprised 23% of all deaths in 2000. Mortality rates for these diseases (per 100,000 population) were basically the same as number of deaths, since Grenada's population stood at slightly more than 100,000 that year.

Malignant Neoplasms

Between 1996 and 1998, there were 372 deaths from malignant neoplasms; in 2000, the 105 deaths from malignant neoplasms represented 15% of total deaths. Malignant neoplasms of the digestive organs ranked first, with 29 deaths; followed by malignant neoplasms of the prostate, with 27 deaths; and malignant neoplasms of the lymphoid, hematopoietic tissue, with 11 deaths.

Accidents and Violence

There were 26 deaths due to external causes in 1997 and 24 in 1998; nearly half of these were in males who died from head and neck injuries. In both years, there were four deaths among 5–14-year-olds. There were four deaths from burns and corrosions in those two years.

Oral Health

Tooth decay, gum disease, and malocclusion are the main dental problems affecting the population. Although rarely life-threatening, these conditions may have significant physiological, psychological, and social consequences. In 1990, the DMFT index was 5.58 for 12-year-olds. In 2000, PAHO completed a dental survey of 1,022 children from seven parishes in Grenada, which revealed important aspects of the level of children's oral health in the country. For example, the survey found that caries is moderately prevalent in 6–8-year-old and 12-year-old children, but is severe in 15-year-olds. The study also found that dental fluorosis is negligible in the country, and that bleeding on probing was found in roughly 11% of children, regardless of age. Fully 20% of children had calculus, mainly 12- and 15-year-olds. Of concern was the fact that renal fluoride excretion of children was found to be lower than the provisional standards set by WHO for children 3–5 years old, and few children had been administered fluoride supplements to protect them from dental caries. Although no differences were found in the prevalence of dental caries by sex in primary dentition, there were differences by age and sex in permanent dentition. The prevalence of dental caries in 6–8-year-olds was 39%, but by 12 years of age it had reached 64%, and by 15 years of age it had nearly doubled to 79% compared to the youngest age group. At 12 years of age, the mean DMFT for males (n=117) was 2.37, while that for females (n=152) was 2.97, 25% higher than that for males. It should be noted that, although these indices are high, they are considerably lower than those in 1990. Water is not fluoridated in Grenada, and children do not fully take advantage of the free dental care program, particularly the very young or underprivileged children and children living in outlying areas.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Ministry of Health covers the following key functional areas: administration, acute care (hospitals), mental health, community services, and environmental health.

As part of its administrative role, the Ministry of Health is responsible for formulating policy; enforcing regulations; providing direction to all other programs; and overseeing health and vital statistics, expenditure control, and personnel matters. The Minister functions as the Ministry of Health's political head, the Permanent Secretary as its administrative head, and the Chief Medical Officer as its principal officer advising on technical matters.

The Ministry is responsible for the overall management of the health sector, and it discharges its managerial responsibilities through a centralized administrative office that deals with policy making, planning, programming, and regulation. The office encompasses units that deal with registry, finance, personnel, planning, health information, epidemiology, birth and death, schools of nursing, and procurement. It should be noted, however, that although the office is responsible for the above functions, the Ministry of Finance has final authority over all expenditures, the Department of Human Resources makes all staffing decisions, and the Public Service Commission selects and appoints staff

and determines terms and conditions of employment, discipline, leave, and related matters.

Health Sector Reform Strategies and Programs

Recently, an advisory committee for the health system was appointed. The Government also intends to introduce an executive agency, a hybrid system embracing elements from delegation and decentralization models, as another way to achieve greater efficiency and improve institutional care quality. Polyclinics that offer extended hours and a broader range of services, with the community's active participation in the management of the services, also will be established.

The Health System

Institutional Organization

Grenada is divided into seven health districts, six of which have a health center as their main primary care facility. These centers, along with an additional 30 medical stations distributed throughout the country, are usually the first point of contact within the health system and the Ministry's front line for health service delivery. All facilities are within easy access to the entire population and most are in satisfactory physical condition. Each health district is assigned a District Medical Officer, several categories of nurses, including family nurse practitioners, public health nurses, and district nurses, community health aides, dentists and dental auxiliaries, pharmacists, environmental health officers, and mental health workers. Some specialist services such as pediatrics and psychiatry are provided at some of the health centers.

Public sector hospital facilities include the General Hospital in the capital and two rural hospitals, Princess Alice Hospital in St. Andrew and Princess Royal Hospital in Carriacou. There also is a 20-bed psychiatric unit at the General Hospital.

The Ministry of Health's Environmental Health Department is responsible for controlling water pollution; improving wastewater treatment; ensuring that the population has access to an adequate supply of safe drinking water; and improving systems for the disposal of excreta and other substances harmful to human, animal, and plant life. The department is staffed by 14 environmental health officers.

Private Participation in the Health System

Recently, private health care facilities have been proliferating, and private physicians sometimes use public sector facilities and their personnel. The several private facilities in existence are mainly located in the capital city; they are all owner-financed and provide services for those who can pay out-of-pocket or through private insurance companies. Private facilities include 5 acute-care hospitals, 13 nursing homes, 2 maternity units, and several medical practitioner offices that provide ambulatory care throughout the country. Health care service is available on the three island states.

Private entities and public institutions have a well-developed relationship. Public institution practitioners work part-time at some private entities and utilize the public institutions for diagnostic purposes and surgical interventions of their private patients.

Health Insurance

The Ministry of Health has limited information on the levels of coverage and modalities of delivery of the various health insurance programs. Several private insurance companies are in operation, and most of them are registered and located in the capital. There is a National Insurance Scheme that works through a pension plan and includes some health benefits. A general health plan with a basic package of health benefits to which all citizens are entitled does not exist, however.

Organization of Regulatory Actions

The Ministry operates under the following legislation that regulates the public and private health care sectors: the 1953 Hospital Act, the 1903 Medical Officers Act, the 1982 Medical Practitioners, Dentists, and Veterinary Surgeons Registration Act, the 1954 Midwives Act, the 1952 Mosquito Destruction Act, the 1980 Nurses Registration Act, the 1988 Pharmacy Act, the 1925 Public Health Act, the 1980 Public Health Act (schoolchildren immunization), the 1988 General Hospital Act (fee rules), the Medical Products Act, and the Hospital Authority Act.

The Ministry of Health has direct control over the public health system and regulates the private health system through legislation. The Ministry's regulatory resposibilities include carrying out existing legislation and developing new legislation. A Medical Board chaired by the Chief Medical Officer is responsible for granting medical licenses to practice medicine in Grenada; medical licenses need not be renewed annually, and physicians are not obligated to pursue continuing education or prove to be physically fit to practice. Nurses must register with the Nursing Council. A Pharmacy Council monitors the importation and distribution of pharmaceuticals to the public and private sectors and registers pharmacists and pharmacies on an annual basis.

Organization of Public Health Care Services

Health Promotion

The Health Education Unit collaborates with the Ministry of Health and other government agencies such as the Ministry of Education and the Government Information Service, as well as with nongovernmental organizations, in the planning, implementation, and evaluation of health education and health

promotion activities. Several workshops have been held for health workers, teachers, religious and community leaders, and NGO members to ensure that every health worker understands that he or she is a health educator and is fully committed to an intersectoral, community-based approach to health promotion. The Health Education Unit has engaged the community in the planning of health activities, including involving community members in assessing health needs, organizing community health fairs, and participating in discussions about such health issues as HIV/AIDS and chronic diseases. As a way to help institutionalize health and family life education in schools, a health education curriculum is being developed with the Ministry of Education.

In the past, the community had only been minimally involved in the planning and implementation of national health activities, and its involvement varies considerably from district to district. In its revitalization of the primary health care program, however, the Ministry plans to involve the community in the development and implementation of health programs. Several NGOs are involved in health promotion programs in the community. For example, the Grenada Planned Parenthood Association conducts a youth outreach program through which counselors visit schools and community groups to speak on family life and sex education issues.

The Ministry of Health's Education Unit has emphasized diabetes and hypertension programs that encourage lifestyle changes such as better diet and more exercise. Community and other civil groups are involved in planning programs to prevent diabetes and hypertension.

In another health promotion effort, the Ministry of Health and the Grenada Food and Nutrition Council launched a pilot project to combat anemia in St. Patrick's parish in 2000. Project components included screening of 1-year-old children, follow-up visits for children with Hb readings of <11 g/dL, nutrition education sessions at clinics, involvement of community support groups, distribution and display of anemia posters at clinics, airing of radio and television messages, and the production of a booklet with iron-rich recipes and guidelines to improve Hb levels.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Between 1995 and 2000, the epidemiology and the health information units merged, thereby strengthening the health information system; the new unit is headed by an epidemiologist. A surveillance nurse collects complete data from community health facilities and from the laboratory on a weekly basis, enhancing the timeliness, accuracy, and quality of the data. Data also is collected from private practitioners and private hospitals. The epidemiology unit transmits selected data from the laboratory to CAREC on a weekly basis. Apart from the weekly communicable disease reports, a quarterly bulletin and a yearly report on public health information are generated for decision-making and planning of the health services programs.

Potable Water, Excreta Disposal, and Sewerage Services

Grenada's National Water and Sewage Authority, established in 1990 under an Act of Parliament, is responsible for the management of public water supply and sewage. The Ministry of Health's Environmental Health Division, through powers granted by the Public Health Act, is responsible for on-site sanitation.

Grenada's public water supply system consists of 34 water production facilities, with a 37,300 m^3/day capacity; 86% comes from surface-water sources and 14%, from boreholes. About 97% of the water is disinfected, and roughly 97% of the urban and 93% of the rural population has access to safe drinking water. The country-wide coverage of safe drinking water is 93.2%; half of the unserved population (13,000 persons in Carriacou and Petit Martinique) regularly use private rainwater cisterns and the remainder mainly rely on rural springs or rivers or share their water supply with neighbors. About 96% of the urban population and 97% of the rural population is served with adequate sanitation; countrywide coverage is 96.9%.

Solid Waste Services

The 1995 Solid Waste Act established Grenada's Solid Waste Management Authority, a statutory body charged with streamlining the solid waste management system. Solid waste collection services are fully privatized, but the Ministry of Health continues to monitor solid waste management. An estimated 98% of all households are covered by this service.

Pollution Prevention and Control

Grenada has no national policies or organized programs to combat coastal pollution, but is party to several international environmental agreements. Two coastal areas were recently designated as protected areas under a marine parks project administered by the Ministry of Agriculture, Lands, and Fisheries.

Food Safety

The Ministry of Health also is responsible for ensuring the country's food safety. To that end, it continues to improve food handling and food processing in order to reduce food-borne diseases. Workshops on better food handling practices are held each year for itinerant vendors and hotel staff. More than 200 itinerant vendors attended these workshops in 2000.

Food Aid Programs

As part of its responsibility to ensure food security at the household level, the Ministry of Agriculture has been working with low income families to encourage them to do home gardening. The Food Council, working with the Ministry of Agriculture, is encouraging families to plant foods rich in iron and vitamin C in home gardens as a way to combat anemia in the population.

Organization of Individual Health Care Services

Ambulatory, Emergency, and Inpatient Services

Individual health care services are provided mainly through public facilities. The 240-bed General Hospital is a referral hospital. Its services include 24-hour emergency, specialist, surgical, pediatric, psychiatric, ophthalmic, obstetric/gynecologic, and ear/nose/throat care; ultrasonograms, electrocardiograms, and mammograms also are available. Support services include laboratory, pharmacy, imaging, physiotherapy, and rehabilitation services. The hospital also offers several ancillary services through its dietary, maintenance, and ambulance services. The General Hospital is administered by a Medical Director under a Hospital Ordinance, who reports to the Chief Medical Officer and the Permanent Secretary. A management team, comprising heads of key hospital departments, the Chief Medical Officer, and the Permanent Secretary, is in place. During 1996–2000, there were 43,575 admissions at the General Hospital, with an average length of stay of 6 days and a bed occupancy rate of 56%. Admissions and discharges from the General Hospital curently are categorized by service, but diagnosis and service data are being compiled, and such data is expected to be available by the end of 2001.

The 60-bed Princess Alice Hospital provides secondary health care, with emphasis on low-risk obstetrical, general medical, and minor surgical services, as well as stabilization of emergencies. The 40-bed Princess Royal Hospital also provides secondary health care, emphasizing low-risk obstetrical, general medical, and minor surgical services, limited diagnostic services, and stabilization of emergencies.

Specialized Services

Consultants conduct specialist clinics in pediatrics; ear, nose, and throat; and mental health at the district level. The District Medical Officer refers persons seeking care in other specialties to the General Hospital, but there are long delays before receiving such services. Referrals for admission to the General Hospital also are made through the accident and emergency department. No established follow-up system is in place to inform the district medical team when a discharged patient returns to the community, and this is an area that will be given high priority in the new health plan. Community services carry out their functions through community nursing, pharmacy, district medical officers, dental health, health education, and HIV/AIDS programs.

Specialized mental health services provide treatment, rehabilitation, and follow-up care at the Mental Hospital and in the community for individuals suffering from mental disorders and their families. Mental health institutions include the 80-bed Mt. Gay psychiatric hospital for chronic patients and a 120-bed geriatric facility; both are usually filled above capacity. Carlton House, with 16 beds, provides rehabilitation for substance abuse patients and the Dorothy Hopkin Home, also with 16 beds, offers services for disabled children.

Data on drug abuse collected in collaboration with the police, the prisons, and the Ministry of Health indicated a decline in admissions at Carlton House, which went from 67 admissions for abused substances in 1999 to 53 in 2000. The number of persons sentenced to prison for drug related offenses also declined slightly for those same years, dropping from 53 in 1999 to 50 in 2000.

An occupational therapy program was established to fully rehabilitate patients and improve their self-esteem so that they can successfully return to their communities.

Health Supplies

Drugs

Grenada procures most of its pharmaceuticals and medical supplies through the subregional program managed by the Eastern Caribbean Drug Service (recently renamed the Eastern Caribbean Pharmaceutical Procurement Service), a pooled procurement initiative that provides members with lower prices for medication. The procurement cycle ensures that regional standards are reviewed annually and revised periodically, and that essential drugs are available on a timely basis. There is a national drug list with 273 drugs included, and the list is revised every year. All of the population has access to those drugs on the list.

Equipment

High technology equipment in the public health sector is all located at the General Hospital in the capital. All three hospitals have maintenance units that conduct preventive maintenance, make plant repairs, and replace equipment. The General Hospital also has a biomedical technology maintenance unit that periodically receives support from external agencies by training personnel to keep up with changing technologies. The maintenance unit at the General Hospital also does preventive maintenance at the community/district health facilities. Historically, the maintenance of biomedical technology and that of plant and equipment have been deficient. Underfunding of maintenance programs is a long-standing problem for the Ministry of Health. Funding agencies provide refurbishment assistance to health facilities, but this assistance is insufficient to sustain the preventive maintenance program.

Ultrasonograms, electrocardiograms, and mammograms are available in both the public and private sector. Limited laboratory investigations and X-ray services are provided by the private sector. There is no fixed budgetary allocation for the preservation and maintenance of equipment. The status of plant and equipment in the private sector is not available.

Human Resources

There are 8 physicians per 10,000 population. In 1998, there were 59 medical practitioners employed in the public health

sector, many of whom also had a private practice: 10 are district medical officers and 38 work primarily in hospitals. There are 10 interns. Some 21 doctors work exclusively in the private sector in individual or group practice.

There is 1 nurse per 413 population. Of the 242 registered nurses, 54 work in the community services and 188 work at the three hospitals. There also are 40 community health aides and 84 nursing assistants.

There are 6.9 pharmacists per 10,000 population. The public sector employs 22 pharmacists based in the community and at the hospital's procurement division. The private sector employs 47 pharmacists. Pharmacists working in the public and private sectors are trained in a three-year program at the T.A. Marryshow Community College.

There are 1.5 dentists per 10,000 population. In 1998 there were 15 dentists in Grenada: 7 were employed in the public sector, and all of them also have private practices; the remaining 8 work exclusively in the private sector. Five dental auxiliaries work along with the dentists in the public sector, focusing primarily on the school population.

The St. George's University School of Medicine, a privately owned institution, currently offers an undergraduate program with majors in Basic Medical Science and Medical Technology. Other majors under development are nursing, pharmacy, sociology, psychology, and physician's assistant. It provides five scholarships annually to Grenadian nationals. Local schools of pharmacy and nursing provide training in those disciplines.

Health Sector Expenditure and Financing

Financing of health expenditure is confined to the public sector. The Ministry of Health receives its funding from general taxation through the Ministry of Finance's consolidated fund. International funding agencies also assist in funding some health projects and programs. Supervision and control over public financing of health are the responsibility of the Ministry of Finance and the Ministry of Health under the direction of Parliament/Cabinet; this function is carried out through the annual budgeting process.

Total public sector recurrent expenditure in 2000 was US$ 98.9 million, higher than the US$ 87.3 million spent in 1998. Health expenditures represented US$ 11.9 million in 1998, and US$ 12.5 million in 2000. Data on expenditure for 2000 showed that health, education and housing, and social services consumed 11.0%, 17.3%, and 7.0%, respectively, of the total recurrent budget. In 1998, per capita recurrent health expenditure was US$ 118.27. There is little information available on private health care financing and expenditure.

Hospital services are funded by the Government of Grenada through its annual budgetary allocation of revenue and expenditure. Hospital services are generally free, with nominal user fees charged for the use of the 18 private beds and operating theater, laboratory, and X-ray services; there also is a prescription fee for drugs administered to private-bed patients. A grant of US$ 100,000 is provided by St. George's University School of Medicine to purchase medical equipment; the university also provides five medical scholarships each year. Several donor organizations and individuals locally and overseas also contribute with equipment and supplies.

External Technical Cooperation and Financing

The Ministry of Health and the Ministry of the Environment continue to receive significant technical and financial assistance from PAHO/WHO, UNICEF, and the Caribbean Development Bank, as well as from such countries as Taiwan, France, and Cuba.

The Caribbean Development Bank has provided significant assistance for the refurbishment, rebuilding, and maintenance of community health facilities. In 2000 and 2001 together, EC$ 350,000 were utilized; approximately EC$ 80,000 went to the maintenance program. The Bank also provided a grant of US$ 150,000, which will be used to develop and strengthen hospital management systems.

PAHO provides technical and financial assistance in health sector reform, environmental health and health promotion, and disease prevention. PAHO also provided short- and long-term fellowships to Grenadians.

UNICEF's assistance helped to intensify the breast-feeding program and allowed for the implementation of pilot projects in combatting anemia and school health.

The governments of China and Taiwan provided grants of US$ 100,000 for the last three years, which have been used to purchase medical equipment for hospitals and community health services. The Government of Cuba has provided doctors, nurses, and other health professionals. Cuba also is managing all technical areas for the new hospital project and will provide the medical equipment for the hospital.

Through bilateral work with the Government of France, eight nurses have been trained in intensive care nursing. Biomedical technicians were also trained. France also provided equipment for a two-bed intensive care unit and US$ 16,000 worth of physiotherapy equipment. An agreement also is in place for the transfer of patients for treatment to Martinique and Guadeloupe.

The Ministry of Health receives medical assistance through a nongovernmental organization aligned with the Peace Corps in the form of equipment and consultant clinics in different areas twice annually. The Health Foundation provides services to persons requiring medical attention. The Ministry also receives donations from many Grenadian organizations abroad.

FIGURE 1. Gross domestic product, annual growth (%), Grenada, 1991–1999.

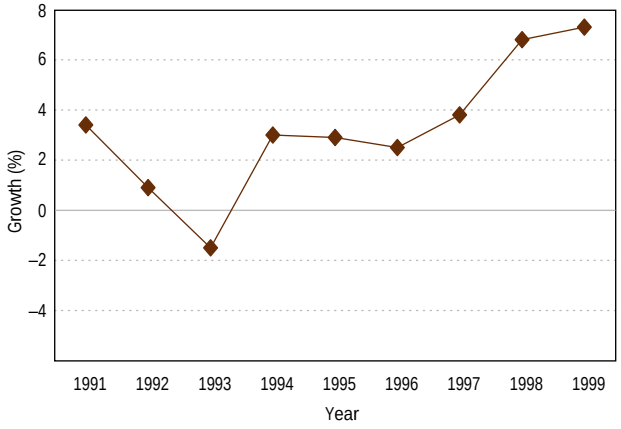


FIGURE 2. Population structure, by age and sex, Grenada, 1999.

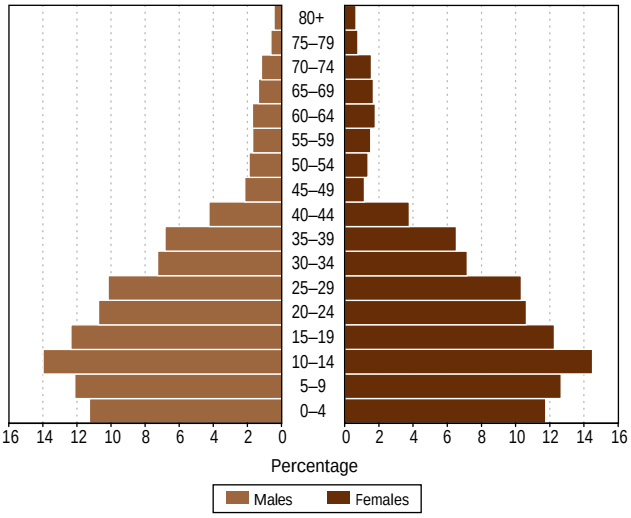


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Grenada, 2000.

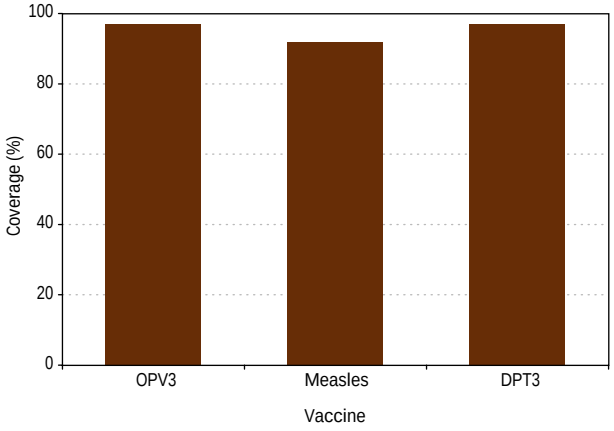
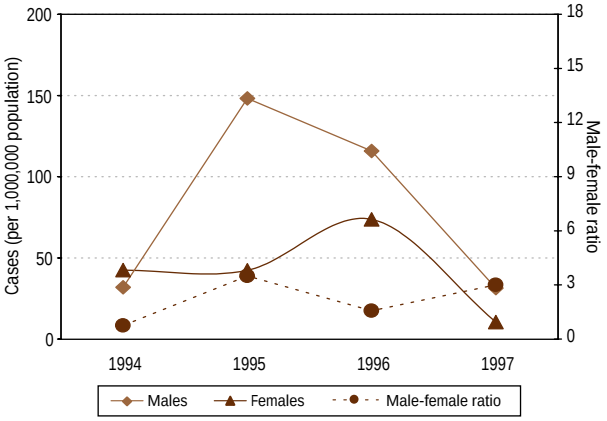


FIGURE 4. AIDS incidence, by sex, with male-female ratio, Grenada, 1994–1997.



GUATEMALA

OVERVIEW

The Republic of Guatemala is bordered on the north and northeast by Mexico; on the east by Honduras, El Salvador, and Belize; and on the south by the Pacific Ocean. Its land area of 108,889 km^2 is divided administratively into 22 departments and 331 municipalities, which in turn have a total of 20,485 communities. In 2000, the country had an estimated population of 11,433,694, and the average density was 102 inhabitants per km^2, with extremes of 1,177 in the department of Guatemala (23% of the total population) and 9 in Petén; 65% of the population lived in rural areas. The nation has a richly varied ethnic, linguistic, and cultural heritage. The indigenous population represents 48% of the total and is made up of the Garifuna, Xinka, and Mayan peoples. In all, there are 24 linguistic groups, and more than 125 languages and autochthonous dialects are spoken.

Signature of the Firm and Lasting Peace Agreement on 29 December 1996 represented the culmination of negotiations formally initiated in 1990. The 12 commitments contained in this accord brought an end to 36 years of civil strife in Guatemala. The timetable for their fulfillment was divided into three phases over the period 1997–2000: (1) the first 90 days of peace, starting 15 January 1997; (2) from conclusion of the first phase up to the end of 1997; and (3) from the beginning of 1998 through 2000. In January 2000, the Guatemalan Republican Front took over the reins of government with nearly 75% of the popular vote in a turnout of 44%, the highest in the country's electoral history. The policies embodied in the national government plan for 2000–2004 are oriented toward fulfilling the goals set forth in the Peace Agreement.

Guatemala begins the 21st century with a human development index of 0.619, or a rank of 120 out of 174 countries. Seventy-five percent of the population lives in poverty, with a higher proportion in rural areas than in cities (75.6% compared with 28.8%). The metropolitan region (department of Guatemala) has the highest human development index (0.70), and the lowest indexes are in regions inhabited mostly by indigenous peoples in the north (0.53) and northwest (0.49).

Agricultural activity accounted for 26% of GDP and generated 60% of employment. Internal migrant workers numbered around 1,438,694 persons. One of the best years for the Guatemalan economy during the last decade of the 20th century was 1998, when it grew 5%, but there was tension and instability, and soon a number of indicators of macroeconomic imbalance began to appear: increased fiscal deficit of the central government (2.3% of GDP), increasing instability of exchange and interest rates because of a worsening balance of trade, and a deficit in the balance-of-payments current account. Thanks to an expansive fiscal policy, government spending increased 32.8% without an equivalent rise in tax revenue. In 1999 and 2000, GDP grew 3.6% and 3.3%, respectively (Figure 1), and per capita GDP at 1995 prices was 0.9% and 0.8%, respectively.

The privatization process got under way in 1997, when usufruct was granted for 50 years to exploit the railroad network and when the majority of shares of Empresa Eléctrica de Guatemala, S.A. (80%), Telecomunicaciones de Guatemala (95%), and Empresa de Energía Eléctrica (80%), the national electrification institute, passed into private hands. The State netted US$ 584.2 million for these operations and used the funds to build up the national budget to a level equivalent to 2.4% of GDP. In 1998, the net tax burden (not including returned tax credit) came to 8.9% of GDP. The Peace Agreement established a target tax burden of 12% by 2000, but this goal was not met, nor was consensus reached on the Fiscal Pact, which proposed changes in the national taxation system and structure. The internal debt as a proportion of GDP was reduced from 10.6% in 1990 to 5.2% in 1998, and the foreign debt went from 18% in 1990 to 10% in 1998. Twenty percent of the households received 63% of the income in the country, whereas 40% of households received only 8%. In 1998, 91.3% of the indigenous population was living below the poverty line, compared with 55.6% for the rest of the population. Open unemployment rose from 3.7% in 1995 to 5.6% in 1999. According to the 1998–1999 National Survey of Household Income and Expenditure conducted by the National Statistical Institute, 65% of the female population were not working in 1998; among those who had jobs, most worked only five

days a week and 6% received no compensation. The year 1999 saw an increase in open unemployment, which was greater in urban areas and among women. A family had to earn two salaries at the minimum wage in order to cover the cost of the basic food basket. According to the Ministry of Labor, the trade union movement has been growing: in 1998 alone, 78 new unions were registered. Women represented only 10% of organized labor.

Official information comes from the following sources, which are not always in agreement: the National Statistical Institute (vital statistics), the National Civilian Police, the Judicial Agency, and the Office of the Attorney for Human Rights. According to the National Statistical Institute, one-third of the violent deaths in the country occur among young persons aged 20–29 years. The rates of crimes that involved rape, robbery, and kidnapping remained constant, and activities related to drug trafficking increased. In 1995, cocaine seizures were valued at US$ 13.5 million; by 1998, the volume had increased almost nine-fold. According to the Judicial Agency, between 1995 and 1998, there was a steady increase in the rate of crimes and misdemeanors, especially in the department of Guatemala. Kidnapping, which once affected those in the upper income brackets almost exclusively, has spread to other segments of the population and regions of the country and has become the most serious threat to personal safety. In 1998, this type of crime was concentrated in the departments of Guatemala and Escuintla, with reported rates of 5.4 and 4.5 kidnappings per 100,000 population, respectively, and the amount of underreporting is undoubtedly quite sizable. According to the National Civilian Police, however, kidnappings fell from 97 in 1997 to 30 in 1998, although in the latter year there was an increase in the number of missing persons. The lack of safety in rural areas was aggravated by increases in automobile thefts, contraband, bank robberies, and kidnappings, among other crimes. In 1998, there were 47 attempted lynchings, with 37 victims and persons beaten.

In 1999, the illiteracy rate was 31.7% (39.2% for women and 26.3% for men). In rural areas, the rate was 36.2% for women and 26.7% for men, and in urban areas it was 20.3% and 14.7%, respectively. The areas with the largest indigenous populations had the greatest educational deficits. The department of Guatemala and 10 other nonindigenous departments had the highest proportion of female enrollment at the high school level, especially in vocational programs for secretaries and teachers. However, in institutions of higher learning, the percentage of females continued to be quite low. There are marked inequalities in terms of school attendance: 68% of truants had illiterate mothers, and this rate was 72% in the indigenous population. In 1996, a national program was implemented to promote self-management for educational development, geared specifically to producing bilingual teachers as part of a pilot project conducted at 39 teaching institutions in the capital and the interior of the country. The education budget as a proportion of GDP almost met the target in the Peace Agreement. Data from the National Literacy Commission for 1998 showed that half the urban population had five years of schooling, whereas half the rural population had only one year. One-third of the nonindigenous Guatemalans in rural areas also did not know how to read.

In 1998, intermediate education continued to be a predominantly urban phenomenon: 65% of the basic programs (first to third year of secondary school) and 86% of the diversified programs with technical curricula were located in the capital. That same year, the departments with 75% to 100% indigenous population had crude enrollment rates of 14.9% in the basic cycle programs and 4.4% in the diversified programs; for the departments with 0% to 24.9% indigenous population, the corresponding rates were 32.4% and 12.4%; in the capital, they were 64.0% and 35.1%, respectively. Starting in 1990, the number of Mayan schools increased and by 1998 there were 100 establishments formally organized into associations and classified according to linguistic groups. The commitment in the Peace Agreement was that all children under 12 years of age would have completed their first three years of primary school by 2000.

Selected demographic indicators and infant mortality rates, by department, are presented in Table 1. In 1999, the birth rate was 34 per 1,000 population, ranging from 46.1 in Quiché to 25.8 in Guatemala City, and the general mortality rate was 4.8 per 1,000 population. Even though the total fertility and infant mortality rates for 1987, 1995, and 1998 showed steady improvement, there continued to be very marked differences between the urban and rural populations. The total fertility rates for the indigenous and nonindigenous populations remained stable, but they were lower in the latter case (Table 2), a reflection of inequalities in health and differences in level of economic development, which underscores the need to identify, measure, and reduce disparities in living conditions and access to health services.

In 2000, the annual population growth rate was 2.9%. In terms of age distribution, 44% of the total population were children and adolescents under 15 years old and 5.3% were 60 or older (Figure 2). In rural areas, 38% of the population were under 15 years old, 37% were between 15 and 44, 8% were between 45 and 49, and 6% were over 60. Life expectancy was 67.2 years (64.7 years for men and 69.8 years for women).

Mortality

A total of 53,486 deaths were registered in 1999, for a mortality rate of 4.8 per 1,000 population, with the highest rates in the departments of Retalhuleu (7.1 per 1,000 population) and Escuintla (6.9 per 1,000). For both sexes, the leading causes of general mortality were pneumonia and diarrhea, which in 1999 represented 22.3% and 6.0% of all deaths, respectively. In males, the rate for pneumonia was 114 per 100,000 population, and for acute diarrheal disease, 51.1 per 100,000, while in females the corresponding rates were 95.8 and 35.4 per 100,000. The third leading cause of death for males was homicide (40.7 per

TABLE 1. Selected demographic indicators and infant mortality rate, by department, Guatemala, 1999.

Department	Indigenous population (%)	Rural population (%)	Migrants (no.)	Infant mortality rate (per 1,000 live births)
Guatemala	12.84	29.11	231,300	44.4
Sacatepéquez	42.64	29.47	1,362	47.7
Zacapa	4.46	71.41	26,985	28.0
Izabal	23.27	80.17	47,074	23.2
Jutiapa	5.20	79.67	18,746	33.8
Escuintla	6.59	62.90	200,000	57.0
El Progreso	2.09	73.44	14,009	40.7
Santa Rosa	2.69	75.93	35,173	40.3
Chiquimula	30.12	74.73	20,125	27.9
Jalapa	38.43	72.73	…	34.7
Baja Verapaz	56.49	79.54	22,645	36.6
Suchitepéquez	58.08	69.80	37,963	50.6
Quetzaltenango	60.73	60.16	91,925	53.3
Petén	26.93	73.27	119,283	33.1
Huehuetenango	65.90	85.43	153,832	30.7
San Marcos	43.54	87.00	136,158	33.3
Retalhuleu	34.01	72.28	36,942	44.9
Sololá	95.16	66.75	6,878	48.9
Totonicapán	96.92	89.27	125,628	59.5
Quiché	85.82	84.82	83,230	36.6
Alta Verapaz	90.75	84.21	13,936	33.2
Chimaltenango	79.39	58.43	15,500	53.3

Source: Ministerio de Salud Pública y Asistencia Social. *Indicadores básicos 1999.* Guatemala: MSPAS; 1999.

TABLE 2. Infant mortality rate and total fertility rate, by area and ethnicity, Guatemala, 1987, 1995, and 1998.

	Infant mortality rate (per 1,000 live births)			Total fertility rate (children per woman)		
	1987	1995	1998	1987	1995	1998
Country	73	51	45	5.6	5.1	5.0
Urban	65	45	49	4.1	3.8	4.1
Rural	84	63	49	6.5	6.2	5.8
Indigenous	85	64	56	6.8	6.8	6.2
Nonindigenous	76	53	44	5.0	4.3	4.6

Source: Sistema de Naciones Unidas en Guatemala. *Informe Nacional de Desarrollo Humano 2000. Guatemala: la fuerza incluyente del desarrollo humano.* Guatemala: Sistema de Naciones Unidas; 2000.

100,000), and for women it was undernutrition (16.8 per 100,000). Neoplasms and myocardial infarction were the fourth and fifth leading causes of death for both sexes. According to data from the National Statistical Institute, the distribution of proportional mortality for the six broad groups of causes in 1997 was as follows: communicable diseases, 13%; external causes, 13%; diseases of the circulatory system, 12%; certain conditions originating in the perinatal period, 8%; tumors, 7%; and all other causes, 47%. Of the 53,486 deaths registered in 1999, 33.6% corresponded to the over-60 years age group. Physicians certified 59.8% of all deaths; some other authority certified 31.2% of them; and midwives or other personnel without formal training certified 9%. Analysis of the mortality pattern indicates that underregistration is probably 56% at the national level.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Until 1998, infant mortality was on the decline (Figure 3). In 1997, there were 13,949 deaths, for a rate of 37.7 per 1,000 live births; by 1999, the numbers had edged upward to 15,317 deaths and an overall rate of 40.5 per 1,000 live births. The highest rate (59.5 per 1,000) was in the department of Totonicapán, which has one of the largest indigenous populations and ranked fourth in the country in terms of migratory influx. Izabal, on the other hand, with an indigenous population of only 23%, had the lowest infant mortality rate (23.2 per 1,000). The rates for neonatal and postneonatal mortality were 15.4 and 22.3 per 1,000 live births, respectively. The National Maternal and Child Health Survey conducted in 1998–1999 (ENSMI 98–99) estimated infant mortality at 45 per 1,000 live births for the five-year period prior to the survey; neonatal mortality was estimated at 23 per 1,000 live births and postneonatal mortality at 22 per 1,000. No variations were observed with regard to place of residence, but the rate for the nonindigenous population was 44 per 1,000 live births, compared with 56 per 1,000 for indigenous groups. Fifty percent of infant deaths occurred between the perinatal period and the third month of life. In the Social Policy Matrix, a document published in 2000 that sets forth the social commitments assumed by the Government, the goal is to reduce infant mortality 12.5% from its 1999 level of 40.5 per 1,000 live births to 35.0 per 1,000 by the year 2003.

In 1999, acute respiratory infections accounted for 40% of all deaths in children under 1 year, acute diarrheal disease claimed 12%, and perinatal causes, 11%. The highest mortality from acute diarrheal disease was in Santa Rosa (6.8 per 1,000 children under 1 year), and the lowest was in Zacapa (1.1 per 1,000). In this same age group, mortality from pneumonia ranged from 29.7 per 1,000 in Totonicapán to 5.2 in Izabal. The mortality rate in children 1–4 years old was 14 per 1,000 (18 for girls and 15 for boys): 9 per 1,000 in the cities and 20 per 1,000 in rural areas. In nonindigenous populations, the death rate was 12 per 1,000 compared with 24 per 1,000 in indigenous groups. By educational level of the mother, the rate was 24 per 1,000 for mothers who had never attended school, 12 per 1,000 for those with primary schooling, and 1 per 1,000 for mothers with secondary education or higher. Low birthweight was 9.3% overall, 11.4% in urban areas, and 7.9% in rural areas.

Schoolchildren (5–9 years)

Between 1985 and 1998, the net rate of primary care delivered to children between the ages of 7 and 12 years increased by 8.5%. In 1999, a total of 1,027 deaths were registered in the 5–9 years age group, for a rate of 0.6 per 1,000. Cases of acute diarrheal disease rose from 16,015 in 1997 to 43,119 in 1998 and 50,799 in 1999. Chronic undernutrition affected 47.6% of all children aged 5 and 6 years, while 1.4% suffered from acute malnutrition and 22.9% had global malnutrition (as measured by weight-for-age). In 1999, a total of 95 suspected cases of cholera were reported in children aged 5–9 (40 of them confirmed), for an incidence of 5.8 per 100,000; one of the cases resulted in death, for a case-fatality rate of 1.1%. The following year, there were 31 suspected cases of cholera, of which 10 were confirmed (1.8 per 100,000), and there were no deaths. There were 1,186 reported cases of hepatitis A in schoolchildren, and this age group accounted for 24.5% of all cases. In 1999, there were 28,501 reported cases of pneumonia, for an incidence of 174.5 per 10,000, and 261 deaths, making for a case-fatality rate of 0.9%. Also in this age group, 1,213 cases of dengue were reported in 2000, of which 144 were confirmed, with 18 hemorrhagic cases and 7 deaths in the 10 cases reported at the national level (case-fatality rate: 38.8%). In 2000, there were also 19,573 cases of malaria in schoolchildren; 149 of them were caused by *Plasmodium falciparum*, with 30 associated cases. Between 1984 and 1999, the National AIDS Program under the Ministry of Public Health and Social Welfare reported 9 cases of this disease in school-age children, representing 0.26% of all cases in the country in all age groups.

Adolescents (10–14 years and 15–19 years)

In 2000, Guatemala had a population of 2,752,924 adolescents, who comprised 24% of the national population. Of this number, 51% (1,402,601) lived in rural areas. In terms of education, 11.7% of the females and 1.6% of the males had no schooling. In the group aged 10–14 years, 10.1% of the females and 6.5% of the males were illiterate, while among 15–19-year-olds, the rates were 13.9% for females and 8.8% for males. A 1998 survey revealed widespread lack of political awareness among the country's youth: 67% said they knew nothing about the Peace Agreement. On the other hand, according to a historical memoir of the civilian conflict (*Recuperación Histórica de la Memoria*), about 8.2% of the combat victims were adolescents 14–17 years old.

The National AIDS Program reported that between 1984 and September 2000 there were 23 cases of AIDS in the group aged 10–14 years (0.6%) and 142 cases in those aged 15–19 (3.8%); 77% of those cases occurred in males.

A 1998 survey on the use and abuse of addictive substances in students 12–18 years old revealed that 37.1% had consumed alcohol, 21.1% had used tobacco, 3.8% had taken tranquilizers, 3% had smoked marijuana, 2.4% had taken stimulants, 2.2% had used cocaine, and 1.9% had sniffed inhalants. The average age of the first use of these substances was 13, and use was greater among males for all substances studied. In 1999, it was reported that 28% of adolescent street kids were between 10 and 12 years old, 40% were between 13 and 15, and 24% were between 16 and 18. These young people gave the following reasons for living in the streets: 42% were victims of abuse, 39% were runaways, 25% were from poverty-stricken families, and 19% were from broken homes. The majority of adolescent street kids (86%) were nonindigenous; 60% came from slums in the capital, 32% were illiterate, and most were males. The proliferation of gangs (known in Guatemala as *maras*) is an urban phenomenon, seen particularly in the capital, where about 10,000 youths, averaging 20 years of age, are affiliated with more than 90 such organizations and share the same basic trait: lack of hope for the future.

Among girls 10–19 years old, 8.3% had their first sexual encounter before the age of 15, and approximately 70% of them before the age of 20. The fertility rate in girls aged 15–19 was 123 per 1,000. ENSMI 98–99 determined that teen pregnancies produced 362,372 live births, or 17.1% of the national total. The departments with the largest percentages of live births to adolescent girls (most of them nonindigenous) were Izabal (29%), Petén (24%), and Escuintla (22.3%). In 60% of the cases, the mothers were from the poorest strata of the population. Sixty-nine percent of adolescents 15–19 years of age were familiar with some method of birth control, but only 4% used contraception (3.6% used modern methods and 0.6% resorted to traditional methods).

In 1999, the 10–19 years age group had 32,028 reported cases of acute diarrheal disease, 285 cases of cholera (61 of them confirmed), and 16,109 cases of pneumonia with 286 deaths (case-fatality rate: 1.7). In 1999, there were 2,128 registered deaths in the 10–19 years age group. According to data from the National Statistical Institute, in 1998 the leading cause of death in youths aged 15–19 was gunshot wounds (165 deaths, 147 of them in males), followed by pneumonia and influenza (83) and intestinal infections (66), without differences between the sexes for the latter two causes. General ill-defined symptoms and other causes accounted for 969 deaths.

Adults (20–59 years)

In 1999, the population of adults between the ages of 20 and 59 numbered 4,116,147 and corresponded to 39.3% of the total. According to the findings of ENSMI 95, maternal mortality during 1990–1995 was estimated at 190 per 100,000 live births (calculated by the sisterhood method). The Ministry's Health Management Information System (SIGSA) gives maternal mortality rates of 98 per 100,000 live births in 1997, 100.2 in 1998, and 94.9 in 1999, with an estimated underregistration of 60%.

With maternal mortality stratified according to income, the averages ranged from 50.1 per 100,000 live births in the upper income brackets to 132.4 in the poorest segment of the population. Based on per capita GDP, about 70% of all maternal deaths occurred in the poorest strata. In 1999, the five leading causes of maternal death were hemorrhage associated with delivery (24%), retained placenta (15%), septicemia (11%), eclampsia (8%), uterine atony (6%), and other causes (36%). In 1995, the percentage of pregnant women attended by trained personnel was 54%, and in 1998 and 1999 the proportion was 59%. In 1999, 47% of all prenatal checkups were attended by physicians, with percentages ranging from 36% in rural areas to 67% in the cities; 12% were attended by nurses; and 27% by midwives, with a range from 36% in rural areas to 11% in urban areas. Nationwide, 40.4% of all deliveries were attended by trained personnel (37% by physicians and 3.4% by nurses). According to ENSMI 98–99, midwives attended 50% of deliveries; the proportion was 61% in rural areas and 31% in urban areas. The percentage of deliveries attended by nurses was similar in urban (3.4%) and rural (3.8%) areas. In the indigenous population, midwives attended 67.6% of deliveries and physicians, 14.5%; in the nonindigenous population, the percentages were 39.5% for midwives and 50.3% for physicians. At least one dose of tetanus toxoid vaccine was administered to 56.9% of all pregnant women (46% of indigenous women and 63% of nonindigenous women). Thirty-four percent of all women of reproductive age used modern family planning methods and 13% used traditional methods; the former included the pill (17%), female sterilization (12%), hormonal injections (11%), condoms (11%), and intrauterine devices (6%). Only 0.7% of women relied on male sterilization. Of all women living in stable unions, 62% were not using any family planning method, whereas 13% of indigenous women and 50% of nonindigenous women were using some form of family planning. The use of family planning has been on the rise, from 31.4% in 1995 to 38.2% in 1998 and 1999.

According to ENSMI 98–99, urban and nonindigenous women were taller on average than those from rural areas and indigenous women. The body mass index of women 15–24 years old was lower than expected. The record of the 10 leading reasons for medical consultations shows that women made more visits than men and that pneumonia and diarrheal disease were the main reasons for consultation for both sexes. Women had more deaths due to hypertension, stroke, and diabetes mellitus, while men had more deaths from pneumonia, diarrhea, and pulmonary tuberculosis.

The Elderly (60 years and older)

In 1999, the proportion of the population aged 60 and older was estimated at 5.3%, with a slight predominance of women (51.8%). Indigenous peoples represented only 40% of this age group. It is estimated that 6% of the elderly live alone and receive no support from their families, and 65% of them live below the poverty line. The leading reasons for consultation at the Ministry's health services were preventable, communicable, and infectious diseases. A total of 7,118 cases of acute diarrheal disease were reported in 1997, 9,041 in 1998, and 10,667 in 1999. In 1999, there were 270 reported cases of cholera in this age group, of which 62 were confirmed and 7 ended in death, for a case-fatality rate of 2.5%, the highest for any age group. In 2000, there were 131 cases of cholera (25 confirmed) and 1 death, for a case-fatality rate of 1.1%, compared with the overall national rate of 0.75%. The 61 reported cases of hepatitis in this age group represented 1.3% of the total for the entire population. In 2000, there were 471 cases of clinical dengue (49 confirmed) and 4,697 cases of malaria in this age group. Of the six cases of human rabies reported in 2000, two of the victims were elderly, one 75 and the other 62 years old, and both were in the interior of the country (departments of Sololá and Quetzaltenango). Between 1984 and June 2001, a total of 106 cases of AIDS were reported in this age group (2.53% of all reported cases). This population's access to health services is limited, and social security coverage is low: only 12.2% receive a pension, and it is usually a small amount.

Family Health

The average household has five members, and this number is larger in rural areas and larger still in the indigenous population. Households headed by women have increased, especially in non-Mayan families, and in the other indigenous groups the number has been rising for the last 15 years and is directly related to the armed conflict. It is estimated that 2.7% of children aged 7–9 years are already in the economically active population. The breakup of families as a result of the armed conflict has left a large number of orphans and traumatized more than 20,000 youths.

Between 1987 and 1998, some 25,000 children and youths were repatriated, representing 62% of the total repatriated population. In 1998, a total of 845 complaints were filed with the Office for the Defense of Children and Youths, 95% for physical abuse and 10% for sexual abuse. It is estimated that for every 10 children who are abused by close family members, 7 of the cases are not reported. The Street Kids Forum was created in 1997 with the interinstitutional participation of governmental and nongovernmental organizations.

In 2000, a total of 10,600 complaints were filed with the Office of the Attorney for the Defense of Human Rights; the Office of the Attorney for the Defense of Women; and the Program for the Prevention and Eradication of Domestic Violence. In addition, 5,583 complaints were received by the Ministry and the Office of the Attorney for the Defense of Women. Eighty-three boys and 65 girls were victims of family violence. The Guatemalan Women's Group and the Association of Women Moving Forward are responsible for case follow-up through 49 safe houses and self-help houses. In 1998, data from the Office of the Attorney General of the Nation showed that approximately 1,029 adoptions had been authorized, and the main receiving countries were the United States (64%), France (12%), and Spain and Canada (each with 5%).

Workers' Health

National Statistical Institute data for the period 1989–1999 indicate that women constitute 24% of the economically active population and represent 43% of unskilled laborers, while only 6.8% hold positions in the upper-income levels. In the group of children and adolescents 7–14 years old, 34.1% were working, the majority (53.9%) as laborers; 38.2% performed unremunerated household tasks; and 7.7% were self-employed. Of adolescents aged 14–18, an estimated 71% of them worked. The Guatemalan Social Security Institute (IGSS) covers only 17% of the national population. In 1998, there were 1,131 cases of pesticide poisoning in six departments in the country, and in 1999 there were 754. Of this latter number, 80% were in males and 15% were in children and adolescents under 15 years of age (fatality rate: 14%); 67% were associated with work-related accidents, 25% with ordinary accidents, and 7% were suicides. The pesticides involved most frequently were organophosphates (48%) and carbamates (15%). In 2000, there were 763 cases of poisoning, 603 of them in males; 482 were work-related accidents (fatality rate: 7.3%), and 211 were ordinary accidents (fatality rate: 6.5%). Three percent of poisonings were in children less than 4 years old.

The Disabled

The principal deficiencies that affect the disabled are musculoskeletal (72%), psychological (31%), visual (31%), and disfigurement (26%). Most of the disabled have two deficiencies. Disability is also a legacy of the armed conflict and has especially affected those who fought in the Army and the demobilized combatants of the Guatemalan National Revolutionary Union as well as civilians from different parts of the country. A 1999 study conducted by the Ministry in the 22 departments reviewed 2,872 cases of disability and verified that 1,841 of them were caused by the armed conflict, following a similar pattern of geographic distribution. The departments with the most registered cases were Quiché, Alta Verapaz, Baja Verapaz, Sololá, Retalhuleu, and Guatemala City. Data for the year 2000 from the National Care Program for Persons with Disability Caused by the Armed Conflict indicate that 70% of the population with disabilities live in dwellings made with inadequate materials, 66% have latrines, more than half have no electricity, and 97% are without telephone service.

Indigenous and Other Special Groups

Guatemala is one of the Latin American countries with a high percentage of indigenous population (48%). The natural growth rate in the departments with a large indigenous presence was estimated at 3.2% a year, while in the departments with an indigenous population of less than 25% the rate was 2.6%. In 1998, illiteracy in the departments with 75% to 100% indigenous population was 52.2%; in departments with 0% to 24.9% indigenous population illiteracy was 29%, and in the country's capital it was 11.2%. According to data from the 1995 National Micronutrient Survey conducted by the Institute of Nutrition of Central America and Panama (INCAP), 67.8% of the indigenous population suffered from chronic malnutrition compared with 36.7% of the nonindigenous population; global malnutrition (as measured by weight-for-age) was 33.6% and 18.6%, respectively. In terms of sanitation, 53.4% of the nonindigenous population had access to an indoor bathroom compared with 21.4% of the indigenous population; only 18.6% of indigenous households had a sewerage connection compared with 43.7% of nonindigenous households. The nonindigenous had access to water for household use through public or private distribution networks, whereas 50% of the indigenous communities obtained water from wells, rivers, or springs. In 1998, the average social exclusion index in Guatemala was 25.9. The highest exclusion level (38.5) was in the indigenous departments of Huehuetenango and Quiché.

According to data from the National Survey of Household Income and Expenditure 1998–1999, migrant workers come from predominantly indigenous areas (Quiché, Huehuetenango, and Baja Verapaz) and contribute 26% to the GDP. It is estimated that about 1,000,000 persons (more than 80% of them indigenous) move within and across the country's borders several times a year for periods of up to three months, often with their wives and children, to work on agricultural export crops, a scenario that deprives them of the benefits of social security. Harvesting lasts six months (from November to April), not counting the time spent tilling and fertilizing the land. Guatemala exports agricultural workers to Mexico and receives agricultural migrants from other Central American countries, especially El Salvador and Honduras. Also, migrants from Central America, South America, and Asia travel through Guatemala on their way to the United States via Mexico. Many of those who are undocumented are unable to cross the border and end up remaining in the country, underemployed and living in marginal conditions. About 540 communities in 17 departments have implemented programs for the resettlement of uprooted persons and the reinsertion of those demobilized after the conflict. The indigenous peoples have been less inclined to migrate than the nonindigenous. Between January and March 1998, the total number of migrants and deported persons at the Mexico-Guatemala border was 20,098. Guatemalan families in California accounted for 60% of all family remittances from the United States, and in 1998 these remittances generated US$ 423 million in exchange—more than the national tourist industry (US$ 323 million).

By Type of Health Problem

Natural Disasters

Guatemala lies across three tectonic plates: the North American, Caribbean, and Cocos. The movements of these plates, plus the country's 40 volcanoes (5 of which have been active) and the development of six geological faults, leave the country vulnerable to natural disasters as well as those provoked by humans. In 1999 and 2000, a series of tremors caused damage in 12 departments. In addition, there have been severe droughts, with risk of famine, in some parts of the country. In November 1998, Hurricane Mitch caused heavy damage in 14 of the country's 22 departments, causing 106,000 people to be evacuated and taking the lives of 268. The productive sectors were most affected: 68% suffered direct damage and 83% experienced some form of indirect damage. Heavy rainfall in 2000—double the level in the winter of 1999—caused rivers to rise and leave damage in their wake along the southern coast and in the west. At the same time, 19 of the 22 departments were affected by drought. Heading the list of man-made disasters is deforestation, which occurs at a rate of 120,000 hectares a year and is offset by only 2,000 hectares of reforestation. At this rate, it is estimated that the vegetation cover will disappear completely in 29 years. Every year 300 tons of soil per hectare are lost in the remaining forest areas and up to 1,100 tons per hectare are lost in the deforested regions, a process that could result in a total loss of soil in some areas of the country in 5–10 years. In 2000, 605 surface and forest canopy fires affected a total of 16,582 hectares located in "protected" areas in Petén (22.4%), Quiché (16.4%), Chimaltenango (10%), Guatemala (9.7%), Jalapa (7.3%), and others (34.2%).

Vector-borne Diseases

About 54% of the population is exposed to malaria transmission. In 1999, a total of 101,326 cases were reported (30,977 confirmed and 70,349 clinically diagnosed), and the annual parasite index was 12.2 per 1,000 population. The health areas at greatest risk for malaria morbidity were Ixcán (incidence: 15,846 per 100,000 population) and Southwestern Petén (10,055 per 100,000). Of the confirmed cases, 92% were attributed to *Plasmodium vivax*, 3.2% to *P. falciparum*, and 5.3% to 12 associated cases. Eighty percent of the cases were reported in seven health areas (Ixcán, Quiché, Alta Verapaz, Baja Verapaz, Petén, Izabal, and Escuintla). The main vector was *Anopheles albimanus*, and *A. pseudopunctipennis* was found in some places. Resistance to chloroquine has not been encountered. In 2000, there were 109,874 reported cases (29,302 confirmed and 80,572 clinically diagnosed) of malaria; the confirmed cases were distributed as follows: 95.9%, *P. vivax*; 4%, *P. falciparum*; 0.1%,

mixed. Of the reported cases, 66% occurred in seven health areas. In the areas of Totonicapán and Sacatepéquez, there was no evidence of disease transmission. Incidence peaks during the rainy season (April to November). The largest number of cases was recorded in the population aged 10–59 years, and it is a predominantly rural phenomenon. The Ixcán health area reported nine deaths to SIGSA in children under 1 year of age who had been diagnosed clinically.

Dengue is a serious public health problem in Guatemala, where the inhabitants at risk reside in all 25 health areas and represent 34% of the total population. In 1999, a total of 3,617 cases were reported (incidence: 931.7 per 100,000 population). The health areas most affected were Escuintla (192.7 per 100,000) and Southwestern Petén (137.9 per 100,000). SIGSA recorded two cases of hemorrhagic dengue and one death. In 2000, there were 10,083 reported cases, 9,006 of which were clinically diagnosed as classical dengue (1,035 of them confirmed) and 42 were hemorrhagic dengue, leading to 9 deaths. The incidence ranged from 1.0 per 100,000 population in the department of Sololá to 697.9 per 100,000 in Escuintla, with a case-fatality rate of 21.4%. Unlike 1999, 2000 was an epidemic year, and the departments most affected were Escuintla and Huehuetenango. The National Health Laboratory confirmed that dengue serotype 2 was the virus in circulation (100 cases) in 11 health areas. Of 5,863 samples submitted by 22 health areas, 2,550 were positive, 2,644 were not processed, and 669 were negative. The index of dwellings infested with *Aedes aegypti* larvae, pupae, or both was 11%. Of the cisterns inspected, 5% were positive for *A. aegypti*, for a Breteau index of 23%.

Fifteen of the country's health areas are infested with the Chagas' disease vectors *Triatoma dimidiata* and *Rhodnius prolixus*, and about 34% of the population (556,823 people) are at risk for infection. A Chagas' disease control program was launched in 2000 with emphasis during the first two years on six health areas: Zacapa, Chiquimula, Jutiapa, Santa Rosa, Baja Verapaz, and Alta Verapaz. Of 15,478 dwellings inspected, 1,395 were positive for *Triatoma*. A total of 174 cases were detected in blood banks, with a prevalence rate of 0.97%.

The onchocerciasis endemic area encompasses 7 of the country's 25 health areas (about 7% of the national territory), and 606,547 people are at risk. There are 554 endemic communities in 30 municipalities, with an at-risk population of 160,000. Health coverage for people who live in the endemic areas began to be increased in 1996, and by 2000, coverage had reached 90%. In the latter year, 147,030 cases were treated with ivermectin and 665 of the patients had secondary reactions to the treatment.

According to reports from the health areas, foci of tegumentary leishmaniasis place 295,166 persons at risk for transmission of this disease in rural jungle areas of Huehuetenango, Quiché, Alta Verapaz, and Petén. In 2000, a total of 956 cases were detected with cutaneous lesions, and there were 71 cases with visceral lesions. Several of the latter cases were found in El Progreso.

Diseases Preventable by Immunization

In 1982, the National Immunization Program was launched throughout the country with a basic vaccination scheme for infants under 1 year old. In the five years from 1996 through 2000, the following coverage levels (with differences among the municipalities) were achieved: OPV—76%, 78%, 91%, 86%, and 97%, respectively; BCG—77%, 88%, 89%, 93%, and 97%; DPT3—73%, 83%, 88%, 88%, and 95%; and measles—69%, 74%, 79%, 83%, and 88% (see Figure 4 for coverage levels achieved in 2000). In 1999, the national campaign "*Puesta al Día*" against measles reached 98% of the population 1–14 years of age. Vaccination of pregnant women and women of reproductive age is carried out routinely in municipalities at risk; however, there are no data available on cumulative coverage. In 1996–2000, the annual coverages with tetanus toxoid (TT2) for women of reproductive age were 8%, 8.3%, 10%, 6.6%, and 22% (see Figure 4 for the year 2000). In 2000, the National Immunization Program acquired the MMR vaccine against measles, mumps, and rubella to replace the measles vaccine in the immunization scheme for all children up to 1 year of age starting in 2001.

The last case of poliomyelitis was reported in 1991. Epidemiological surveillance for the occurrence of acute flaccid paralysis continued during 1996–2000, when the system reported 49, 77, 51, 56, and 87 cases in those five years; none of them was confirmed to be polio. Although case reporting by SIGSA was better in 2000 than in 1999, there is still underregistration compared with the National Immunization Program: of the 85 cases with fecal samples recorded by the program, only 57 were reported by SIGSA. The taking of adequate samples is slightly below the required minimum of 80%. In 2000, the overall rate of acute flaccid paralysis was 1.7 per 100,000 in the population under 15 years, with a range of 0–4 in different geographic areas. This rate was higher than the levels achieved in 1998 and 1999 (1.1). The departments with the highest rates were Santa Rosa, Guatemala, Chiquimula, Sololá, and Zacapa. The INCAP virology laboratory processed a total of 87 samples, 4 of which were positive for OPV-derived poliovirus types 1 and 3.

In 1996, there were no reported cases of measles; one isolated case occurred in 1997, but since then there have been no further cases. Epidemiological surveillance is on the alert for suspected cases, and in the five years 1996–2000 there were reports of 128, 303, 171, 291, and 904 cases, respectively, none of which was confirmed. In 2000, the surveillance of suspected cases improved relative to 1997–1999. That same year, the National Health Laboratory received 980 samples from suspected cases, 82 of which were eliminated because they failed to meet the definition of a case. The final count for the National Immunization Program was a total of 902 cases, of which 517 (57%) were reported by the official system, which points up the need to improve reporting systems in the health areas. In 2000, 23 of the 25 health areas (92%) reported at least one suspected case, as did 50% of the municipalities. By comparison, the percentages in 1999 were 76%

and 22%, respectively. Ninety-seven percent of the cases were investigated within 48 hours after they were reported.

The detection of rubella continues to be tied to the surveillance of measles. The number of positive cases increased from 157 in 1999 to 275 in 2000. Establishment of a surveillance system for congenital rubella syndrome was an important goal for 2001 because of the introduction that year of the MMR vaccine.

The numbers of reported cases of neonatal tetanus in the four years 1996–1999 were 17, 7, 5, and 2, respectively. In 2000, there were 6 cases and 3 deaths (case fatality: 50%). The figures may be larger if it is kept in mind that, according to SIGSA, only about 20% of all deliveries are attended in institutions.

Cases of pertussis increased during the period 1996–1999: 40 in 1996, 131 in 1997, 441 in 1998, and 268 in 1999, and the age group most affected is now 6–9-year-olds. The 194 reported cases in 2000 represented 28% fewer than the year before, and the outbreaks were in Chimaltenango (2), Quiché (2), and Huehuetenango (1). Infants under 1 year were most affected, with 104 cases (53%). Fourteen deaths were registered in infants 28 days to 11 months old (fatality rate: 7%): 7 from the department of Guatemala, 3 from Retalhuleu, 2 from Escuintla, and 1 from Suchitepéquez. In 72% of the cases, there was no prior record of vaccination. The highest incidence rates per 100,000 population were found in Ixcán and Quiché (5.0), Chimaltenango (4.0), and the department of Guatemala (3.0).

All the deaths from diseases preventable by immunization occurred in areas where vaccination coverage was regarded as adequate (95% or greater administration of all the biologicals in the basic vaccination scheme to the population under 1 year of age in all the municipalities of the country). The largest number of cases came from state hospitals. There continue to be problems in obtaining nasopharyngeal swabs for the isolation of *Bordetella pertussis* because often there is no transportation available to take the samples immediately to a microbiology laboratory.

The last case of diphtheria was recorded in 1997. In 2000, there were five reported cases of tuberculous meningitis, one more than in 1999, with four deaths (fatality rate: 80%). Two of the cases were in infants under 1 year old, one was in a 5-year-old child, and two were in adults over 19 years old; they came from the areas of Quetzaltenango, Retalhuleu, Izabal, Guatemala, and Alta Verapaz (all of which had over 90% BCG coverage).

Intestinal Infectious Diseases

Cholera cases doubled from 1,008 in 1997 to 2,077 (1,556 suspected and 521 confirmed) in 1999, but in 2000 the number dropped to 790 (612 suspected and 178 confirmed). The departments at highest risk in 1999 were Retalhuleu and Escuintla. The case-fatality rate has been declining: in 1999 there were 18 reported deaths, and in 2000 there were 6, with corresponding fatality rates of 0.9 and 0.8.

In 1999, there were a total of 385,633 cases of acute diarrheal disease (incidence: 3,470 per 100,000 population) and 3,244 deaths from this cause (29.2 per 100,000). In 2000, morbidity was up 21.6% from that in 1999, with 468,981 reported cases (4,220 per 100,000). However, the fatality rate fell from 8% in 1995 to 3.5% in 1997 and 0.8% in 1999. No national data are available that make it possible to identify the origin of acute diarrheal disease, nor is the information broken down by sex. In 1999, children under 5 years old were most affected, with 238,434 cases, or 61.8% of the total. Mortality was higher in this group, with rates of 695 per 100,000 infants under 1 year old and 302 per 100,000 children aged 1–4 years. Children under 5 years old were the most affected group again in 2000, with 294,588 cases (62%). The departments with the highest fatality rates from acute diarrheal disease in infants under 1 year old were El Progreso (271 per 10,000 population under 1 year), Quiché (117), Santa Rosa (113), and Chiquimula (109).

In 2000, foodborne disease was the second most important cause of morbidity in the country, with 469,705 cases; that year also saw a 115% increase in reported cases of food poisoning (1,061) relative to 1999 (492). There were seven outbreaks: one in Totonicapán (182 cases from food contaminated with *Bacillus cereus*); three at the Police Academy in Guatemala City (131 cases total, no causal agent identified); one at San Juan de Dios Hospital (113 cases among hospital personnel, no causal agent identified); one in Villa Nueva (156 cases at a processing plant); and one in Chimaltenango (12 cases caused by dairy products contaminated with *Staphylococcus aureus*). The foods most frequently involved were meats, dairy products, and raw vegetables. The principal agents identified were *Staphylococcus aureus*, *Salmonella*, *Shigella*, *Vibrio cholerae*, and *Escherichia coli*. The Ministry has a specialized laboratory for identifying the agents responsible for cases of food poisoning. In 1999, 17 health areas reported 212 cases of typhoid, with six of these areas accounting for 80% of the cases: Santa Rosa (21.4%), Suchitepéquez (20.4%), Sacatepéquez (11.7%), Quetzaltenango (9.2%), and Escuintla (9.2%).

Chronic Communicable Diseases

Guatemala has a high incidence of tuberculosis. The directly observed treatment, short course (DOTS) strategy has been applied in Guatemala at the national level since 1991, with actual coverage around 70%. The department with the highest incidence is Escuintla (60.6 per 100,000 population), and the lowest incidence is found in Chimaltenango (5.1 per 100,000). In 1999, a total of 2,820 cases were reported, 2,597 (87.1%) of them pulmonary; of the latter number 2,264 were diagnosed by positive sputum smear. Adults 25–34 years old (52% males) were the group most affected, representing 21% of all cases in 1999. In 2000, there were 2,274 registered cases of tuberculosis, 46.6% in women, and 324 of them in children under 10 years of age. Pulmonary forms represented 92.7% of the total, and, of these, 79.8% were diagnosed by microscopic sputum examination. In recent years, the finding of respiratory symptomatic cases has fallen short of the annual target, with rates of 2.8% (1997), 4.2%

(1998), and 3.9% (1999). For each respiratory symptomatic case identified, an average of one sputum smear examination has been performed. In 1999, the treatment success rate was 79%, with extremes between the health areas ranging from 95% in Ixcán to 53.6% in Quiché, and the overall rate of patients abandoning treatment was 9%, with a high of 37.1% in Quiché and a low of 1.7% in Zacapa. In 1999, quality control of microscopic sputum examinations performed by the National Health Laboratory produced 97.9% concurrence in the results for 833 samples examined. Since 1992, the Ministry's National Tuberculosis Program has been conducting seroprevalence studies to determine the presence of HIV in tuberculosis patients who agree to participate; in 1998, of 38.1% of patients who consented to testing, 4.6% tested positive for HIV. According to the National AIDS Program, the seroprevalence of HIV in tuberculosis patients at the Rodolfo Robles Hospital was 5% in 1997 and 9.3% in 1998. In 1999, of 804 samples taken, 41 (5%) were positive for HIV. No studies have been done of resistance to tuberculosis drugs, but about 30 patients are being treated for multidrug resistance in a centralized unit at Rodolfo Robles Hospital in the capital.

As of early 2001, only 27 cases of leprosy were registered at the national level, and the patients were undergoing treatment. There are reporting problems because the hospital that takes care of patients at the national level does not share information with SIGSA.

Acute Respiratory Infections

Acute respiratory infections (ARIs) are the leading cause of morbidity and mortality in the country. In 1999, a total of 1,019,247 cases of ARI and 228,762 cases of pneumonia were reported, with 11,082 deaths. Pneumonia was the leading cause of mortality in infants under 1 year (10.6 per 1,000 population), while 63% of the cases and 50% of the deaths were in children under 5 years old. Southeastern Petén reported the highest incidence (211.2 cases per 100,000 population) and Quetzaltenango the lowest (28.3 per 100,000). In 2000, there were 1,341,873 cases of ARIs and 234,328 cases of pneumonia.

Zoonoses

Rabies is enzootic throughout Guatemala. Two cases of human rabies were reported in 1999 and six in 2000. The latter occurred in the departments of Sololá (one case), Quetzaltenango (four cases), and Jutiapa (one case); all the victims were males, ranging in age from 3 to 25 years. The average period elapsed between the attack by the rabid animal and death was 37 days. Three of the six cases were treated prophylactically with suckling mouse brain vaccine and later with antirabies serum; the remaining three patients came in for consultation after the symptoms of the disease had already appeared. A total of 13,207 persons were bitten by suspicious animals in 1999, and in 2000 the number was 15,053; rabies cases reported in animals in those two years came to 141 and 143, respectively. In 1999, the brains of 272 animals were examined, and 52% tested positive for the rabies virus; in 2000, the number studied was 414, and 35% tested positive. In 2000, laboratory surveillance increased 52% over the year before. Twenty-one of the 25 health areas (84%) documented the presence of rabies virus for three consecutive years (1998–2000), except that in 2000 there was no laboratory surveillance in three of them (Baja Verapaz, Southwestern Petén, and Ixcán). In 19 departments, there were 118 cases of rabies in animals in 2000. Along the Belize border, cases were identified by the examination of brains from cattle, a vampire bat, and a Baja California Sur spotted skunk. In 2000, studies revealed the presence of the common vampire bat (*Desmodos rotundus*) throughout almost the entire national territory. Ten departments reported cases of humans bitten by bats. Canine vaccination against rabies had a coverage level of 66% in 2000.

In 1999, the prevalence of bovine tuberculosis was 3.5% and that of brucellosis, 3.0%. Cases of equine encephalitis were said to have occurred in the southern coastal area during the rainy season. Data indicate that the prevalence of teniasis may be as high as 30% in some localities, but this problem needs further study. In consultations at the IGSS, neurocysticercosis was the primary cause of seizure in the school population under 14 years of age in 1998. Most of the Guatemalan population buys and cooks pork that comes from swine clandestinely slaughtered in abattoirs where there is no veterinary control. Bovine vesicular stomatitis is endemic, and the New Jersey serotype is identified most often. The country has remained free of foot-and-mouth disease, but surveillance by the Ministry of Agriculture has been reduced.

HIV/AIDS

In 1984, the Ministry of Public Health and Social Welfare reported the first case of AIDS in Guatemala. Since then, the epidemic has been concentrated in urban populations and groups traditionally regarded as being at high risk. As of 30 June 2001, a total of 4,197 cases had been reported officially (35.9 per 100,000 population), and underregistration is believed to be as high as 50%. Seventy-four percent of the affected individuals are males; the 15–49 years age group is most vulnerable, accounting for 87% of the cases, followed by those over 50, with 8%. In 1986, the male-female ratio was 6.5:1, but by 2000 the ratio had declined to 2.1:1. As of 1999, there were 141 known cases of mother-to-child transmission. A total of 266 cases of AIDS were reported in 1999 and 316 in 2000. About 50% of the cases occurred in the two poorest strata of the population (Figure 5). As of June 2001, the department of Guatemala had reported 51% of all cases in the country (80.1 per 100,000 population); Quetzaltenango, with 8%, was in second place (49.3 per 100,000); Escuintla and Suchitepéquez followed with 6% each (47.4 and 63.7 per 100,000 population, respectively); and Izabal was in fifth place with 5% (66.4 per 100,000). The most frequent routes of transmission

from 1984 until 1999 were sexual (93.5%), vertical (4.1%), and via blood (2%).

In 1998, the seroprevalence of HIV reported by the Army health service was 0.3 per 100,000, a figure similar to that found in the rest of the population. The last study conducted in recruits, carried out in 1994, showed a seroprevalence of 0.5%. In 1998, the results of seroprevalence studies in sex workers were as follows: 4.7% in Guatemala City (based on 470 samples); 11.1% in Puerto Barrios (117 samples) and 8.7% in Morales (46 samples) in the department of Izabal; and 2.4% in Escuintla (204 samples). In 1996, 33.8% of 3,422 tuberculosis patients undergoing treatment (1,149 individuals) agreed to submit to HIV testing, and 5.5% (63 cases) turned out to be seropositive. In 1998, the seroprevalence of HIV in tuberculosis patients in Quetzaltenango was 9.8%. There is no information about HIV/AIDS infection in ethnic groups, although cases of AIDS have been reported in the Mayan people. According to 1998 data from the National AIDS Program, the seroprevalence levels at blood banks in five health care centers have been lower than 0.5%.

Sexually Transmitted Infections

There were 513 reported cases of syphilis in 1999 and 355 in 2000. A total of 10,681 cases of urethritis/vaginal secretion were reported in 1999, and the year 2000 saw a slight increase, to 11,487 cases.

Nutritional and Metabolic Diseases

The availability of food is limited, because total absolute increases in food production are not large enough to keep pace with the growth of the population. Indeed, per capita output has remained static, which translates into an average deficit per capita of 200 kcal/day. Forty-six percent of children under 5 years old have some degree of chronic protein-energy malnutrition (height-for-age indicator), and among those under 3 years old, 50.3% suffer from chronic nutritional deficiency. The prevalence of global malnutrition (as measured by weight-for-age) is 24% in children under 5 years of age and 26% in those under 3 years. With chronic malnutrition, or stunting (low height-for-age) in children under 5, a comparison of prevalence rates for 1987, 1995, and 1999 indicates a downward trend. However, the urban-rural gap did not show any improvement: the rates in 1987 were 47% for urban areas and 62% for rural areas; in 1995, the respective figures were 35% and 57%; and in 1999, they were 32% and 54%. In those same years, the gap in terms of ethnicity actually widened: in 1987, the rates were 71.7% among indigenous groups and 48.2% in the rest of the population; in 1995, they were 67.8% and 36.7%; and in 1998 and 1999, they were 67.3% and 34.1%. The situation remained unchanged for indigenous groups between 1995 and 1998–1999. Vitamin A deficiency (serum retinol ≤20 m/dL) affected 15% of preschool children. Measures were taken to provide supplements and fortify sugar with vitamin A. Iron deficiency (Hb ≤12 g/dL) affected 35.4% of women of reproductive age, 39.1% of pregnant women, and 34.9% of non-pregnant women. At the extreme ages of the reproductive cycle, the anemia problem is greater, and it is especially acute in adolescent girls between ages 15 and 19 (43.2%). The prevalence of anemia (Hb ≤11 g/dL) in children 1–5 years old was 26%.

Malignant Neoplasms

Cancers of the reproductive system account for 42% of all neoplasms in both sexes. According to SIGSA data, in 1999 there were 452 cases of cervical cancer and 240 deaths. Of 214,832 exfoliative cytology examinations, 2,571 (1.2%) were positive. Fifty-five percent of these examinations were performed by the nongovernmental organization APROFAM, 17% by IGSS, 17% by the Ministry of Public Health, and 11% by the National Cancer Institute. Breast cancer is the third leading cancer and the second most frequent site for women.

Accidents and Violence

In 1999, a total of 2,741 deaths were caused by accidents (5.1% of all deaths), with a mortality rate of 16 per 100,000 population. There were 384 suicides (0.7% of all deaths) and 1,774 homicides (3.3%). With the current registration system, it is not possible to know the type of accident or its cause.

Mental and Behavioral Disorders

Studies of morbidity based on mental health care provided in the health areas show that the most important reasons for consultation were depression (29%), psychosis (16.4%), somatotrophic dysfunction (14.5%), anxiety disorders (12.3%), and epilepsy (11.4%). Qualitative studies examined the effects of the political violence that the country experienced for more than three decades and demonstrated that there was a corresponding increase in psychological disorders and other psychosocial problems.

Emerging and Re-emerging Diseases

Five cases of leptospirosis were documented in 2000, representing a reduction of 29% relative to 1999, when there were seven cases. Positive laboratory samples were submitted from the Guatemala, Escuintla, Izabal, and Zacapa health areas (16% of the total). It was not possible to determine the serovar of the leptospira. The cases diagnosed in 2000 were detected not through regular laboratory surveillance but rather through an outbreak of hemorrhagic dengue, when samples negative for dengue were tested for leptospirosis.

In 2000, 126 cases of meningitis, 4 of them meningococcal, were reported from 14 health areas. Children under 5 years old accounted for 68% of the cases. A meningitis outbreak occurred in a nursery of newborns at one of the hospitals, and the agent *Serratia marcescens* was isolated. During 1998–2000, an average of 140 cases were reported each year in the country as a whole.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Constitution of the Republic recognizes health as a fundamental right and a public good to be safeguarded by all persons and institutions in the country. Health is defined as consisting of the following components: services to individuals; environmental protection; community participation; production and distribution of food, medicines, and chemical products; and interinstitutional coordination. In addition, it dictates that social security is a public function, which is national in scope, unitary, and compulsory. The Peace Agreement constitutes another public policy instrument that supports health sector reform and extended coverage.

The Health Code approved in November 1997 stipulates that the Ministry of Public Health and Social Welfare is formally responsible for leadership of the health sector. As defined in the Code, leadership includes the guidance, regulation, surveillance, coordination, and evaluation of health actions and institutions at the national level. This definition constitutes the legal basis for a sectoral reform that has the capacity to transcend the public institutions. The Code also obligates the Ministry to provide free health care to persons without means and requires nongovernmental organizations to participate in delivering publicly financed services within the legal framework of coverage extended to neglected communities.

The Ministry's policy to broaden its coverage entails implementation of the Integrated Health Care System. The instrument Health Policies 2000–2004 calls for development of the following: (a) integrated health care for families; (b) health care for the Mayan, Garifuna, and Xinka peoples, with emphasis on women; (c) health care for the migrant population and strengthening of integrated health care for other groups; (d) broader basic health service coverage with quality and sustainability; (e) basic and environmental sanitation; (f) access to essential drugs and traditional medicine; (g) strategic distribution of human resources; (h) institutional development, deconcentration, and decentralization; (i) intra- and intersectoral coordination; (j) improvement and optimization of external cooperation; and (k) expansion of health sector financing.

Health Sector Reform Strategies and Programs

The National Health Plan 2000–2004 stipulates that the overall objective of health sector reform is comprehensive transformation of the social health production model, including improvement of the efficiency and equity of service delivery. In addition, it has the following specific objectives: (a) extension of basic health service coverage with emphasis on the poorest segments of the population; (b) increased public expenditure on health and mobilization of financial resources to ensure sustainability of the sector; (c) redirection of resource allocation; (d) increased efficiency of the public sector in the performance of its functions and the production of services; and (e) generation of an organized social response, with a broad base of social and community participation. Emphasis is placed on the organization of publicly financed services to extend coverage to the rural population that currently has no access to health care. In 1996, the population without health service coverage was estimated at 46%; between 1997 and 2000, coverage was increased to include an additional 35% of the total population. The strategy used was based on a partnership between the Government, represented by the Ministry, and nongovernmental organizations: the former set the standards and allocated the funds, and the latter contributed the trained personnel and infrastructure. This initiative required the definition of a basic package of services. Two operational profiles were involved, and in both cases activities were executed with public funds made available for the purpose: health service providers, which used the monies to directly deliver health care services, and health service administrators, which received budgetary allocations to expand coverage in public health establishments. During 1996–1999, the reform led to the creation of new windows of opportunity and new relationships between the State and civil society, thus strengthening the integration of communities into the social health production process. Decentralization of the Ministry's budget was initiated in 1997, and the head offices in the health areas were authorized to handle their own financial resources. The Ministry and IGSS signed an agreement in 1997 to collaborate on expanding health services coverage and improving the quality of care.

An agreement to create national councils for the management of liquid and solid waste provided the legal bases for strengthening interventions in environmental sanitation. Specifically, it spelled out the scope of authority and responsibilities for basic rural sanitation to be assumed by the National Institute of Municipal Development, which also took on the Ministry's commitments to externally funded projects in this area. The main problems that confront this sector are: (a) an inadequate institutional framework and a confusing array of policies and planning mechanisms; (b) limited technical and administrative capacity on the part of service providers, along with deficient project execution; (c) lack of sustainability of the services because of inadequate fee-for-service rates; and (d) limited participation on the part of users, which affects their willingness to pay for services.

The Health System

Institutional Organization

The health system is composed of three large sectors: private for-profit, private nonprofit, and public. The framework of health sector reform has set the stage for these sectors, which in the past have functioned independently, to cooperate in new ways. Heading up the public sector is the Ministry of Public Health and

Social Welfare, which, as pointed out earlier, is responsible for leadership of the sector and is also one of the main direct providers of services to the open population. Other public providers take care of specific groups that serve the State, including the health services of the armed forces and the national police. IGSS has its own service network, which covers workers affiliated with its regime, especially in the capital and the country's southern coast. It is an autonomous institution, financed with compulsory contributions from workers and their employers. The private nonprofit sector consists of some 1,100 nongovernmental organizations, 82% of them national; of those, 18% carry out preventive health activities (80%) and provide clinical services (20%). The departments with the largest presence of nongovernmental organizations in the health area are Sololá, Chimaltenango, Alta Verapaz, Quiché, Totonicapán, San Marcos, and Chimaltenango, all of which have a high concentration of indigenous and rural population. The private for-profit sector provides services through insurance programs, prepaid medical services, medical or hospital centers, clinics, and private establishments, located in the capital and other major centers in the interior. Most of the services are concentrated in the capital, and they are financed mainly by direct payments from the users. Public services have been deconcentrated and are offered through departmental directorates in direct line of authority, which are responsible for budgetary management under a system of revolving funds. The present Government (2000–2004) is promoting decentralization of public administration through the transfer of authority to municipal governments, but as yet there is no legal, methodological, or instrumental framework in place to support this process.

Developments in Health Legislation

The purpose of Guatemala's health legislation is to ensure the viability and implementation of health sector reform. The National Health Council advises the Government and the Ministry on health matters and regulates the operations of the health services and their infrastructure—specifically, the development and utilization of human resources and the health care networks, with high priority given to health promotion and protection. Some of the significant legal measures enacted so far include: a law to prevent, punish, and eradicate domestic violence; antismoking provisions in reforms to the Health Code (the Ministry is currently working on the enabling legislation); establishment in 1997 of the Program for Access to Drugs (PROAM), which provides for state and municipal pharmacies and other points of sale for drugs (the Ministry has agreed to provide drugs to rural dispensaries run by health promoters); a law on the accessibility of drugs; and a general law to combat HIV, which seeks, inter alia, to strengthen aspects related to the human rights of HIV-positive individuals and patients with AIDS.

Domestic violence is the subject of commitments assumed by the State, which have been translated into the following concrete measures: (a) a law and corresponding enabling regulations aimed at preventing, punishing, and eradicating family violence; (b) creation of the National Women's Forum and Office for the Protection of Indigenous Women; (c) establishment of the Women's Secretariat under the Presidency; (d) creation of the National Coordination for the Prevention of Domestic Violence; (e) development of a basic information sheet on domestic violence (Ministry of Public Health and Social Welfare), which all institutions are required by law to follow; (f) starting in 1999, establishment of a separate heading in the monthly information received from the SIGSA services for reported cases of family violence, categorized by age and sex; and (g) Critical Path studies of the care given to women who are victims of domestic violence.

Organization of Regulatory Actions

The regulatory role of the Ministry in the private sector is especially important in ensuring the quality control, efficacy, and safety of drugs and related products. The Department for the Regulation and Control of Drugs and Related Products was created within the Ministry to enable it to exercise control in this area, and the Department is supported, in turn, by the National Health Laboratory, where physical, chemical, and microbiological analyses are performed. A technical audit of the pharmaceutical industry in 2000 revealed that only 30% of the laboratories were in compliance with Good Manufacturing Practices. In 1999, the Ministries of Health and Agriculture jointly approved a regulation to guarantee food safety.

The College of Physicians and Surgeons certifies the qualifications of medical professionals at the time they graduate, but they must be further certified as members of the College in order to practice. There is no recertification process that evaluates the technical competence of professionals.

Organization of Public Health Care Services

Health Promotion and Disease Prevention

The services under this heading are health promotion, which includes healthy environments (municipalities, schools, and others) and social communication; disease prevention and control programs; and health systems analysis, epidemiological surveillance, and public health laboratory systems.

Potable Water, Excreta Disposal, and Sewerage Services

The information available on potable water and sewerage services as of 1995 showed that water supply coverage reached 92% of the population in urban areas and 54% in rural areas, while sanitation coverage was 72% and 52%, respectively. The metropolitan area has 16 residual water treatment plants, but only 4 of them are actually in operation. Of the remaining 329 municipalities, 286 have sewerage systems, but only 15 have

water treatment plants; the rest release untreated wastewater into bodies of water, which means that about 4 million inhabitants are without access to potable water and approximately 4.2 million do not have the benefit of any form of wastewater treatment.

Solid Waste Services and Pollution Prevention and Control

In urban areas, 47% of the population dispose of solid waste through collection services, 29% burn or bury it, and 25% have no way to dispose of their refuse. In rural areas, only 4% of the people have access to collection service, 50% burn or bury their waste, and 46% have no means of disposing of it. The refuse collected in both urban and rural areas is deposited in landfills and receives no further treatment.

Standards have been set for imported lead-free gasoline (maximum 0.13 g of lead/L).

Organization of Individual Health Care Services

Ambulatory, Emergency, and Inpatient Services

In 1999, the Ministry of Public Health and Social Welfare had 1,352 health establishments, 43 of which were hospitals (17 at the department level, 10 at the district level, 7 regional, 6 specialized, and 3 general hospitals that receive referrals). There were 29 type A health centers, 234 type B health centers, 973 health posts, 48 peripheral emergency centers, and 15 maternity centers at the canton level. There is a heavy concentration of resources in the metropolitan area, with a bed-population ratio of 2.1 per 1,000 inhabitants, compared with a national average of 1.0. In some departments of the western highlands, this rate is 0.04 per 1,000 population. The Ministry has 5,094 beds throughout the country, distributed as follows: 1,704 for general medicine, 897 for pediatrics, 1,115 for surgery, 898 for maternity, and 480 for medical specialties. In seven of the health areas, more than one-third of the users have to travel an average of 12 km or for more than two hours to reach the nearest service. It is estimated that 30% of the primary-level establishments need reconstruction and replacement of their equipment.

IGSS has 24 hospitals, 30 consultation offices, 18 primary care posts, and 5 services attached to national hospitals; 6 of the hospitals and 11 of the consultation offices are located in the department of Guatemala. There are 2,447 available beds, for a ratio of 1.4 per 1,000 beneficiaries.

Specialized Services

The Ministry does not offer many health services that specifically target the elderly, but steps have been taken to organize the Integrated Health Care Program for Older Adults. So far, the response of the State and society on behalf of this age group has been weak. A law on the subject was passed in 1996, but it could not be implemented, and work is now under way on revised legislation and preparation of the enabling regulations. IGSS provides care for its retirees nationwide through the Integrated Medical Care Center for this population.

The basic objectives of the National Mental Health Program call for mental health services to be decentralized and incorporated into primary health care. As of 2000, services were being provided in 10 of the country's departments and 14 health centers in the capital, whereas before almost all of them were concentrated in the capital and at the hospital level. That year, the Ministry provided 72,559 outpatient psychiatric and psychological consultations. Of this total, 28% of the consultations were provided at primary health care centers. There is a 360-bed Public Psychiatric Hospital in Guatemala City, and six other national hospitals have mental health units. IGSS has a 30-bed psychiatric unit and is working on creating a mental health program. At the end of 2000, there were 60 psychiatrists working at the national level in the public sector (Ministry and IGSS).

Health Supplies

Drugs are sold through a network of public and private pharmacies: in the public sector, there are 32 state pharmacies, 50 municipal dispensaries, 423 social dispensaries, and 761 rural dispensaries; in the private sector, there are 2,039 pharmacies and 382 dispensaries. The country has 1,200 pharmacists and 1,400 pharmacy technicians. There are 85 national and 2 foreign laboratories that manufacture drugs, plus 4 quality-control laboratories, 1 official and 3 private. In 1999, the Ministry spent US$ 17,073,649 on drugs, IGSS spent US$ 24,000,000, and the private sector spent US$ 129,803,326. In 1997, a system was established for the joint negotiation of drug purchase prices with participation by the Ministry, IGSS, and the Military Medical Center. These price agreements enabled the Ministry to reduce its budgetary allocation for drugs by 65%, and IGSS was able to cut back by 23%. There is some overlap in terms of population coverage. The nongovernmental organizations and the Ministry serve the open population with no exclusions. Exclusions apply in the case of private providers (those who can pay receive the service) and IGSS (its subscribers and their qualifying dependents receive the service). In a 1998 survey of 84 services, at the time of the visit 34 of them (42.5%) had in stock more than 80% of the drugs on the list being tracked, while the stocks in the remaining 50 services ranged between 70% and 79%.

Human Resources

Availability by Type of Resource

The ratio of physicians to total population is 9 per 10,000, and in the year 2000, no more than 200 new professionals graduated from state and private universities. For every 3 physicians there is only 1 professional nurse; for each professional nurse there are 14 nursing auxiliaries. Of the 21,996 persons employed by the

Ministry, 92% hold budgeted positions, 5% are temporary personnel without regular posts, and 3% are contracted on a short-term basis. In 1996, the Integrated Health Care System launched a campaign to enlist community personnel, including more than 11,500 health guardians, 1,972 traditional birth attendants, and 604 community facilitators. Health human resources tend to be concentrated in urban areas: the ratio of urban to rural physicians is 4:1, and for professional nurses it is 3:2. Of the 1,225 physicians who work for the Ministry, 46% are located in the metropolitan area and 54% are in the remaining 21 departments. This distribution is at odds with the distribution of the population, 65% of which is located in rural areas, where the people are attended at the primary level by traveling physicians, rural health technicians, nursing auxiliaries, midwives, community facilitators, and health guardians. Most health professionals work in hospitals (71%).

Of the 10,700 persons employed by IGSS, 15% are physicians; 37% belong to other health professional and technical categories and have a primarily curative orientation; and the remaining 48% are administrative staff. The distribution of nurses is similar to that of physicians. All the health areas in the country have a professional who performs the duties of epidemiologist, with varying degrees of preparation or training.

Training

Guatemala has 80 specialists in public health with a master's degree—a small number compared with the need. This situation is expected to improve now that there are two new master's degree programs in public health: one has been offered by San Carlos University since 1995, and one started at Rafael Landívar University in 1999, which specializes in epidemiology and management. There are 450 young Guatemalans studying family medicine in Cuba. Under the regulatory guidance of the National Office of Nursing Auxiliary Resources and Methods, 5 national schools train nursing auxiliaries for public service and 25 private schools also prepare nursing auxiliaries, turning out 800 graduates a year. Technical personnel in the fields of diagnostic radiology, clinical laboratory, environmental health, rural health, exfoliative cytology, and physical therapy have been trained in schools under the aegis of the Ministry, but their numbers remain insufficient.

Health Sector Expenditure and Financing

In 1999, health expenditure represented 2.8% of GDP. Households were the most important source of health financing (42.9%), followed by the Government (27.3%), businesses (22%), and external cooperation (7.8%). The role of private nongovernmental entities is increasing slightly. The National Survey of Household Income and Expenditure 1998–1999 showed that spending on health came to a monthly total of US$ 45 million and represented an average of 6.4% of monthly income. The annual amount spent on health came to US$ 630 million. ENIGFAM found that 31.7% of household spending on health went for the purchase of drugs, 16% for outpatient medical services, and 10% for hospital services. The single largest expenditure corresponded to contributions to IGSS from 25% of the economically active population, which accounted for 38% of all household spending on health. Private insurance amounted to only 0.4% of the total. Households with incomes in the top 10% accounted for 30% of all household expenditure on health, and this group was responsible for almost all the expenditure on private insurance, 42% of spending on medical devices, 39% of the amount that went for hospital services, and 38% of the monies spent on outpatient care. There were differences between the highest- and lowest-income populations in terms of spending patterns: the latter mainly resorted to self-medication, as reflected in the fact that 40% of their expenditure went for medical and pharmaceutical products. Of the expenditure corresponding to IGSS, 40% of the lowest-income households contributed only 6%, whereas the highest-income decile accounted for 30% of the monies paid to IGSS and 90% of the spending on private insurance.

External Technical Cooperation and Financing

In the last five years, Guatemala's technical and financial cooperation amounted to US$ 2,386.6 million. Of this total, 37.3% corresponded to nonreimbursable cooperation and 62.7% of it was reimbursable; 75.2% was intended to support the peace process, 21.7% was for other programs, and 3.1% was allocated for the Hurricane Mitch Reconstruction and Transformation Program. The total amount disbursed during the five years came to more than US$ 1,600 million, of which 55.3% corresponded to reimbursable and 44.7% to nonreimbursable cooperation. More than 59% of these disbursements went for the peace process. Disbursements showed a rising trend during the five-year period, with corresponding improvements in project execution. In its National Plan 2000–2004, the Ministry of Public Health and Social Welfare called for the improvement and optimization of external cooperation, establishing 12 coordinating committees representing actors from the political, technical, and operational areas of the health field in as many departments. At the international level, the country has helped to promote the process of Central American integration in health.

During the five-year period, the Government gave priority to Technical Cooperation among Countries (TCC), with special emphasis on cooperation with Cuba, which sent 488 health professionals, mainly physicians, to provide primary care in some of the most remote communities of Guatemala. TCC projects are being carried out in a variety of areas, including transfusional medicine and blood banks (with El Salvador); water supply and sanitation in indigenous communities (with El Salvador and Panama); water-quality monitoring (with Ecuador); and 10 joint projects

with El Salvador, Honduras, Belize, Panama, Costa Rica, and Cuba on measles eradication, food safety, rabies prevention and control in municipalities near the Belize–Guatemala border, a water supply and sanitation information system, nutritional food security, sharing of experiences in HIV prevention and control, strengthening of epidemiological surveillance, approaches to combating emerging and reemerging diseases, and domestic violence. In addition, projects funded by DFID, SIDA, USAID, and other international agencies are in progress. Guatemala has promoted meetings of the Central American Northern Triangle countries and subscribes to the Declaration of Esquipulas, "Integration for the 21st Century." Guatemala has adopted the Mesoamerican Cooperation Program 2000–2001, and this commitment will be renewed every two years.

FIGURE 1. Gross domestic product, annual growth (%), Guatemala, 1991–2000.

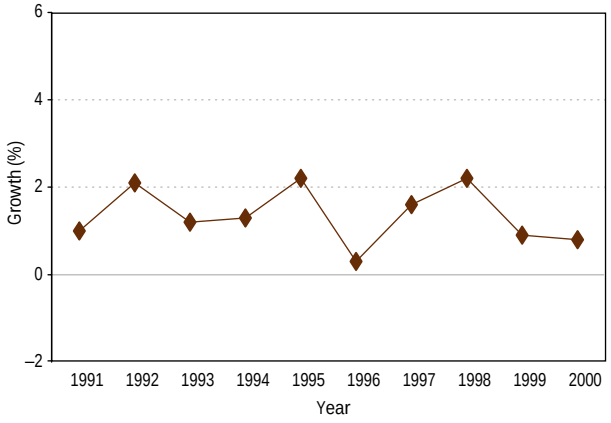


FIGURE 2. Population structure, by age and sex, Guatemala, 2000.

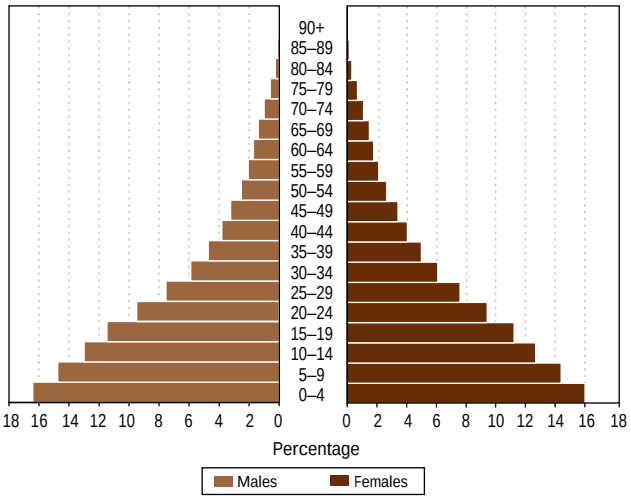


FIGURE 3. Infant mortality trend, Guatemala, 1986–2000.

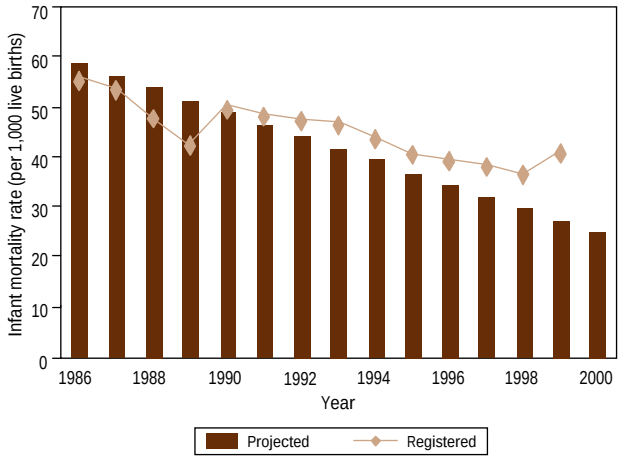


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage for women of childbearing age, Guatemala, 2000.

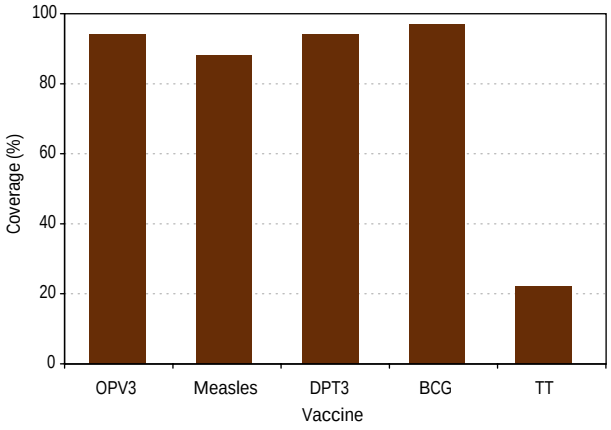
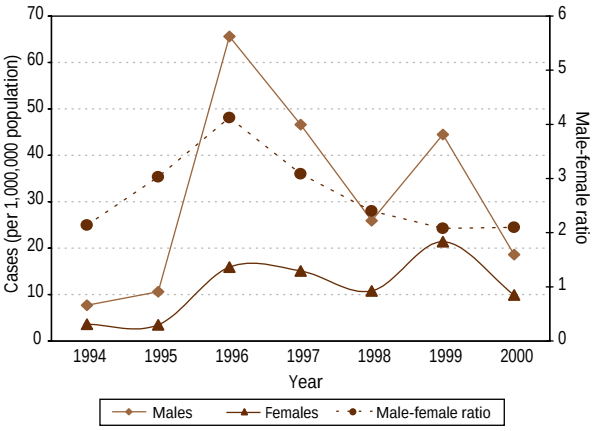


FIGURE 5. AIDS incidence by sex, with male-female ratio, Guatemala, 1994–2000.



GUYANA

OVERVIEW

Guyana, with an area of 215,000 km^2, is located along the northeastern coast of South America. A former British territory, Guyana gained independence in 1966 and became a republic in 1970.

The country is divided into 10 administrative regions, with Regional Democratic Councils responsible for the delivery of services to their catchment populations. Guyana is rich in natural resources; its economy is based mainly on agriculture (primarily sugar and rice), gold, bauxite, and timber.

The last population census was conducted in 1991. The estimated mid-year population in 2000 was 743,004 persons (Figure 1), a decrease of 32,133 from the 1997 mid-year estimate of 775,137. Migration has played an important role in the decline of the population. The Bureau of Statistics indicates that there were 16,316 emigrants in 1997, 15,292 in 1998, and 12,164 in 1999. Approximately 9% of the population were under 5 years of age, 30% were under 15 years of age, and 6.7% were over 60 years of age. Females accounted for some 51% of the total population, and for 53% of the population over age 60.

Data from the 1999 Guyana Survey of Living Conditions showed that East Indians accounted for 48% of the population, or a total of 347,769 persons. The next largest ethnic group was Negro/Black, accounting for 27% of the population; Amerindians were estimated to comprise 6.3% of the population.

Approximately 30% of the population live in urban areas, and of the 70% that live in rural areas, 61% live in coastal areas. The rural interior is very sparsely populated. Based on the 1992–1993 Living Standards Measurement Survey and the 1999 Survey of Living Conditions, the trend has been towards decreasing urbanization. This may be due to the fact that natural resource–based activities are the leading sources of employment and income generation.

The Survey of Living Conditions estimated a total of 173,861 households in Guyana in 1999, with an average of 4.2 occupants. Approximately 31% of heads of household were self-employed and 38% were involved in manual labor. The economically inactive population was estimated at 7%. However, almost 50% of the country's workforce was not gainfully employed.

Adult literacy was 98%, with no significant gender difference. Primary school net enrollment for the period 1997–1998 was 95%; secondary school net enrollment was 68%. The enrollment rate for males at the secondary level was 67%, and for females was 69%.

GDP per capita in 1999 was US$ 800. Overall, Guyana experienced positive economic growth from 1991 to 2000, despite negative growth in 1998 and weaker positive growth at the end of the decade (Figure 2). Economic setbacks have been attributed to several factors, including El Niño (which caused drought in some parts of the country and adversely affected agricultural output), and reduced commodity prices on international markets.

Guyana has high levels of external and domestic debt. Although the external debt has been declining due to debt forgiveness, in 1999 it was US$ 1.4 billion. The rate of inflation increased from 4.1% in 1997, to 4.8% in 1998 and 7.4% in 1999.

According to the Survey of Living Conditions, 36% of the population live in absolute poverty (less than US$ 510 per year or US$ 1.40 per day) and 19% live in critical poverty (less than US$ 364 per year or US$ 1 per day). This is a reduction from the absolute (43%) and critical (28%) poverty levels reported in the 1992–1993 Living Standards Measurement Survey. In rural interior areas, 78% of the population live in absolute poverty and 71% live in critical poverty, and in rural coastal areas, 40% live in absolute poverty and 18% live in critical poverty. Levels of absolute poverty in urban Georgetown and other urban areas declined in comparison to the 1992–1993 survey; the number of persons living in critical poverty also declined.

In 1997, Guyana was approved by the IMF and World Bank for debt relief under the Highly Indebted Poor Countries Initiative (HIPC). Under this arrangement, Guyana will receive debt relief of approximately US$ 329 million (net present value), or an annual average of some US$ 30 million for 20 years. The funds released through debt relief have allowed for reallocation of public spending towards health, education, and poverty alleviation. Some of the objectives for the health sector include increasing spending on drugs, maintenance, and primary health care; implementing selective user fees; reorganizing the institutional structure of the Ministry of Health; and reforming the health care delivery system.

The National Development Strategy, which was drafted in 1996 and provides the framework for development for the period 2001–2010, was revised in 2000. The Strategy's objectives are to attain the highest economic growth rates possible; eliminate poverty; achieve geographical unity; achieve equitable geographical distribution of economic activity; and to diversify the economy. One of the Strategy's pillars is the reform of public sector institutions, and the intensification of the public service reform process that began in 1990. As part of this reform, two pilot agencies—the ministries of Health and Education—moved from line item budgeting to program budgeting in fiscal year 1997. Program budgeting is used to effectively allocate resources in the Ministry of Health's eight programs.

The crude birth rate declined from 26.1 per 1,000 population in 1997, to 24.1 in 1998 and 23.2 in 1999. The crude death rate remained nearly constant, at 6.8 per 1,000 population in 1997, 6.5 in 1998, and 6.6 in 1999. Life expectancy at birth also remained steady, at 64.4 years in 1997, 64.8 in 1998, and 64.4 in 1999. In 1998, life expectancy at birth was estimated at 61.5 years for males and 68.2 years for females.

Mortality

There were 5,616 registered deaths in 1997, 5,302 in 1998, and 5,102 in 1999. The male-female mortality ratio in 1999 was approximately 1.47. Most deaths (18%) were in the 75 years and older age group; 16% were in the 65–74 years age group, and 14% were in the 55–64 years age group. Children under 5 years of age accounted for 9.5% of deaths, with 71% of these being children under 1 year. Of the total deaths in 1999, 99% were from defined causes.

Mortality rates by broad groups of causes and sex for 1995–2000 are shown in Figure 3. During the period 1997–1999, diseases of the circulatory system accounted for 34% of deaths, communicable diseases for 18%, external causes for 13%, and neoplasms for 7.9%. The leading causes of mortality were cerebrovascular disease (12%), ischemic heart disease (10%), AIDS (7.0%), undetermined injury (6.6%), diabetes mellitus (6.2%), acute respiratory infections (6.0%), diseases of pulmonary circulation (6.0%), hypertensive disease (4.8%), intestinal infections (3.4%), and chronic liver disease (2.8%). Mortality data show the predominance of chronic noncommunicable diseases, the continuing importance of such communicable diseases as acute respiratory infections, and the increasing burden of injury and AIDS.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Children under 5 years old accounted for 9.3% of the population in 2000. There were an estimated 19,830 live births in 1997, 19,118 in 1998, and 17,093 in 1999. Trained health personnel attended over 92% of these births, and approximately 90% took place in government hospitals and health centers. The percentage of low birthweight newborns was 15% in 1997 and 14% in 1998.

The infant mortality rate was estimated at 26 deaths per 1,000 live births in 1997 and 23 per 1,000 live births in 1998. The neonatal mortality rate for the period 1997–1999 was 13, 16, and 13 deaths per 1,000 live births for each respective year.

In 1999, there were 280 deaths among children under 1 year, compared with 506 in 1997 and 422 in 1998. For the period 1997–1999, hypoxia (22%), intestinal infections (18%), other perinatal conditions (13%), acute respiratory infections (11%), and congenital anomalies (9.8%) were the leading causes of mortality.

There were 124 deaths among children age 1–4 years in 1997, 105 deaths in 1998, and 116 deaths in 1999. Infections and trauma were important factors in mortality in this age group. The leading causes of death during the period 1997–1999 were intestinal infectious diseases (21%), acute respiratory infections (17%), undetermined injury (13%), congenital anomalies (6.7%), and nutritional deficiencies (4.6%).

In 1999, the main reasons for infant visits to outpatient clinics at hospitals and health centers were acute respiratory infections (56%). Skin disorders (8.5%) and scabies (4.8%) were other important conditions. Among 1–4-year-olds, acute respiratory infections (42%), worms (13%), skin conditions (8.0%), and accidents (5.5%) were the main reasons for attending outpatient clinics.

Of the 47,287 children under 2 years of age who enrolled at clinics in 1999, at least once during the year, 14% were assessed as moderately malnourished and 0.6% as severely malnourished. The prevalence of moderate malnutrition was slightly lower in the 0–11 months age group (12%) than in the 12–23 months age group (15%). Only 0.8% in the 0–11 months age group and 0.4% in the 12–23 months age group were severely malnourished.

Schoolchildren (5–9 years)

Children age 5–9 years accounted for 12% of the population in 1999 and 9.3% in 2000. There were 38 deaths in this age group in 1999. Ten deaths were due to external causes, of which four were due to motor vehicle accidents and four to undetermined injuries. Nine deaths were due to communicable diseases, of which six were due to intestinal infections. There were five deaths due to neoplasms.

Weight and height measurements of 246 children in this age group were recorded in the 1997 National Micronutrient Survey. The survey revealed that 8.0% of the children were stunted, 8.5% were underweight, and 2.8% were overweight.

Adolescents (10–14 and 15–19 years)

Adolescents age 10–14 years accounted for 11% of the population in 1999 and 2000. There were 445 deaths in this age group in

1999. Sixteen deaths were due to external causes, of which motor vehicle accidents accounted for four, and suicides, homicides, and undetermined injury accounted for three each.

The 1997 National Micronutrient Survey showed that 18% of the 196 adolescents age 10–14 years surveyed were underweight and 5.1% were overweight. More females (6.9%) were overweight than males (3.2%).

In 2000, 15–19-year-olds accounted for 10% of the population. The 1999 Physical Activity Survey of 279 adolescents age 15–19 years from seven regions revealed that 11% were underweight and 13% were overweight. It also found that females (17%) were more likely to be overweight than males (7.8%).

In 1998, 22% of births were to girls age 15–19 years. In 1999, this age group accounted for 24% of births, with 3% of births to girls under 16 years. Twelve percent of females attending government family planning clinics in 1999 were under age 20.

In 1999, among girls age 15–19, the leading causes of death were suicides (18%) and AIDS (13%). There were also three deaths each to undetermined injury, motor vehicle accidents, and diabetes. Among males in this age group, the leading causes of death were injury (26%), suicide (22%), and motor vehicle accidents (14%).

The Guyana Adolescent Health Survey was conducted in 1998 among 1,396 secondary school students age 10–18 years. These findings cannot be extrapolated to the entire adolescent population. Approximately 60% of the students surveyed indicated that their parents were living together. Eight percent reported that they frequently go hungry from lack of food at home. By age 15, 90% of respondents had had sex. Of the sexually active, 48% never use contraceptives. Among the contraceptive users, at the last intercourse, 40% did not use a contraceptive, 50% used a condom, and 10% used the withdrawal or rhythm method. Nineteen percent of the respondents reported that they had been physically or sexually abused.

Most adolescents (96%) reported being in good, excellent, or fair health. However, 22% never actively exercised, 61% never had a physical examination, and 48% never visited the dentist. The majority (86%) reported that they were happy. However, 13% had attempted suicide once, and 3% reported that they had attempted suicide more than once. The protective factors identified by the survey were parental love, parental communication, and school connectedness.

The school-based Global Youth Tobacco Survey was conducted in 2000 among children age 11–16 years. The survey showed that 30% had ever smoked, and 17% were current users of tobacco products. Approximately 66% think that smoke from others is harmful to them, and 75% think that smoking should be banned from public places.

Adults (20–59 years)

In 1999, there were 1,813 deaths among the population age 20–59 years. Of these, 22% were due to external causes, 20% to diseases of the circulatory system, and 8.9% to communicable diseases (excluding AIDS). AIDS was the leading cause of death, accounting for 15% of deaths in this age group. Undetermined injuries and suicides were responsible for 7.3% and 7.1% of deaths, respectively.

Physical Activity Survey data on 1,171 adults age 20–59 years from seven regions revealed that 28% were overweight (BMI 25–29 kg/m^2) and 23% were obese (BMI >30 kg/m^2). The proportion of overweight/obese people increased with age, with a rate of 33% in the 20–29 years age group, 55% in the 30–39 years age group, 65% in the 40–49 years age group, and 68% in the 50–59 years age group. In all age groups, females had higher levels of overweight/obesity than males.

The same study indicated that 6.6% of respondents reported that they were suffering from diabetes, with prevalence increasing with age, from 1.0% in the 20–29 years age group up to 18% in the 50–59 years age group. A higher proportion of males (8.1%) reported diabetes than females (5.8%). In addition, 14% reported they were suffering from hypertension, which also increased with age. Overweight/obese persons (19%) were more likely to report high blood pressure than those with normal weight (8.6%). The survey also found that 19% had done planned exercise in the week prior to study, 44% consumed alcoholic drinks, and 15% were smokers; more males than females drank alcohol and were smokers.

Between 1997 and 1999, the total fertility rate was stable, at 2.0 children per woman of childbearing age. The maternal mortality rate was 125 deaths per 100,000 live births in 1998. During the period 1997–1999, 62 maternal deaths were reported, with the main causes being hemorrhage (27%), toxemia of pregnancy (21%), and abortion (18%).

In 1999, 82% of women's first prenatal visits occurred after the 12th week of pregnancy. Three percent of women tested for anemia had hemoglobin levels of less than 8 g/dL and 11% had levels of 8–9.9 g/dL; 43% of results were not known. Of the 2,177 women who were diagnosed as having high-risk conditions, 16% had high blood pressure, 10% had a positive VDRL, and 9.0% had pre-eclampsia.

In 1999, 12% of the 12,364 women attending government family planning clinics for the first time were under age 20 years, 71% were 20–34 years of age, and 17% were over 35 years of age. The main contraceptive methods used were oral pills (35%), condoms (33%), injections (18%), and intrauterine devices (4%).

The Elderly (60 years and older)

In 2000, there were an estimated 49,833 persons age 60 years and over, accounting for 5.7% of the population; 53% were female.

There were 1,759 deaths in the 60 years and older age group in 1999. Diseases of the circulatory system accounted for 48% of deaths, neoplasms for 11%, and communicable diseases for 9.3%. The leading causes of death were chronic noncommunica-

ble diseases, including cerebrovascular disease (15%), ischemic heart disease (15%), diabetes (9.7%), and hypertensive disease (9.2%).

The Physical Activity Survey of 147 adults age 60 years and older revealed that 33% were overweight and 22% were obese, with higher levels among women. The study also indicated that 22% reported that they were suffering from diabetes (26% of males and 20% of females). In addition, 43% had hypertension; overweight/obese persons (65%) were more likely to report high blood pressure than those with a lower BMI (32%). The survey also reported that 19% had done planned exercise in the week prior to the study, 25% consumed alcoholic drinks (41% of males and 13% of females), and 13% were smokers (28% of males and 2.3% of females).

In 1999, persons over age 65 accounted for 16,795 visits to hospital outpatient clinics. The main diagnoses for first visits were hypertension (25%), arthritis/rheumatism (10%), diabetes (8.0%), acute respiratory infections (9.6%), and accidents and injuries (4.8%).

Workers' Health

In 1999, 2,385 accidents were reported to the Occupational Safety and Health Division, including 2,370 non-fatal accidents, which have steadily declined from 3,335 in 1997. The number of fatal accidents ranged from 9 in 1997 to 15 in 1999. The majority of non-fatal accidents (85%) in 1999 occurred in the agriculture sector.

The Disabled

The number of persons with disabilities in Guyana is unknown. According to the Community Based Rehabilitation Project, which operates in six regions, there were 573 participants in the program in 2000. Of these, 135 were children under age 5 years; 107 participants had multiple disabilities. The leading causes of disability addressed in this project are related to movement and speech.

Indigenous and Other Special Groups

According to the National Development Strategy, the Amerindian population declined by 5.8% between 1993 and 1999. This group is the majority in many of the hinterland areas of the country, where they tend to live in geographical isolation. The largest group among the Amerindians are the Arawaks (or Lokonas), with approximately 15,000 persons, followed by the Makushi (with approximately 7,500 persons), the Wapishana, the Warau, the Akawaio, and the Patamona. The Survey of Living Conditions showed that 78% of Amerindians live in poverty. Some of the problems they face are malaria, diarrheal diseases, acute respiratory infections, teenage pregnancy, short child spacing, tuberculosis, dental caries, and inadequate access to health care.

Some 60% of malaria cases in the regions are found among the indigenous populations. Eight out of ten inhabitants in Region 2 habitually have malaria. Over a third (35%) of those who have the illness have not responded to the standard drug treatment, while an equal number had clinical symptoms of malaria three times or more during the average 12-month period. Worm infestation is endemic in most interior areas.

A study conducted in 1997 among the Patamona and Wapishana tribes showed that the prevalence of stunting increased with age, from 17% at age 7 years and older to 50% at age 13 years and older among the Wapishana tribe, and from 19% at age 7 years and older to 80% at age 13 years and older among the Patamona. However, by age 18, fewer than 1% of adults overall have a BMI of less than 18.5 kg/m^2, while 11% and 23% of adults among Patamona and Wapishana tribes, respectively, were overweight.

The ease of movement between Guyana and neighboring countries makes the border areas particularly vulnerable to disease outbreaks occurring in the other countries. In 1999, in response to an outbreak of yellow fever in neighboring countries, a campaign was launched to immunize the general population against the disease. Guyana and its neighbors cooperate on health issues, and hold border meetings to address common health issues.

By Type of Health Problem

Natural Disasters

Guyana suffered no major natural disasters since the 1995 flood. Nevertheless, disaster awareness and preparedness remain high. Several officers of the Civil Defence Commission (the agency responsible for disaster management in Guyana) and others have been trained in aspects of disaster management, such as mass casualty management and stress management in disasters.

Vector-borne Diseases

Malaria is a major public health problem in Guyana, and is the leading health problem in hinterland communities. *Plasmodium falciparum* is the main infectious agent. New cases represent over 90% of the cases detected each year. Approximately 90,000 cases were reported over the period 1997–2000; 10,000 fewer cases were reported in 2000 (28,267 new cases) than in 1997. An estimated 261,225 workdays were lost to malaria in 1998 and 136,415 workdays were lost in 1999.

Lymphatic filariasis is endemic in Guyana. A survey of schoolchildren 8–11 years old in seven regions, conducted by CAREC, showed that positive lymphatic filariasis rates for the coastal urban centers ranged from 20% to 32%. In non-coastal or largely rural communities, prevalence rates were 4.2% or less. The study also showed that although children have been exposed to filaria, none was symptomatic.

There were 34 reported cases of dengue fever in 1998, 6 in 1999, and 25 in 2000. Dengue types 1 and 2 were laboratory di-

agnosed during the period 1997–2000. However, no cases of dengue hemorrhagic fever or dengue shock syndrome have been reported.

There were 15 reported cases of leptospirosis during the period 1997–2000. No cases of yellow fever, Chagas' disease, or schistosomiasis were reported.

Diseases Preventable by Immunization

Guyana's immunization program has been very successful. Among children under 1 year of age, BCG coverage was 94% in 1997, 92% in 1998 and 1999, and 93% in 2000 (Figure 4). OPV3 coverage was 89% in 1997, 90% in 1998, 83% in 1999, and 78% in 2000. DPT3 coverage was 88% in 1997, 90% in 1998, 83% in 1999, and 88% in 2000. In 1997 coverage for MMR (single dose at 12–23 months) was 82%. Coverage rose to 93% in 1998, but dropped to 87% and 85% in 1999 and 2000, respectively. In 1999, Guyana introduced yellow fever vaccine into the routine immunization schedule for children age 12–23 months; coverage was 85% in 1999 and 83% in 2000. The last reported case of yellow fever was in 1968.

Vaccination coverage in Guyana varies significantly among regions. In 2000, regional OPV3 coverage ranged from 34% to 100%, and DPT3 coverage ranged from 40% to 99%. Regions 1, 7, 8, and 9, which comprise the hinterland, are often the regions with the lowest coverage. Inadequate management; transport, communication, and cold chain maintenance difficulties; and migratory populations are factors in low coverage.

Guyana has not had any confirmed polio cases since 1962. Weekly surveillance for acute flaccid paralysis began in 1991; since then, 37 cases have been reported, but none was laboratory confirmed as polio.

In 1997, the coverage for the second dose of tetanus toxoid in pregnant women was 71%. Coverage fell to 62% in 1998, and rose to 82% in 1999 and 81% in 2000 (Figure 4). There have been no confirmed cases of neonatal tetanus since 1974.

There have been no confirmed cases of measles in Guyana since 1991. In 1999, 31 cases of rash with fever were investigated, and in 2000, there were 27 cases of rash with fever, but none was confirmed as measles. In 1997, there were 144 confirmed cases of rubella; in 1998, there were only 2 cases, and there were no cases in 1999 or 2000. In 1997, a congenital rubella syndrome (CRS) surveillance system was established, and in that year, there were two serologically confirmed cases. There were also two confirmed cases of CRS in 1998. In 1999, there was one case of suspected CRS, but the serological test for rubella was negative. There were no suspected cases of CRS in 2000. There were four cases of pertussis in 1997.

Intestinal Infectious Diseases

There have been no reported cases of cholera since the 1992–1993 outbreak. In 1999, the Ministry of Health, CAREC, and PAHO conducted a study among primary school children age 5–11 years in six regions. *Trichuris* was found in 9.2% of children, ascariasis in 5.6%, hookworm in 1.5%, and enterobiasis and *Strongyloides* in 0.9%; these levels were lower than those reported in a 1980 survey. *Entamoeba histolytica* was found in 1.9% of the survey population, *Giardia lamblia* in 9.9%, and *Blastocystis hominis* was found in 37% to 48% in all regions surveyed.

Chronic Communicable Diseases

The incidence of tuberculosis has been increasing since 1992. In 1997, there were 381 cases, for an incidence rate of 48 cases per 100,000 population; in 1999, the rate was 53 per 100,000 population. The 1999 Report of a Joint Assessment of the Tuberculosis Programme attributed the increase to the levels of HIV/AIDS, poverty, and urban overcrowding, as well as to increased transmission due to lack of treatment completion by patients. There were 269 newly registered cases in 1998 at the Chest Clinic, in Georgetown, which is the main center for the management of tuberculosis. Of these, 227 were pulmonary, 8 were relapsed pulmonary, and 34 were extrapulmonary cases. The highest rates are found in Regions 1, 4, and 9, which are the coastal areas with the largest towns or cities.

Most new tuberculosis cases occur in young adults age 20–40 years, with peak incidence among 25–34-year-olds. Males account for more than 70% of reported cases, continuing the trend seen since 1990. There were 67 deaths due to tuberculosis in 1997, 69 in 1998, and 45 in 1999. However, these figures must be interpreted with caution, since in most cases, diagnosis is made clinically and with chest X-ray. No information is available on the level of tuberculosis in HIV-positive persons.

The prevalence of leprosy increased from 0.6 per 10,000 population in 1997 to 0.9 in 2000; the incidence of the disease increased as well, from 0.3 per 10,000 in 1997 to 0.4 in 2000. These increases are attributable to improved surveillance and case detection. In 1999, 43 new cases were diagnosed, and 66 patients were in treatment. Fifteen of the diagnosed patients were self-referrals, while 7 were diagnosed through contact examination, and 10 were sent in by members of the general public.

Acute Respiratory Infections

Acute respiratory infections (ARIs) continue to play an important role in morbidity and mortality throughout the life cycle. In all age groups up to 44 years, they were the leading reasons for outpatient visits in 1999. Acute respiratory infection mortality rates were 37 per 100,000 population in 1997 and 41 in 1999. ARIs were the fourth leading cause of mortality in the under 1 year age group during the period 1997–1998, and the third leading cause in 1999; they were the second leading cause of mortality in the 1–4 years age group in the period 1997–1998.

Zoonoses

No human cases of rabies were reported in the period 1997–2000. In 1999, 30 cases (clinical diagnosis only) of rabies in

cattle were reported in the endemic areas in Regions 3 and 4, and in a new focal area in Region 6. No cases in dogs were reported for that year.

HIV/AIDS

From 1997 to 2000, there were 763 reported cases of AIDS—141 cases in 1997, 140 cases in 1998, 234 cases in 1999, and 248 cases in 2000. The male-female ratio was 1.7:1 in 1997 (Figure 5) and 1.2:1 in 2000; females accounted for 40% of cases over the period.

Most AIDS cases (65%) occurred among 20–44-year-olds; 24 cases occurred in the age group 1–4 years. The majority of cases were found in large urban centers. In 2000, Region 4 (which includes the capital, Georgetown) accounted for 69% of reported cases; Region 10 had the second highest prevalence rate, with 10% of cases. The mode of transmission in 97% of the total reported cases in 2000 was unprotected heterosexual sex; in 1999, this figure was 86%. By 2000, AIDS had become the third leading cause of death in Guyana. There were 318 deaths due to AIDS in 1997, 334 deaths in 1998, and 302 in 1999.

The seroprevalence of HIV among blood donors was 1.3% in 1997, 1.8% in 1998, 1.2% in 1999, and 1.0% in 2000.

In 1997, a survey of 265 pregnant women attending three prenatal clinics in Georgetown for the first time found an HIV prevalence of 4.5%, reaching 8.1% among women age 20–24 years. A 1997 survey of 124 sex workers in Georgetown showed that 45% were HIV positive, while a survey conducted in 2000 among 299 sex workers showed that 31% were HIV positive.

Sexually Transmitted Infections

Syphilis was diagnosed in 410 persons in 1998, 315 in 1999, and 534 in 2000. During the period 1997–2000, there were four deaths from syphilis. Gonococcal infections were diagnosed in 269 persons in 1997 and 219 in 1998. These figures underestimate the prevalence of STIs in the country, since they include only persons treated at the Genito-Urinary Medicine Clinic at Georgetown Public Hospital. In 1999, 223 pregnant women had a positive VDRL test.

Nutritional and Metabolic Diseases

Protein-energy malnutrition, iron-deficiency anemia, and obesity continued to be the major nutrition-related problems in the population. Clinic data on breastfeeding patterns at age 4 months indicate an upward trend in the prevalence of exclusive breastfeeding, increasing from 33% in 1997 to 38% in 1999. Of the 17,771 infants attending clinic at age 4 months in 1999, 51% were partially breastfed, 9.0% had stopped breastfeeding, and 2.0% were never breastfed. A 1999 study on young child feeding practices carried out in the coastal regions showed that breastfeeding initiation rates exceeded 90% in five of the seven regions surveyed. The exclusive breastfeeding rate in the population age 0–4 months was 22%. The continued breastfeeding rate at 1 year of age was 60%, and the continued breastfeeding rate at 2 years of age was 39%.

Malnutrition (low weight-for-age) among children attending public health clinics has decreased, with 14% of children age 0–23 months assessed as malnourished in 1999, compared with 17% in 1997. The Multiple Indicator Cluster Survey conducted in 2000 showed that 14% of children under 5 years of age were underweight, 11% were stunted, and 11% were wasted. Children from the rural coast were more likely to be underweight and wasted than children from the urban coast and the interior. Older children (age 12–59 months) were more likely to be undernourished than younger ones (under 11 months of age). Moreover, children whose mothers had no formal education were more likely to be malnourished than children of mothers who had secondary or higher education.

The 1997 National Micronutrient Survey revealed that iron-deficiency anemia affected 40%–55% of children, adolescents, and adults. The survey also found that 52% of pregnant women had low hemoglobin levels (<11 g/dL).

The micronutrient survey and the 1999 Physical Activity Survey both indicated that obesity was a major problem among adults.

There were 67 reported deaths from nutritional deficiencies in 1997, and 118 in 1999. In 1999, 22 of these deaths were children under 1 year of age; this cause accounted for 7.9% of deaths in this age group.

Diabetes mellitus is a major public health problem. In 1999, it accounted for 4,965 first visits and 13,585 total visits to outpatient clinics, and approximately 7% (290) of deaths with defined cause. The risk to females is higher than for males, with a male-female ratio estimated to be approaching 0.5. There were 296 deaths in 1997, and 262 in 1998.

Diseases of the Circulatory System

Cardiovascular disease is a leading cause of morbidity and mortality in Guyana. In the 45–64 years age group, ischemic heart disease is the leading cause of death. The male mortality rate was 271 per 100,000 population in 1997 and 263 in 1998; the female mortality rate was 128 per 100,000 population in 1997 and 127 in 1998. Cerebrovascular disease was the second leading cause of death in this age group, with a male mortality rate of 236 per 100,000 population in 1997 and 235 in 1998. The female mortality rate was 160 per 100,000 population in 1997 and 178 in 1998.

In the 65 years and older age group, cerebrovascular disease is the leading cause of death, with rates of 1,226 per 100,000 population in 1997 and 1,143 in 1998. Ischemic heart disease was ranked second, with rates of 793 per 100,000 population in 1997 and 720 in 1998. In 1999, cerebrovascular disease was responsible for 392 deaths, followed by ischemic heart disease, with 397 deaths. More deaths occurred among males than females. In that year, there were 199 deaths from hypertensive disease, with more occurring among females than among males.

Malignant Neoplasms

During 1997–1999, there were 370, 359, and 348 deaths due to malignant neoplasms in each respective year. In men, cancer of the prostate was the leading cause of mortality due to neoplasms over that period, accounting for 11% of cancer mortality. Cancer of the cervix uteri was the main cause in women, representing 13% of all cancer mortality. The next leading causes were cancer of the breast (8.9%), stomach (8.8%), colon (6.9%), and lung and trachea (6.4%).

Accidents and Violence

External causes are leading causes of disability and death. There were 611 deaths attributed to external causes in 1997, 619 in 1998, and 595 in 1999. Of these, 50% were due to injury undetermined whether accidentally or purposely inflicted. Suicides accounted for 13% of deaths, accidental falls for 12%, and motor vehicle accidents for 9.7%. For all conditions in this broad group of causes, more males were affected than females. There were 41 suicides in 1997, 38 in 1998, and 164 in 1999. Among females, the age group with the most suicides was 15–24-year-olds, and among males, 15–34-year-olds.

Oral Health

There are no recent data on the incidence of dental caries in Guyana. In 1999, five regions listed dental caries among their ten most prevalent diseases. Extractions increased from 92,527 in 1998 to 93,432 in 2000. However, emphasis is being placed on the reintroduction of fillings and prophylaxis. Fillings increased from 765 in 1998 to 3,490 in 2000, and prophylaxis increased from 2,207 in 1998 to 4,013 in 2000.

Emerging and Re-emerging Diseases

In 1999, an outbreak of equine encephalitis resulted in 12 reported deaths.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

A Draft National Health Plan was developed for the period 1995–2000, based on the recognized need to restructure the health sector. The plan sought to incorporate the work of both the private and public health sectors. Its main objectives were to strengthen and expand primary health care; improve secondary care in regional and district hospitals; improve tertiary care at Georgetown Public Hospital; and strengthen the general management of the health sector.

Although the plan was never finalized, some elements are being implemented, especially those that relate to health programs. Based on the National Health Plan, plans for various health programs have been developed and are being implemented, such as the prevention of blindness, oral health, malaria prevention and control, nutrition, and HIV/AIDS plans. Other sectors of government, as well as nongovernmental organizations, have been involved in the planning process.

Health Sector Reform Strategies and Programs

Guyana has embarked on its Health Sector Reform Programme. The broad strategies include changes in the health sector in keeping with civil service reforms; restructuring and reorganizing the Ministry of Health; decentralization of responsibilities for service delivery; broadening health financing and cost sharing options; establishing collaborative mechanisms and links with the private sector and nongovernmental organizations; and the introduction of mechanisms to ensure quality in the delivery of services. The Health Sector Reform Programme also proposes the separation of institutional direction and regulation functions from health care provision. A restructured Ministry will emphasize policy development; allocation of resources and developing sustainable financing; performance evaluation; regulation; research and development; and objective setting.

In 1998, the Government initiated the Health Sector Policy and Institutional Development Programme. The project consists of the reorganization and strengthening of the health sector's institutional structure; the development of an integrated health service delivery strategy; the development of managerial capacity and human resources; the development of health financing options and resource allocation mechanisms; and the institutional development of the Georgetown Public Hospital.

The Health System

Institutional Organization

Several institutions, organizations, agencies, and individuals are involved in health care delivery in Guyana. The Minister of Health has overall responsibility for the population's health. The mission of the Ministry of Health is pursued through seven program areas: ministry administration, disease control, primary health care services, regional and clinical services, health sciences education, standards and technical services, and rehabilitation services.

The Ministry of Health has several roles, including responsibility for policy formulation, standard setting, and monitoring and evaluation. The Ministry is also responsible for financing and managing vertical health programs, including leprosy, vector control, and HIV/AIDS programs. In addition, it is involved in identifying human resource requirements for the entire public health sector.

The Ministry of Local Government is responsible for financing and providing services at the regional level. The National Insurance Scheme provides some health benefits to employed

persons. The private sector functions independently, and NGOs are actively involved in health care delivery.

Developments in Health Legislation

With the advent of the Health Sector Reform Programme, there has been a new impetus to pass legislation to support the reforms. Legislation was passed to establish the Georgetown Public Hospital Corporation and make it a semi-autonomous agency. A policy paper and draft legislation for the establishment of Regional Health Authorities were completed. Draft legislation for the Allied Health Practitioners Act and Health Facilities Accreditation Act was prepared, as were amendments to the Registration of Nursing Profession Act. Legislation to amend the Medical Practitioner Act was approved by Parliament in 2000. Guyana also passed the Occupational Health and Safety Act, which requires the establishment of health and safety committees in the workplace.

Decentralization of Health Services

In 1986, the regions assumed responsibility for health care within their boundaries. Administrative control over health resources in the regions rests with the Regional Executive Officers of the Regional Democratic Councils. Funding for regional health services is provided through the Ministry of Local Government. Regional Health Officers report administratively to the Regional Executive Officers, but receive technical and professional guidance from the Ministry of Health.

The national referral hospital in Georgetown now functions as a semi-autonomous body with its own Board. Other decentralized bodies have been proposed, such as the National Materials Management Agency, which will manage all procurement and distribution of materials, including drugs, in the public health sector. It has also been proposed that some health programs be delegated to semi-autonomous agencies, a process that has begun with the establishment of the Cancer Board.

Private health services have been expanding rapidly, and at present, the private sector provides approximately half of all curative services. There are 10 private hospitals, as well as private diagnostic facilities, clinics, and dispensaries. Some of the services offered by the private sector (e.g., mammography) are not available in the public sector. Most private sector services are provided in the capital and other urban centers. The Private Hospitals Act makes provision for the licensing of private hospitals.

Health Insurance

Guyana does not have a national health insurance system. The National Insurance Scheme operates a social insurance program for employees. Participation in the Scheme is mandatory for employed persons between the ages of 16 and 60, including the self-employed. The Scheme provides sickness (not employment related), maternity, medical care, and job-related injury benefits. Medical coverage is provided, on a reimbursable basis, for such selected services as hospitalization, eyeglasses, dental care, surgery, and drug purchase, with limits on the amount of reimbursement. Some employers provide additional contributory or non-contributory insurance for their employees. In other cases, individuals purchase health insurance from private insurance companies. Data on coverage of private health insurance are not available.

Organization of Regulatory Actions

Health Care Delivery

Several agencies have regulatory responsibilities in the health sector. The Ministry of Health is responsible for the regulation of health policies and legislation, the establishment and enforcement of standards for the delivery of health care, and the protection of public health. The Ministry's Directorate of Standards and Technical Services is responsible for the development of standards for clinical and other services, and for support services, such as the National Blood Transfusion Service, pharmacy services, and laboratories. The Bureau of Standards also has a role in setting laboratory standards. Though the lack of resources impedes monitoring and enforcement of the few existing standards, an inspection team has been visiting hospitals in the public and private sector to ensure that standards are being met, and an infection control committee is in place at the main hospital. Attempts have been made to introduce quality management through training of staff at the hospital and community-based health facilities.

The Pharmacy and Poisons Board has regulatory functions regarding pharmacies and pharmaceuticals. The Government Analyst/Food and Drug Department also has responsibility for regulating some aspects of food and drugs. The Environmental Protection Agency has overall responsibility for the protection of the environment. In addition, the Central Board of Health deals with some environmental issues, such as approving land development for housing and business, and the regularization of squatter areas.

Certification and Professional Health Practice

Professional councils such as the Guyana Medical Council, the Dental Council, and the Guyana Nursing Council regulate professional health practice. Recent amendments to the Medical Board Act provide for representation from the general public, which is proposed for all councils. Continuing medical education is required for annual registration of doctors. Guyana is involved in CARICOM efforts to establish common standards and measures for accreditation within the Caribbean Region.

Basic Health Markets

The Director of Procurement is responsible for procuring drugs and medical supplies, and for setting quality standards for

items required by the health care system. Using the drug certification procedures established by WHO, the Government Analyst ensures that drugs for sale meet the required standards. When necessary, the Caribbean Regional Drug Testing Laboratory is used to assess the quality of drugs.

There is no standardization of equipment in the health sector, and no regulatory body with responsibility for the technological assessment required for equipment procurement.

Environmental Quality

Guyana established its Environmental Protection Agency in 1996. The Agency is charged with managing Guyana's diverse physical environment. Many of the skills needed to ensure proper management of the environment are scarce in the country, and the Agency depends largely on the technical and managerial skills of expatriates. Recognizing its limitations in carrying out its full mandate, the Agency has been delegating functions to other agencies involved in environmental management, such as the Geology and Mines Commission, the Guyana Forestry Commission, the Ministry of Local Government, and the Ministry of Health.

In the area of environmental health, the Ministry of Health is particularly concerned with the poor quality of drinking water in urban and rural areas, the quality of housing, inadequate solid waste management, and clogged sewerage drains.

Food Quality

A number of agencies have regulatory responsibility for food quality, with some overlapping areas of authority. The Government Analyst/Food and Drug Department of the Ministry of Health administers and enforces the Food and Drugs Act and supporting regulations. Activities include licensing and inspection of premises where food products are manufactured or sold; examination of labels and packaging; and analysis of food to ensure adherence to safety and quality requirements. The Government Analyst has been participating in the Inter-American Network of Food Analysis Laboratories and began testing the proficiency of laboratories in diagnosing salmonella in 1999. The Veterinary Public Health Department of the Ministry of Health is responsible for the inspection and monitoring of premises where fresh and frozen red meat, poultry, and seafood are processed or sold. The Guyana National Bureau of Standards, within the Ministry of Trade, develops and promulgates standards relating to food quality; it is also the secretariat for the national committee of the *Codex Alimentarius* Commission, launched in 1999. The Ministry of Fisheries, Crops and Livestock provides regulatory oversight for animal and plant health issues, including pest and disease control, and the use of agricultural chemicals and veterinary drugs. In addition, Guyana's six municipalities have various by-laws to monitor food processing and food service sectors in their respective areas. The need for improved interagency coordination and cooperation, the lack of trained personnel, and outdated legislation have been identified as some of the constraints affecting food regulation and control.

Organization of Public Health Care Services

Health Promotion

The Ministry of Health has endorsed the principles and strategies contained in the Caribbean Charter for Health Promotion. Following the model used in the Caribbean Cooperation in Health Initiative, Guyana has begun to incorporate health promotion in the planning and organization of health programs. The Health Sciences Education Division of the Ministry of Health has taken the lead in training program managers to ensure that all the determinants of health are considered in addressing health issues. Health promotion has been integrated into training program curricula for health workers. In addition, in-service training in health promotion is also conducted for health care workers. Projects with a community participation component have been developed and implemented in an effort to empower communities to be active participants in their own health. Social mobilization activities are carried out in support of such programs as the Expanded Programme on Immunization.

Disease Prevention and Control Programs

While chronic noncommunicable diseases are leading causes of morbidity and mortality in Guyana, communicable diseases are still important contributors to ill health. Several strategies have been employed to prevent and control disease. The Ministry of Health, in its National Health Plan, has determined its priorities based on several factors, including the incidence and prevalence of disease. The priorities include maternal and child health, the Expanded Programme on Immunization, HIV/AIDS and other sexually transmitted infections, malaria, and chronic noncommunicable diseases.

A PAHO evaluation of the Expanded Program on Immunization in 2000 provided information used to develop a five-year plan of action. Guyana applied to the Global Alliance for Vaccines and Immunizations Fund in 2000, and was approved to receive support for new and under-used vaccines. Universal immunization against *Haemophilus influenzae* type b and hepatitis B was introduced in 2000, and the new pentavalent vaccine (hepatitis B, *Haemophilus influenzae* type b, diphtheria, pertussis, and tetanus) is being given to children at ages 2, 4, and 6 months. In an attempt to address regional inequalities, the Ministry of Health targets the regions with lowest coverage for intensive training and supervision in EPI activities. National yellow fever and MMR vaccination campaigns were conducted simultaneously in 1999, in response to yellow fever and rubella activity in neighboring countries.

A control and prevention plan has been developed for HIV/AIDS and other sexually transmitted infections, as have na-

tional guidelines for their clinical management. A national policy for the prevention of mother-to-child transmission has been formulated, and a voluntary counseling and testing initiative is being implemented at five pilot sites in two regions. Intensive work is also being done through the Commercial Sex Workers Project, which trains commercial sex workers to be peer educators.

The Government of Guyana has adopted the WHO Global Strategy for Malaria Control and is involved in the Roll Back Malaria initiative. Strategies include community involvement, training of health and community workers, public education, intersectoral collaboration, intercountry cooperation, and strengthening the management of the program.

A national plan to eliminate filariasis has been developed. Its main strategies are the mass application of albendazole, distribution of diethylcarbamacine-fortified salt, and a more rapid diagnostic procedure for surveillance.

A plan was also developed to reduce intestinal helminths to levels that do not pose a serious public health threat. This involves an integrated strategy, including mass chemotherapy for primary school children, as well as health and environmental education.

Chronic diseases are also a priority of disease prevention and control programs. A national protocol for the management of diabetes and a nutrition plan of action have been developed. Research, such as the Physical Activity Survey, has been conducted to support these programs.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

The Epidemiology Division of the Ministry of Health has overall responsibility for disease surveillance. Information flows from the districts to regional and national levels. However, the system faces logistical and communications challenges. Guyana also maintains close links with neighboring countries to monitor health along its border.

The surveillance system for the Expanded Programme on Immunization is the most developed in the country. The surveillance system for sexually transmitted infections and HIV/AIDS has been reviewed and modified, and is being tested. In 2000, the Invasive Bacterial Infections Surveillance System was introduced at Georgetown Hospital. This system highlights the role of the laboratory in surveillance and aims to improve diagnosis and surveillance of the pathogens that cause meningitis and pneumonia.

Potable Water, Excreta Disposal, and Sewerage Services

Drinking water coverage in all areas of the country is estimated to be 70%, with 54% of households having piped water into the dwelling or yard. Although the amount of drinking water available to Guyanese in both urban and rural settings has increased, quality remains an issue. Sanitation coverage throughout the country has been estimated at 90%, with 18% having access to flush systems and 80% using pit latrines.

The Georgetown Sewerage and Water Commissioners is a parastatal agency responsible for supplying drinking water to Georgetown. The agency has undertaken a program to increase the amount of drinking water, mainly by drilling new groundwater wells. A major factor in the drinking water quality problem in Georgetown is that the supply system has been broken into on many occasions.

The Guyana Water Authority (GUYWA), another parastatal agency, is responsible for supplying water to the rest of the population, particularly on the coastal strip. Water supply issues in hinterland areas are also being addressed. The drinking water provided by GUYWA comes exclusively from groundwater wells. GUYWA does not treat the water it supplies, which has a high iron content.

The Georgetown Sewerage and Water Commissioners is also responsible for sanitation services in Georgetown. An old sewerage system serves the central part of the city. Sewage is untreated and is discharged into the mouth of the Demerara River. Given the city's low elevation, the system has many lift stations; several are in disrepair, and the agency has begun to rehabilitate them. Pit latrines are used in squatter areas in Georgetown, though these are illegal; the rest of the city uses septic tanks. The Town Councils manage sanitation activities in Guyana's five towns. In rural areas, sanitation is the responsibility of the Neighbourhood Democratic Councils and the Village Councils.

Solid Waste Services

Local government bodies are responsible for solid waste management in Guyana. In Georgetown, responsibility for solid waste management lies with the Mayor and City Council. In 1997, refuse collection in Georgetown was privatized. In 2000, the Mayor and City Council received an IDB loan to improve solid waste management.

Pollution Prevention and Control

Air pollution has not been a priority issue in Guyana, though pollution from bauxite mining leads to chronic obstructive lung diseases in communities near mining sites.

Food Safety

The Environmental Health Department, within the Ministry of Health, is responsible for ensuring that proper standards are maintained by the food protection and control services at the regional level. This agency inspects meat and retail food establishments, and is responsible for the registration and training of food handlers. Food service inspections are carried out by Environmental Health Officers attached to the six municipalities of the Regional Health Departments.

Food Aid Programs

Food supplements are distributed to pregnant women and young children attending public health clinics in selected high-

risk communities. This program is coordinated by the Social Impact Amelioration Programme, and is part of a project that aims to prevent and reduce malnutrition among young children. In addition, a number of community-based organizations are involved in implementing on-site feeding programs targeting schoolchildren and the elderly.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

Health services are provided at five different levels in the public sector. Level I includes the 166 health posts; level II, the 109 health centers; level III, the 19 district hospitals; level IV, the 4 regional hospitals; and level V, the national referral hospital, the psychiatric hospital, the leprosarium, and the geriatric hospital in Georgetown. Levels I and II focus primarily on health promotion and prevention, with some curative and rehabilitative care. Level III institutions provide basic inpatient and outpatient curative care and selected diagnostic services. Level IV hospitals provide general inpatient and outpatient services, diagnostic services, and specialist services in obstetrics and gynecology, general medicine, and surgery. The level V national referral hospital provides a wide range of diagnostic services as well as specialist inpatient and outpatient referral services. The referral system among the different levels is not well developed.

There are 3,274 hospital beds (4.4 beds per 1,000 population) in the private and public sectors. Ambulatory care is provided at all levels of the health system; outpatient specialist services are available at regional and national hospitals; and accident and emergency care is provided mainly at the hospitals. There is no organized ambulance service.

Auxiliary Diagnostic Services and Blood Banks

Laboratories exist at the regional and national levels, though maintenance of equipment is a problem. Over the period 1997–2000, the emphasis has been on the implementation of a quality assurance system; in addition, laboratory manuals have been produced and staff have been trained. Radiology services are provided at the district, regional, and national levels.

Guyana's National Blood Transfusion Service is governed by a semi-autonomous Board. The Service is the main testing facility for HIV and the national reference center for HIV confirmatory testing. In the public sector, blood for transfusion is screened for hepatitis B and C, HIV, malaria, and syphilis; it is not screened for Chagas' disease. A draft policy for the Service has been developed, and CAREC has been involved in activities to strengthen and institutionalize quality management in the laboratory.

Specialized Services

Reproductive health care is provided by the public, private, and nongovernmental sectors. Maternal and child health clinics throughout the country provide a range of services, including family planning and pre- and postnatal care. The Safe Motherhood Initiative is also being implemented. During the period 1997–2000, the *Maternal and Child Health Manual* was revised, and a manual on labor ward management was produced; supporting audiovisual materials were also produced. An adolescent reproductive and sexual health pilot project in four communities aims to empower adolescents and youths in the exercise of their sexual and reproductive rights. Services provided include counseling, nutrition education, and contraceptive services. The Ministry of Health is collaborating with the Ministry of Education in the formulation of a family life education program for schoolchildren.

A draft plan for the prevention of blindness was developed in 2000, with an emphasis on primary prevention of blindness and on reducing the backlog of persons waiting for cataract surgery. The Ministry of Health, the Guyana Society for the Blind, the Caribbean Council of the Blind, and Sight Savers International have collaborated to improve services for the visually impaired. Primary eye care workers and other categories of health workers have been trained. Guyana is a signatory to the Global Vision 2020 Initiative, which seeks to eliminate preventable blindness by the year 2020.

There has been a progressive shift towards the strengthening of the primary health care approach in the provision of dental services. The number of public facilities offering dental care on a daily basis increased from 14 in 1997 to 22 in 2000, and dental education activities have been increased. The Cheddi Jagan Dental Centre, in Georgetown, focuses primarily on the oral health status of children, improved access for hinterland citizens, and the training of the different categories of dental staff.

The psychiatric hospital provides in- and outpatient care. Psychiatric nurse practitioners have been trained and are providing promotive, preventive, and curative mental health services. Training of nurses' aides in mental health was conducted in 2000. The Ministry of Human Services, in collaboration with PAHO, conducted training programs to enhance the management of inpatients at the main geriatric institution.

The Rehabilitation Services have been strengthened, though they lack qualified staff in critical areas. A training program for rehabilitation assistants has produced 20 mid-level workers to support rehabilitation activities. The services of physiotherapists, occupational therapists, and speech therapists have been obtained through the Voluntary Services Overseas program, and from Cuba and India. An NGO is implementing a project to strengthen rehabilitation services, which includes training rehabilitation personnel, supporting the production of orthopedic appliances, and establishing a national center for vocational training for persons with disabilities. Appointed in 1998, the National Commission on Disability works towards identifying conditions that lead to disabilities and to help ensure that the disabled have a full and productive life. The Community Based Rehabilitation

Programme operates in six regions; its activities include training of persons with disabilities.

Health Supplies

Although there is a local drug manufacturer, most of the drugs used in Guyana are imported. There is an essential drugs list and a national formulary; the formulary has not been updated since 1993. Training has been conducted in rational drug prescribing and in estimating drug supply. The manual on effective drug inventory management was completed and training conducted.

Guyana does not produce any vaccines or biologicals. Vaccines and syringes/needles are purchased through the PAHO Revolving Fund for Vaccine Procurement. Vaccines are provided to private practitioners and institutions at a cost. There are periodic shortages of supplies, largely due to procurement problems, such as deficient logistics management. Biomedical equipment is not standardized. Biomedical staff have been trained in equipment maintenance.

Vaccine cold chain facilities exist at all levels of the health services. There is a central vaccine storage area at the Ministry of Health, in Georgetown; regional and district hospitals, as well as health centers, also have storage facilities. Vaccines, syringes/needles, safety boxes, and other supplies are centrally procured, stored, and distributed to regions and selected field sites.

Human Resources

In the public health sector, staff vacancy rates range between 25% and 50% in most categories. Some specialties, such as pharmacy, laboratory technology, radiography, and environmental health, have particularly high vacancy rates. There is a continuing loss of trained personnel from the public to the private sector and to other countries. There are also problems with the distribution of some health staff.

From 1997 to 1999, the number of physicians ranged from 3 to 4 per 10,000 population; the ratio of physicians to population is lower in the more remote regions. During the period 1997–1999, the ratio of nurses ranged from 7 to 15 per 10,000 population, and the ratio of pharmacists was approximately 2 per 10,000 population. The ratio of dentists remained steady, at 0.4 per 10,000 population. Foreign personnel are relied upon heavily in some disciplines. For example, more than 90% of the specialist medical staff in the public sector are expatriates.

The Ministry of Health has developed creative mechanisms for dealing with staff shortages. New cadres of health workers have been developed, such as psychiatric nurse practitioners, rehabilitation assistants, and environmental health assistants. The Ministry offers a variety of clinical and technical health education programs, including training of physician assistants (medex), nurses, X-ray technicians, dental auxiliaries, laboratory aides, community health workers, pharmacy assistants, and multipurpose technicians. In 2000, a new category of worker, community dental therapists, was also trained; this category is almost exclusively oriented towards health promotion and oral disease prevention. Nursing schools are attached to the public hospitals in Georgetown, New Amsterdam, and Linden, as well as one private hospital. Training of rural midwives was reintroduced in 2000.

Health Research and Technology

There is very little research activity in Guyana. In 2000, the Caribbean Health Research Council provided training for health staff in research methodology.

Health Sector Expenditure and Financing

Government health expenditure in 1997 was US$ 19,318,104, or US$ 26 per capita; however, the distribution of resources was not equitable. For example, the regional budget for primary health care was 25% of total recurrent government expenditures on health, while the public hospital in Georgetown received as much as 35%.

In 1999, 12% of the government budget was allocated to health. Approximately 62% of total health financing is obtained from tax revenues and social insurance contributions, although this figure might be overestimated, as private sources of financing have not been fully calculated.

External Technical Cooperation and Financing

Financial support for Guyana's health sector is channeled through the national budget, primarily via the Ministry of Health, the regions, the Ministry of Finance, and the Ministry of Human Services and Social Security. The main donor agencies include the IDB, the European Union, CIDA, PAHO, UNICEF, and UNDP. In 1997, external funding covered approximately 12% of total government spending on health, 15% of public sector needs, and some 10% of total private and public health expenditures. In 1998, external funding amounted to 7.3% of total government health spending.

The IDB and the European Union have provided major investment funds for Guyana's health sector. The IDB is providing US$ 2.5 million for a technical cooperation project for institutional strengthening. In 1998, the Government signed a technical cooperation agreement with the IDB, by which the Bank agreed to provide a grant to finance consulting services for the execution of the Health Sector Policy and Institutional Development Programme. The IDB also provided loan funds for the program to increase the amount of drinking water in Georgetown. DFID and the European Union have funded the Guyana Water Authority's expansion program. UNFPA has supported the adolescent reproductive and sexual health pilot project in four communities. The Ministry of Health is also collaborating with donor agencies and PAHO/WHO to implement the plan to eliminate filariasis.

FIGURE 1. Population structure, by age and sex, Guyana, 2000.

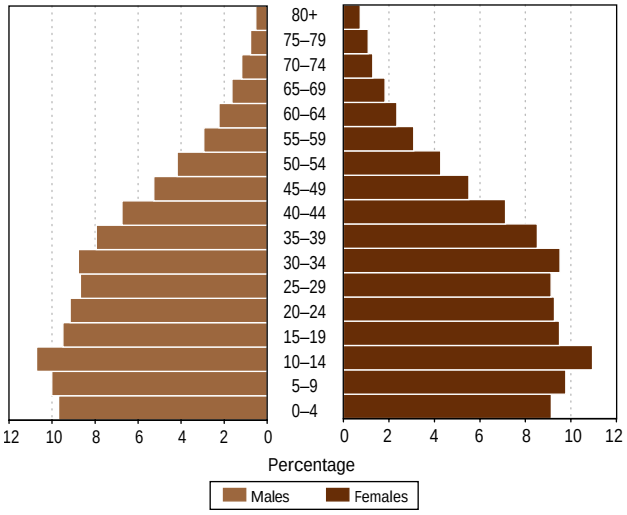


FIGURE 2. Gross domestic product, annual growth (%), Guyana, 1991–2000.

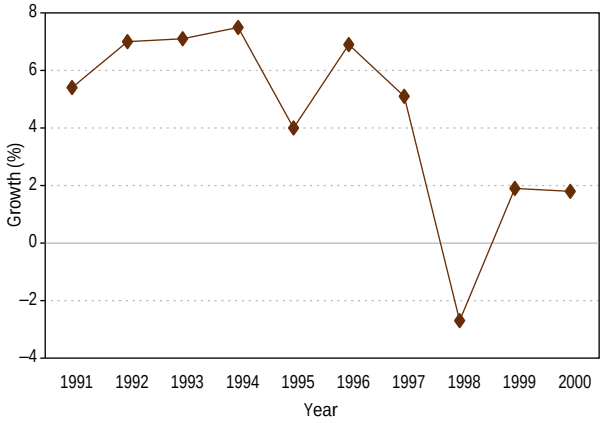


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Guyana, 1995–2000.

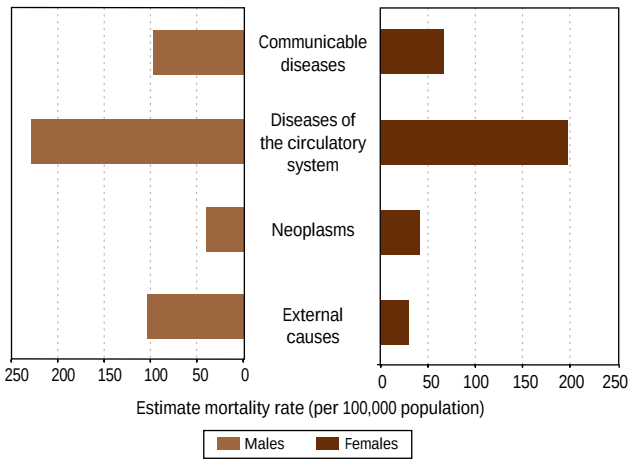
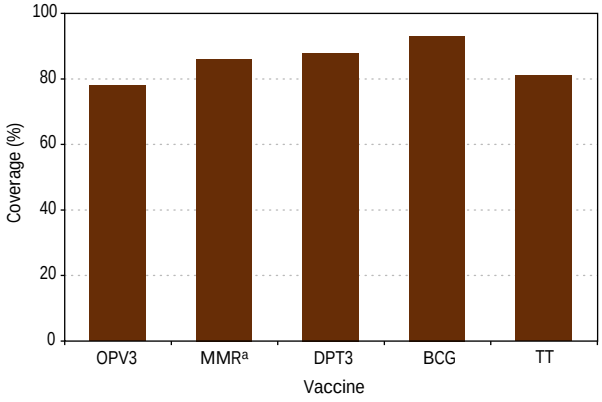
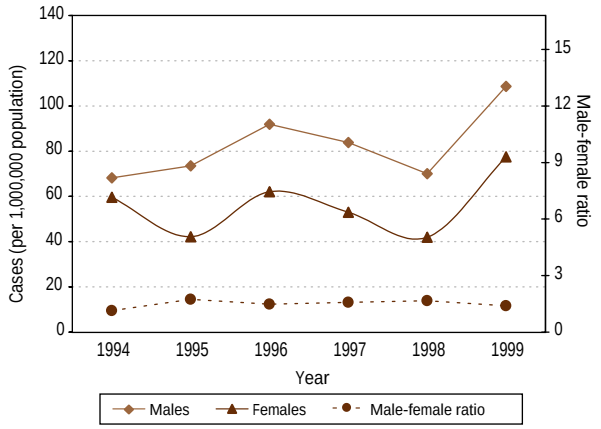


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage for women of childbearing age, Guyana, 2000.



[a]Coverage for children under 2 years of age.

FIGURE 5. AIDS incidence, by sex, with male-female ratio, Guyana, 1994–1999.



HAITI

OVERVIEW

Hispaniola, the second largest island in the Caribbean, is shared by two countries: Haiti and the Dominican Republic. Haiti occupies the western third of the island, with a land area of 27,700 km^2. It is divided into nine departments and one coordination; in all, the country has 41 districts, 133 municipalities, and 561 sections within the municipalities.

Haiti declared independence in 1804, thus becoming the first black nation in the world and the first independent country in Latin America. Its recent history, however, has been marked by political and social violence. As it approaches 200 years of independence, poverty and social exclusion remain unchanged for most of the Haitian population. After the fall of the dictatorship of Jean-Claude Duvalier in 1986, the country had five different presidents until elections held in 1990 brought Father Jean Bertrand Aristide into office. In 1991 there was a military takeover, and the international community imposed an economic embargo that lasted until 1994, when constitutional order was restored and the armed forces were dissolved. A new democratic government took office for the term 1995–2001, but the period was marked by political conflicts that left the country without a prime minister from 1997 until 1999 and caused State reform processes to stagnate. During 2000, elections were held for municipal officials, new deputies and senators in the Congress of the Republic, and, finally, the presidency—all of them accompanied by a climate of extreme violence and social tension between the opposing political forces.

From the economic point of view, the 1990s saw a worsening of poverty for the Haitian population, especially during the embargo (1992–1994), when the recession turned into an economic depression and the country suffered an estimated 25% loss in economic activity. Other factors that contributed to the economic crisis were political problems, the termination of foreign aid, and a 5.4% drop in exports between 1998 and 1999. In 1999–2000 the growth in the GDP was 1.23%, down from 2.34% in 1998–1999 and 3.13% in 1997–1998 (Figure 1). The fall was due mainly to a progressive decline in the contribution of the agricultural sector, which saw a negative growth of –1.3%. Between the beginning of the 1990s and the end of that decade, the contribution of the agricultural sector to the GDP dropped from 35.4% to 29%, and that of the manufacturing sector fell from 15.5% to 8.9%. Only construction and the public sector increased during the period.

Inflation was estimated at 15% in 1999–2000, and during the same period the price of foods increased 10.4%, compared with a rise of only 3.8% in the previous biennium. The exchange rate in October 1999 was 17.5 Haitian gourdes per US dollar, and by August 2000 it had risen to 22 gourdes.

Employed workers represent 46% of the total economically active population (males, 50.4%; females, 42.2%). The majority work in the informal (51.4%) and agricultural (44.5%) sectors, and a small proportion in the public sector (1.3%). In 1997, 56.2% of the children 6–11 years old were enrolled in school. Literacy in the population over 10 years of age was 61.5% in 1999–2000, with differences by sex and place of residence (Table 1).

A survey conducted in 1999–2000 found that 67% of the population was living in poverty and 31.4% of the households had more than seven members. A similar survey conducted in 1986–1987 found that 65% of the households were living in poverty and 12.3% of them had more than seven members. In 1999–2000, 46% of the families had only one room to sleep in. The principal cities in the departments are connected to the capital by a system of highways, most of which are in poor condition. Two mobile telephone companies are improving communications in the main cities, especially Port-au-Prince.

TABLE 1. Literacy rates among the population aged 10 years and older, by sex and area of residence, Haiti, 1999–2000.

Population group	Metropolitan zone	Remaining urban area	Rural	Total
Males	92.0%	81.0%	55.1%	66.6%
Females	68.8%	79.6%	43.7%	56.7%
Total	85.1%	80.3%	49.5%	61.5%

The official languages are Haitian Creole, which is spoken by all the people, and French, which is used to a large extent in the cities, especially by those who have completed elementary school (those with a command of French represent an estimated 10% of the population).

The estimated annual population growth rate during 1995–2000 was 2.1%. The population in 2000, based on the census of 1982, was estimated at 7,958,964, for a density of 282 inhabitants per km^2. Sixty-four percent of the people live in the countryside, 21% in the metropolitan area of Port-au-Prince, and 15% in other urban areas. The population pyramid in Haiti is broad at the base and narrows gradually, especially after age 20 (Figure 2); 40% of the population is under 15 years old, and only 5% is over 65. There are more women (51.9%) than men, particularly in urban areas, a situation that is explained by migratory patterns: women tend to migrate more from rural areas to the cities, while men tend to go abroad. These population movements make for different population pyramids in the urban and rural areas. For example, in the metropolitan area of Port-au-Prince there is a bulge corresponding to the age group of 20–24 years, with a larger number of women, whereas in rural areas the pyramid narrows between the ages of 10 and 24.

The population dynamic has been characterized as one of progressive urbanization, reflected in the following trends: growth of the major cities such as the Port-au-Prince metropolitan area (annual growth rate for the Department of the West: 3%); emigration of thousands of Haitians to countries abroad, especially the United States of America (Florida and New York), Canada, and neighboring islands (net migration for 1995–2000: –2.6%); and a shifting of population toward the Dominican Republic, along the border shared by the two countries, to work at minor jobs or in the sugar cane fields, usually as temporary laborers. A sizable percentage of professionals and qualified technicians contribute to this Haitian diaspora, which represents a source of income for the country: the monthly remittances sent to families in Haiti account for 8.3% of household income. It is estimated that 1.5 million Haitians live abroad.

The crude birth rate was 33 per 1,000 population, and the general fertility rate was 4.4 children per woman. The average age of the population was 19 years for both sexes, and the dependency ratio was 77.9 during the period. Live expectancy at birth was 54.4 years for the general population (52.8 for men and 56 for women). However, there are estimates for 2000 that show a decline in life expectancy of as much as 5 years for both sexes as a result of the AIDS epidemic.

Mortality

Since 1997, both the Ministry of Public Health and PAHO have been promoting the certification of deaths. This effort, which has been concentrated in the main public hospitals of the country, resulted in the registration of 5,505 deaths in the first year. In 1998 the number increased to 6,541, and in 1999 a total of 7,997 death certificates were issued. This last figure is believed to represent only 10% of all deaths, but even so, the information gained is valuable for developing a mortality profile, despite the fact that almost half the certificates (47.9%) have ill-defined diagnoses.

An analysis of the deaths by broad groups of causes shows that communicable diseases headed the list, representing 19.5% of all certified deaths and 37.5% of those with a specifically defined diagnosis, thanks to the large registration of diarrheas and infectious gastroenteritis (Table 2). The second most important group was diseases of the circulatory system: cerebrovascular accidents, arterial hypertension, and cardiovascular problems, with a higher number of registered cases in women, represented 8.3% of all deaths. External causes ranked third (4.3%), and neoplasms were in fourth place (2.7%), the most frequent being tumors of the digestive organs.

In terms of specific causes of death, AIDS ranked first, with 413 certified deaths (5.2% of the total), followed by diarrheas and infectious gastroenteritis (5%), with 398 deaths, with 180 of the deaths from diarrhea (45%) occurring in the group aged 15–49 years. Cerebrovascular accidents were in third place, with 278 deaths (3.5%), followed by pneumonias (180 deaths), other car-

TABLE 2. Mortality, by broad groups of causes and sex, Haiti, 1999.

		Females		Males		Unknown		Total	
Broad group of causes	ICD-10 code	No.	%	No.	%	No.	%	No.	%
Communicable diseases	A00–B99, G00–G03, J00–J22	732	18.5	821	20.6	7	15.2	1,560	19.5
Malignant neoplasms	C00–C48	119	3.0	95	2.4	—	—	214	2.7
Diseases of the circulatory system	I00–I99	371	9.4	293	7.4	—	—	664	8.3
Certain conditions originating in the perinatal period	P00–P96	137	3.5	119	3.0	8	17.4	264	3.3
External causes	V01–Y89	109	27	237	5.9	1	2.2	347	4.3
All other diseases		642	16.2	464	11.6	9	19.6	1,115	13.9
Ill-defined causes	R00–R99	1,855	46.8	1,957	49.1	21	45.7	3,833	47.9
Total certified deaths	A00–Z99	3,965	100	3,986	100	46	100	7,997	100

diopathies (163), tuberculosis (162), and causes related to maternity. Of the 10 leading causes of death in women, the first three coincide with the general pattern, but maternal causes come fourth, with 157 deaths. Diabetes (85 deaths) and arterial hypertension (68) occupy seventh and ninth place, respectively, while in men the latter two are replaced by external causes and assaults.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Infant mortality increased from 73.8 per 1,000 live births in 1996 to 80.3 per 1,000 in 2000. This indicator is calculated from the results of a representative national survey based on a stratified sample of 9,831 households. The rising rate is associated with increased poverty, deficiencies in the health system, and the impact of the AIDS epidemic, both because of the number of children infected by their mothers and because of the number of orphans left abandoned and vulnerable. According to the same survey, neonatal mortality increased during the same period from 31.2 to 32.2 per 1,000 live births, and postneonatal mortality rose from 42.8 to 48.1 per 1,000.

Acute diarrheal disease is the number-one health problem in children: 25.7% of those under 5 years old and 43.4% of those under 1 year had had episodes of diarrhea in the two weeks prior to the survey, but only 40.7% of those under 5 and 45.3% of those under 1 year received oral rehydration therapy.

In 1999 there were 1,215 deaths in children under 5 years old, representing 15% of all registered deaths. The leading causes were the same as in 1997 and 1998: intestinal infectious diseases headed the list at 12.1% of the total, followed by infections of the perinatal period (10.2%), malnutrition (9.1%), and acute respiratory infections (6.9%). AIDS was among the 10 leading causes of death in this age group, reflecting the importance of vertical HIV transmission in Haiti. HIV/AIDS accounted for 3.6% of all registered deaths, with no difference between males and females.

Schoolchildren (5–9 years)

In Haiti the school-age population is considered to be the group ranging from 6 to 24 years of age, since more than 80% of the pupils are older than their grade because of constant delays, mainly for economic reasons. In 2000 the population between 5 and 9 years of age was estimated at 1,053,610, or 13% of the total, while the group aged 6–24 years represented 44%. Because of poverty conditions and the fact that 89% of the schools are private, 17.1% of the school-age population was not enrolled in school and 12.5% had never been enrolled. Of this last group, 41.9% were under the age of 10, and 54% were girls.

It is estimated that the AIDS epidemic has left 7.4% of the children and adolescents under 15 years old without a father, mother, or both, and, if all causes of death are included, the proportion rises to 13.2%. At the same time, an estimated 20% of the group under 15 years old are in a state of vulnerability—living in poverty, undernourished, with limited access to education, residing in foster homes where they do domestic work, or else in the street. And that does not include the ones who are HIV-positive or disabled. It has been calculated that some 250,000 children and adolescents are sent to live with families other than their own, in a situation referred to as *restavek*, where they perform domestic jobs for which they receive no compensation—81% of them in rural areas, 75% of them girls, and most of them between 7 and 14 years old. Only 55% attend night school. Four out of five report that they have been subjected to physical violence, and they are also exposed to sexual and psychological abuse. Street children are another vulnerable group: Quisqueya University estimated in April 2000 that their number ranged between 6,500 to 7,800.

As the result of an epidemic of measles and an outbreak of polio associated with circulating vaccine-derived poliovirus, priority has been given to vaccinating the population under 15 years of age both in school and at home, the latter based on a house-to-house campaign. No other health sector actions are aimed at this population group, despite various attempts by the Ministry of Health over the last 10 years through the school health service, which has yet to organize a model for the delivery of health care.

In the group aged 5–14 years, infectious and parasitic diseases accounted for 24% of the registered deaths, and typhoid, HIV/AIDS, tuberculosis, and malaria all ranked among the 10 leading specific causes of mortality, with no major differences between the sexes. However, external causes represented 10% of all causes of death, with 26 cases of traumatic injuries, 17 of them inflicted on women (65%), and 9 deaths from transport accidents, 8 of them in boys.

Adolescents (10–14 and 15–19 years)

Adolescence is defined as ages 10 through 19, while youth goes up to age 24. Haiti has a young demographic structure, with 60% of the population under 24 years old. In 1999 the median age was 20 years.

According to the death certificates for 1999, adolescents and youth accounted for 8% of the deaths in the country. HIV/AIDS was the leading cause of death in this age group, accounting for 5.8% of all certified deaths, a higher level than it had been in 1997 and 1998. Among the 10 leading specific causes of death in this population group were assault and homicide, tuberculosis, typhoid, and causes related to maternity. In 1999 there were 157 maternal deaths, 35 of which (22%) were reported in the group aged 10–24 years. The State has no specific health services for adolescents and youth, and health personnel have received no specialized training in this area.

The fertility rate in girls aged 15–19 increased from 76 per 1,000 to 80 per 1,000 between 1996 and 2000, and in women 20–24 years old it rose from 178 to 187 per 1,000. In contrast, the fertility rate in women aged 25–29 declined from 233 to 204 per 1,000. For all age groups the rate is higher in rural areas. Among girls aged 15–19 years, 0.3% had had an abortion, while in the 20–24 age group the proportion was 1.2%, and 0.7% had had two abortions.

The average age at which men had their first sexual relationship was 18.5 years, and for women the age was 19 years. In a 1992 survey conducted in Cité Soleil (the poorest, most marginalized area of Port-au-Prince), 8.3% of the young people reported having had their first sexual encounter between the age of 7 and 11. Of the girls 15–19 years old living in consensual unions, 16% were using some method of family planning, and the percentage increased to 32% in women aged 20–24.

The prevalence of sexually transmitted infections in adolescent males 15–19 years old was 9.9%. In the group aged 15–24 the prevalence of HIV infection was estimated at 3.8%; that of syphilis, 6.7%; and hepatitis B, 3.2%. Surveys show a high level of knowledge about the prevention of AIDS, and condoms are cited as the best method for preventing infection, but even so, their use continues to be very limited. In one survey, 18% of the females and 33% of the males stated that they had used a condom in their last sexual encounter. Condom use varies with level of schooling; youth who had completed high school had a tendency to use condoms more frequently (17% of the women, and 30% of the men) compared with those who had only primary education. Among those who had had no schooling at all, condoms were used by only 1% of women and 2% of men.

Violence and sexual abuse are very frequent in this population group: 29% of the girls say that they did not consent to their first sexual relationship, 37% of the cases of violence reported by women are sexual abuse, and 70% of adolescent girls and women have been exposed to violence in some form. Of those affected by violence, 37% cited assault or sexual abuse, 15% were under 15 years old, and 3% were under the age of 10. At the same time, 62% of the women between 15 and 29 years old were unemployed, and 6.6% were heads of household.

Data from 1999 indicate that 61% of all registered alcoholics and drug addicts were between 10 and 25 years old. In the group aged 10–24 years the leading cause of mortality was AIDS, representing 10% of all registered deaths with specifically defined causes, followed by intestinal infections (9.6%), causes related to maternity (8.8%), external causes (8.8%), and finally typhoid, the fifth-ranking cause of death in this age group.

Adults (20–59 years)

The age group of those 20–59 represents 40% of the total population. It encompasses both the population of reproductive age and the national workforce. The fertility rate declined from 6.0 children per woman of childbearing age in 1977 to 4.8 in 1994, and the estimated rate for 2000 was 4.7 children per woman, with variations by place of residence (5.8 in rural areas and 3.2 in the Port-au-Prince metropolitan area). In 2000, 99% of the women had information about at least one modern family planning method, most notably the pill, injections, and the condom, and 71% knew about at least one traditional method. Of all women with a regular partner, 22% were using a modern method (50% of them used injections) and 5.8% were using a traditional method. These percentages were higher than they had been in 1994 (13% and 4.4%, respectively).

AIDS is the leading cause of death for the population 15–49 years of age, accounting for 11.2% of all registered deaths and 21.6% of deaths with specifically defined diagnoses. Intestinal infections come second, and maternal causes rank third. Ill-defined causes represent 48% of all deaths in this age group.

The maternal mortality rate in 2000 was 523 per 100,000 live births, a 15% increase relative to 1995, when it was 457 per 100,000. Causes related to maternity are the second most important cause of death in women 15–49 years old (the first being AIDS), and they represent 17.7% of all registered deaths with specifically defined diagnoses. Among maternal causes, problems relating to arterial hypertension and eclampsia are the most frequent, followed by complications of labor such as hemorrhage. Seventy-eight percent of pregnant women had prenatal checkups with a health professional (physician, nurse, or nursing auxiliary). This figure was a 15% increase over 1995, when 67.7% had prenatal monitoring. Delivery care by a health professional or trained midwife also increased, from 46.3% in 1994 to 59.8% in 2000.

The Elderly (60 years and older)

The over-60 population represents 5.9% of the total (5.5% of all males and 6.3% of all females). There is no definite social security policy for this population group, despite efforts of the State, which agreed to grant a retirement pension through the Ministry of Finance to employees who had completed 25 years of service and were at least 50 years old. The National Office of Old Age Security, created in 1965, brings together 1,323 affiliates in the private sector. In addition to its headquarters, this agency has 10 offices, located in the Port-au-Prince metropolitan area and in six cities of the interior. In 1999–2000 it insured 64,853 individuals, or 0.8% of the total population. It paid out 166 pensions in 1997–2000; 80% of the beneficiaries were men, and the average benefit paid was under G1,000 a month (US$ 45). However, because of the high level of unemployment, most older adults are not eligible for this pension benefit.

There are no health programs for older adults. According to Haitian tradition and culture, the elderly stay in the home and are cared for by their families. However, this situation is beginning to change, and private nursing homes for seniors are starting to appear, although because of their cost they are accessible to only a minority of the population. Nine municipal governments offer a

small amount of financial assistance for nursing homes for the poorest persons.

In 1999 the causes of death were mainly noncommunicable diseases. Diseases of the circulatory system accounted for 39% of the deaths with a valid diagnosis. Cerebrovascular accidents, arterial hypertension, and cardiopathies accounted for a larger proportion of deaths in women (55%). According to the registered deaths, diabetes had a male-female ratio of 2:1. Malignant neoplasms of the digestive organs, along with tuberculosis and HIV/AIDS, were among the 10 leading specific causes of death in the adult population.

Family Health

Constant displacement and migration abroad are causing the family structure to break down in both urban and rural areas. In the large cities a single dwelling may be occupied by several families as a result of migration or of children being orphaned. In urban areas, 48% of single-parent families are headed by women, compared with 33% in rural areas. There are no programs geared to family health.

Workers' Health

There is no reliable information available on the health situation of workers, the majority of whom are in the informal sector, nor is there a health program that takes occupational risks into account. The employment rate is 46%, and the informal sector (composed mainly of women) and the agricultural sector together make up 96% of the working class. No services are provided for the informal sector, nor do these workers have any social security benefits, except in the case of sexual workers, disadvantaged children, and the disabled. The law provides three months of maternity leave for employed women, but almost the entire working class is beyond the reach of health and protection services, save for routine health services. Government workers have a poorly organized insurance system, while the health of employees in the private sector comes under the responsibility of the Office of Medical Insurance and Maternity, an autonomous centralized entity with a hospital that offers basic services plus some specialized services such as traumatology. In addition to medical care, an indemnity is paid to beneficiaries in the event of temporary incapacity or permanent disability; in 1999–2000 it was paid to 559 persons, 90% of them men. The number of enrollees fell to 43,698 in 1999–2000, versus 50,935 in the preceding period.

The Disabled

In 1998 the Ministry of Health estimated that 525,000 Haitians (7% of the total population) had some form of disability, and half of them were under 15 years of age. The most frequent disability was blindness; it was estimated that 1% of the population was blind and that between 75,000 and 200,000 had vision problems because of traumatic injuries, glaucoma, cataracts, infection of the cornea, and diabetic retinopathy.

Border Populations

Little information is available about the health situation of the people who live on the border and cross over into the Dominican Republic for shorter or longer periods, most of them to work in the sugar cane fields. Nor are there concrete figures on the number of Haitians living in the neighboring country, which could range from 250,000 to 1 million. According to a socioeconomic survey conducted in the communities of sugar cane workers in the Dominican Republic, 27.5% of the mothers stated that they were of Haitian or Dominican-Haitian origin. Also, 76% of the women and 46% of the men born in Haiti had had no schooling, compared to 24% of the Dominican women and to 21% of the Dominican men. The survey also found that there was less knowledge about and less use of methods to avoid HIV infection among the Haitian population, and that 20% of the children under 5 years old with Haitian mothers were suffering from moderate or severe malnutrition.

By Type of Health Problem

Natural Disasters

Haiti is susceptible to hurricanes because of its geographic location, and it is particularly vulnerable to their damage because of environmental degradation and the precarious state of homes, which are often built on unstable terrain near steep embankments or swamps. At the same time, because of the severe deforestation that has taken place throughout the island, even normal rains can cause floods in Port-au-Prince and other urban areas. In September 1998, Hurricane Georges claimed 230 lives, caused damage or injury to 344,000 persons, battered 13,000 homes, killed 40,000 head of cattle, and destroyed about 100 km of roads, for a total estimated loss of US$ 161 million. In November 2000 torrential rains caused major damage in the Department of the North: 14 deaths, 300 homes destroyed, extensive losses of sugar cane and corn crops and of livestock, and the displacement of more than 23,000 persons. Haiti is also at high risk for earthquakes, since it has eight tectonic faults, two of them major: one located in the extreme north and the other crossing the country from east to west.

In November 2000 the government adopted a National Plan for Disaster Management and Preparedness, which had been developed with the assistance of agencies in the United Nations system.

Vector-borne Diseases

In Haiti *Plasmodium falciparum* malaria is endemic, with it sometimes becoming epidemic, and with the highest levels of transmission in rural areas and during the rainy seasons, from March to May and October to November. In 1999 there were 59 deaths from malaria (with 90% underregistration), and a total of 973 cases were reported to the Ministry of Health. However, this

figure does not reflect the real number; there is no epidemiological surveillance system for malaria, and the reported cases were from only four departments. According to entomological studies conducted 15 years ago, there are five species of *Anopheles* in Haiti, and the principal malaria vector is *Anopheles albimanus*, which is widespread throughout the country and becoming progressively more resistant to DDT. A joint five-year project is being undertaken with the Dominican Republic to eliminate malaria from the island.

As for dengue, there is no structured program aimed at prevention and control of the disease. At the same time, epidemiological data are insufficient to estimate the magnitude of this problem in Haiti. In 1999 two cases of dengue were reported to the sentinel epidemiological surveillance system, but neither of them was confirmed because there is no public health reference laboratory. In 2000 the network of Cuban physicians participating in that country's technical cooperation program reported a total of 59 clinical cases of dengue. The *Aedes aegypti* vector is present throughout Haiti, especially in urban areas, where accumulations of garbage provide propitious breeding sites, especially during the rainy seasons. There have been no known cases of hemorrhagic dengue.

Lymphatic filariasis is widespread in urban areas, especially in the Department of the North on the Gulf of Gônave, where it is a major public health problem. The entire country is at risk for transmission of this disease, since the vector, *Culex quinquefasciatus*, tends to breed in urban areas and along coastal areas sheltered from the wind. In cities such as Léogâne, Arcahaie, and Limbé the rate of microfilaria carriers exceeds 20%, and preliminary surveys conducted since 1999 to detect presence of the infection indicate that municipalities in the Department of the North and the Department of the Center have positive rates of over 30%.

Diseases Preventable by Immunization

No cases of measles were reported between 1994 and 2000. During the first quarter of 1995 the Ministry of Health conducted a vaccination campaign against this disease that achieved 95% coverage of children between 9 months and 10 years of age. However, vaccination efforts were not continued during 1995–1999, and as a result, by 2000 about 1 million children under 5 years of age were susceptible. This situation set the stage for the outbreak of an epidemic on 8 March 2000 in the city of Gonaïves, in the Department of the Artibonite. During that year there were a total of 990 confirmed cases, most of them in the metropolitan area of Port-au-Prince. The viral genotype identified was the same one that was circulating in the Dominican Republic and other countries of the Americas. To combat the epidemic, the Ministry of Health immediately launched a door-to-door vaccination campaign in Gonaïves, and within two weeks the children under 10 years old in the main cities of the Department of the Artibonite had been vaccinated. However, despite the effort to contain the epidemic, cases were confirmed in various municipalities throughout the country, and a national campaign was undertaken to vaccinate all children between the ages of 6 months and 14 years (3 million in the entire country). By the end of 2000, measles vaccination coverage had reached 75% (Figure 3), with a range of 50% to 100% in the country's 133 municipalities.

The last case of poliomyelitis in Haiti was confirmed in 1989, and the disease was declared eradicated from all the countries of the Americas in September 1994. However, vaccination coverage was not satisfactory and it was not possible to establish surveillance of this disease because the number of cases of acute flaccid paralysis was insufficient. In 2000 a case of acute flaccid paralysis was reported in a 2-year-old girl living in Danse à l'Ombre, Department of the Northwest. Virologic studies identified a poliovirus derived from the Sabin type 1 vaccine that had become modified by successive mutations through transmission between unvaccinated children over a period of probably one and a half to two years. The virus that was isolated differed from the Sabin type 1 virus in 24 of its nucleotides. Seven more cases occurred in 2001, the last one in July. To bring this epidemic under control, two house-to-house polio vaccination campaigns were conducted in 2001 (May–June and September–November). Coverage in the first campaign was 100%, and extensive monitoring of the house-to-house exercise confirmed high rates of coverage in all the departments.

Diphtheria cases are confirmed based on their clinical and epidemiological characteristics. Eight cases of diphtheria were reported in 1999, seven of them in the Department of the West. Neonatal tetanus continues to be a public health problem: 38 cases were confirmed in 1999, and 60 were reported in 2000. However, it is thought that the true number of cases is much greater, given the deficiencies in the epidemiological surveillance system, in which fewer than 10% of the health services in the country participate.

Intestinal Infectious Diseases

Diarrhea and gastroenteritis are the second leading cause of death in the general population, especially children. Typhoid was also among the 20 most frequent causes of general mortality in 1999; although it is not subject to surveillance, it accounted for 67 registered deaths that year. There have been outbreaks in closed communities, where the case-fatality rate is high.

Chronic Communicable Diseases

Tuberculosis is the sixth most important cause of death in the country, and it continues to be endemic. In 1998 the estimated prevalence was 123 per 100,000 population, and in 1999 a total of 9,124 cases, including all forms of the disease, were reported, for a prevalence of 114 per 100,000 population. In 1998–1999 the rate of cases diagnosed on the basis of positive sputum smear was 84 per 100,000 population, and 6,750 new cases were re-

ported. The health services network involved in the directly observed treatment, short course (DOTS) strategy is incipient: as of the year 2000 there were 200 health establishments (one-third of the total) participating in the national network engaged in combating this disease. The mobility of the population and difficult access to health services are factors that hamper follow-up of patients and lead to dropping out of therapy or to treatment failure. The AIDS epidemic has aggravated the tuberculosis situation, since TB is one of the infections most frequently found in persons with HIV. So far, there is insufficient information on the extent of this association.

Although the true prevalence of leprosy is unknown, it can be said that the disease is certainly still endemic in Haiti. The fight against this disease has been led mainly by agencies in the nonprofit private sector such as the Famme Pereo Institute, located in Port-au-Prince, and the Cardinal Leger Institute, in the Department of the Artibonite. Of the cases registered by these agencies in 1996 and 1997, 81% were paucibacillary (or tuberculoid). These centers still receive some reports of cases of deformation as a result of leprosy.

Acute Respiratory Infections

Surveys of morbidity and mortality conducted at the national level in 1987 and in 1994–1995 showed that about 20% of the children under 5 years of age had experienced cough and rapid breathing in the two weeks before they were interviewed, and the percentage was even higher in younger children. Only one-fifth of these children are taken to the health services, with notable differences depending on the level of schooling of the mother and place of residence (rural or urban). According to the death certificates recorded in 1999, there were 209 deaths attributable to acute respiratory infections, 97 of them in children under 5 years old.

Zoonoses

During 1995–2000 there were 22 reported cases of human rabies and 44 cases of laboratory-confirmed canine rabies. Most of these cases were from the Port-au-Prince metropolitan area. Rabies is a public health problem of the utmost importance. At present, many reported foci are not investigated because of deficiencies in the epidemiological surveillance system. Prevention measures such as canine vaccination have been stepped up. In the year 2000 alone, nearly 30,000 dogs and cats throughout the country were vaccinated. In 2000 approval was given to a technical cooperation project to be carried out jointly with the Dominican Republic for prevention campaigns in cities along the border shared by these two countries.

Carbuncle is endemic in the departments of the North, Southeast, and the Artibonite. These three departments have active foci, and the Ministry of Agriculture is conducting vaccination there, although the activity is sporadic and there is little community participation. Data on morbidity and case fatality rates are unavailable.

HIV/AIDS and Sexually Transmitted Infections

HIV/AIDS is the most important of all the sexually transmitted infections that occur in Haiti, with 4.5% of the population infected. The virus affects both men and women of reproductive age, causes death at a young age, and leaves vulnerable populations behind, such as orphaned children. Among certified deaths, HIV/AIDS infection was the leading cause in 1999, with 413 deaths, or 10% of all registered deaths with a specific diagnosis. In women of reproductive age, AIDS was responsible for 20.5% of all registered deaths. It is estimated that every year there are some 13,000 pregnant women who are HIV-positive, and that 30% of their children (3,900) will be born with the infection. A project on the prevention of mother-to-child transmission is still in the incipient stage and is currently being carried out on a pilot basis in three health institutions.

Prevention efforts are still inadequate, in part because the Ministry of Health has not been able to standardize and organize the interventions of the different players involved: the public and private sector, nongovernmental organizations, and international agencies. Since 1991 the Ministry of Health has not carried out epidemiological surveillance for AIDS in the health services, which would provide information on the progress of the epidemic and the characteristics of the affected population. Surveillance has been based solely on cross-sectional studies conducted every four years that measure seroprevalence in pregnant women and on other studies recommended by PAHO/WHO for estimating prevalence in the general population. Three sentinel studies have been conducted in pregnant women, yielding prevalence rates of 6.2% in 1993, 5.9% in 1996, and 4.5% in 2000. However, this slight decline does not necessarily mean that the risk has diminished, since the percentage of positive responders increased between 1996 and 2000 among women under 20 years old. Indeed, it is possible that the lower prevalence is due to the high number of deaths from AIDS.

Migration to urban areas and other countries of the Caribbean, especially the Dominican Republic, has favored HIV transmission. In terms of human rights, there is no legislation to protect persons with HIV/AIDS, women who are victims of rape, or young girls who are forced to have sexual relations. Persons with HIV/AIDS are victims of discrimination, rejected by society and their own families, abandoned, and often only accepted by charitable institutions, where they eventually die. There is no possibility of access to triple-drug therapy.

The sentinel survey of pregnant women also screens for cases of syphilis and hepatitis B. The latest study, conducted in 2000, showed positivity rates of 5.6% for syphilis and 3.8% for hepatitis B. The surveys also showed that seropositivity for HIV increased from 2.1% to 13%. Blood transfusion centers are another source of information. Between October 1999 and September 2000 the screening of 3,948 prospective donors showed that 1.4% were positive for HIV, 3.6% for hepatitis B, 0.1% for hepatitis C, and 0.8% for syphilis. The population examined has previously

responded to a survey to determine risk behaviors. The use of the syndromic approach to the diagnosis and treatment of sexually transmitted infections is not yet sufficiently developed in the health services.

Nutritional and Metabolic Diseases

In 1995 a nutrition survey was conducted in all the departments of the country, and since then a reference document has been prepared assessing the nutritional status of children under 5 years old. According to the survey, overall malnutrition was 67.3%, with the highest level in the Department of the Center (75%) and the lowest in the Department of the Northeast (52%). Chronic malnutrition affected 65.5% of the population, with extremes of 72% in the Department of the Center and 52% in the Department of the Northeast, while acute malnutrition was 34%, with variations ranging from 48% in the Department of Grand'Anse and 25% in the Department of the West. In the certified deaths that were studied, malnutrition ranked eighth among the causes of general mortality, with 145 deaths, 76% of them in children under the age of 5 years. It is not possible to obtain exact information on nutritional anemia in preschool children, but the prevalence is believed to be high because of the endemicity of malaria, helminthiases, and other predisposing factors as well as widespread poverty.

Vitamin A deficiency is also a public health problem, and the State provides supplements of this vitamin through the health system. According to studies on vitamin A conducted by UNICEF in 1977 in the departments of the Northeast and Northwest, the prevalence of conjunctival xerosis was 9.7 per 1,000 and corneal ulcers, 2.5 per 1,000. A 1997 study of household and maternal determinants of vitamin A and iron status conducted in 226 Haitian preschoolers aged 24–60 months showed that stunting (low height-for-age) was severe in 31% of the sample and moderate in 23%, while 36% had low weight for age, and wasting (low weight-for-height) was found in 4%. At the same time, 92% had a deficiency, or were at risk for a deficiency, of vitamin A. The mean plasma vitamin A concentration for all the children was 12.5 µg/dL, while boys had significantly lower plasma retinol values (11.7 µg/dL, SD 4.9) than girls (13.2 µg/dL, SD 4.9), and 20% of the study population was iron-deficient, with serum ferritin levels of less than 12 ng/mL. Numerous foci of iodine deficiency have been found in the country, and cases of cretinism were reported in the Department of the Center.

A nutrition survey conducted in 1995 showed that only 1% of newborns received early breastfeeding, between 15% and 36% of the children were exclusively breast-fed, and 96.3% were breast-fed at some time. There were no differences in terms of sex, but the percentage was higher in rural areas (97.8%) than in the cities (94.9%). In 2000 the prevalence of exclusive breastfeeding for 0–5 months increased to 49%, and nonexclusive breastfeeding rose to 99%. Moreover, 25.9% of the babies were breast-fed for 23 months. At the same time, however, exclusive breastfeeding of infants 0–3 months old was only 3.3%, and 34% of those 0–5 months old also received powder-based infant formula.

Diseases of the Circulatory System

According to the certified deaths that were studied, cerebrovascular diseases are the third leading specific cause of death, other cardiopathies are in fifth place, diabetes ranks tenth, and arterial hypertension is in eleventh place. It is interesting to note that there are more registered deaths among females than among males, and this pattern is consistent in the different age groups. Race-related factors, excessive salt intake, and overweight are risk factors for cardiovascular disease in the younger age groups.

Malignant Neoplasms

Malignant neoplasms were not among the 20 leading specific causes of mortality in Haiti in 1999, since they corresponded to only 2.5% of all registered deaths with a certified diagnosis. There were a total of 196 cases of malignant neoplasms, 111 in females and 85 in males. Malignant tumors of the digestive tract headed the list (66 cases), followed by malignant neoplasms of the male genital organs (33 cases). However, this information is not conclusive because of the sizable underregistration of deaths and also because the National Health System does not have efficient means for performing histopathological diagnosis.

Accidents and Violence

Accidents and violence contribute significantly to morbidity and mortality in Haiti, especially among the economically active population and among adolescents and youth. In 1999 transport accidents stood in twelfth place among the causes of general mortality, with 98 deaths, and assault with a firearm was in sixteenth place, with 70 deaths, 56 of the victims being men.

Oral Health

No information on the subject of oral health is available at the national level. Surveys conducted in small localities have found a 37% prevalence of caries in 12-year-old schoolchildren. A 1996 study conducted in Jérémie revealed that 50% to 79% of the adults had at least one missing tooth, while only 1% of the group aged 17–59 years had teeth with fillings.

Emerging and Re-emerging Diseases

In 1998 there were 61 cases of meningococcal meningitis and in 1999 there were 56, with a case-fatality rate ranging from 20% to 30%. The epidemic in 1994–1997 led to strengthening of the epidemiological surveillance system, despite its limitations, and made it possible to identify outbreaks in more than 27 of the country's municipalities and take steps to control them. In all, 667 cases occurred, with a case-fatality rate of 31%. Half these cases were reported by the National University Hospital of Haiti (HUEH) in Port-au-Prince. The age group most affected was children and adolescents 5–14 years old, and the strains

identified corresponded to *Neisseria meningitidis* serogroups B and C.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

In 1998 the Ministry of Health published its national health policy, which recognizes health as a fundamental human right of all Haitians, without discrimination, and emphasizes health's direct relationship to human development under the principles of equity, solidarity, and social justice. The document refers to the difficulties the Ministry has had to face, with inadequate human and financial resources to meet its objectives for serving a nation immersed in poverty and with great health needs.

The National Health Policy calls, in the first place, for strengthening the Ministry's steering role in the planning, execution, and evaluation of health programs. The Municipal Health Units (UCSs) are decentralized administrative units responsible for carrying out a series of health activities of assured quality with the participation of the community. Although traditional medicine, which in Haiti has magical and religious connotations, is recognized and is widely practiced, it does not receive direct support from the health sector.

Health Sector Reform Strategies and Programs

Following the Declaration of Alma-Ata in 1978, the government adopted the primary health care strategy, which has served as the basis for national health programs such as immunization, diarrheal control, and the promotion of breastfeeding; nutrition; maternal and child health; tuberculosis control; and malaria control. The program to combat AIDS was added more recently. These are vertical programs, and their activities are executed by the health services with the participation of the community, bearing in mind the principles of quality, effectiveness, and financial sustainability. Primary health care is currently the overriding strategy in the national policy. It is provided in the form of a minimum package of services that includes health care for children, adolescents, and women; emergency medical and surgical care; communicable disease control; public health education; environmental health; water supply; and the supply of essential drugs. However, this minimum package of services has not yet been institutionalized in the health services, and in the meantime the national programs have limitations that prevent them from offering full coverage throughout the country.

The second most important strategy is reorganization of the health system, which includes functional decentralization of the Ministry based on the UCSs. To implement the decentralization process, commitments have been defined at the central and departmental levels, and the latter has been given the administrative authority to manage financial resources as well as responsibility in the planning, follow-up, and evaluation of health programs through the UCSs. However, the decentralization process is still incipient, and no concrete steps have been taken to initiate or give sustainability to the UCS initiative on a national basis. Other important lines of strategy in the national health policy are: development of an efficient financial system, strengthening of community participation, creation of opportunities for intersectoral coordination, coordination and articulation of the various actors in the health system, development of a human resources policy, research focused on problem-solving, and health legislation to safeguard the interests of the people.

The Health System

The health system includes the following: a) the public sector, consisting of the Ministry of Public Health and Population and the Ministry of Social Affairs; b) the private for-profit sector, encompassing all the health professionals who work in private practice, either independently or in clinics; c) the mixed nonprofit sector, including Ministry of Health personnel working in institutions that are in the hands of the private sector, typically nongovernmental organizations (NGOs) or religious organizations; d) the private nonprofit sector, consisting of NGOs, foundations, and associations; and finally, e) the traditional health system.

The central organization of the Ministry of Health, headed by the minister and the director general, consists of a number of central bureaus (for example, Public Hygiene, Family and Child Health, External Cooperation) that execute the health programs. The exceptions are the AIDS and tuberculosis programs, which are directly under the Office of the Director General. In addition, there are 10 health directorates, one for each of the nine departments and the Nippes Coordination, which are headed by a departmental health director and staffed by professionals who manage the national programs. Under the health directorates come the UCSs (which usually bring together several health services), whose number and location are dictated by the size of the population under their jurisdiction and whether they are in an urban or a rural area.

Because of the country's political problems in recent years, little progress has been made in health legislation. The most recent organic law is dated 1983–1984, but since then new structures have been created, even though they have not had any juridical basis, which are consistent with the resolutions the country has supported in international meetings on health and development. The new parliament is expected to approve the Law on Health and the Law on Drugs, among others, and to establish a Health Commission to support these processes.

All health system institutions are overseen and coordinated by the Ministry of Health, in its regulatory and normative role. However, the Ministry has been unable to assume this leadership role because its structures have received no support in recent years, especially during the embargo. Resources from interna-

tional cooperation agencies have been directed more toward the nonprofit private sector, with the result that some of these institutions have greater capacity than the public sector. The Ministry of Social Affairs is theoretically responsible for the health of workers in the formal private sector, and for this purpose it has various decentralized agencies, the most important of which are the National Office of Old Age Security; the Office of Insurance for Workplace Accidents, Sickness, and Maternity; and the Institute of Social Welfare and Research. Private for-profit activity is concentrated in the Port-au-Prince metropolitan area, where most health professionals practice. Private institutions, including clinics, laboratories, and pharmacies, operate without any significant restrictions and without participating in the health programs or surveillance systems.

The health services reach 60% of the population. They are distributed as follows: public sector, 35.7%; mixed public-private sector, 31.8%; and private sector, 32.5%. There are 371 health posts; 217 health centers, some of which have beds; and 49 hospitals, located mainly in the department capitals. Some of the hospitals are specialized, including the National University Hospital of Haiti, which is the national reference hospital, although its operations are hampered by financial limitations. The bed ratio in national institutions is 86 per 100,000 population, with extremes ranging from 37 per 100,000 in the Department of the Southeast to 127 per 100,000 in the Department of the West. Even though there are health posts in the municipalities, their number is insufficient to take care of the population's needs.

It is estimated that 40% of the population have no access to health services and rely on traditional medicine. Most of these people reside in rural areas, where 13% of the inhabitants live more than 15 km from the nearest health post; 25% are at least that distance from the nearest health center; and 45%, from the nearest hospital.

Organization of Health Regulatory Actions

The formulation of strategies and the execution of activities aimed at guaranteeing minimum services are hampered by an inadequate legal framework that has not been kept up to date and by deficiencies in the institutional framework. The absence of basic laws and the failure to comply with the outdated ones that do exist is creating an anarchic situation in which the State is unable to regulate, supervise, or inspect the quality of the services and supplies that are offered.

The nation's laws governing the safety and efficacy of drugs were enacted in 1948 and 1955. In 1997, within the framework of the first World Bank project, the Ministry of Health drafted a law on this subject with technical assistance from PAHO/WHO, but as of the end of 2000 it still had not been approved because of political problems. The Bureau of Drug and Chemical Substance Control (Ministry of Health), created in 1997, is responsible for the regulation of these products, but it does not have either the means or the capacity to carry out its mandate, and the situation is aggravated all the more by the lack of competent human resources. In June 1999 the Ministry of Health created the Bureau of Health Service Organization, and the Essential Drug Service now comes under this agency.

Environmental Quality

Because of the poverty in rural areas, peasants are obliged to cut down trees to build makeshift dwellings and, even more important, to cook their food. Indeed, 71% of the energy consumed in the country comes from wood and charcoal, with the result that only 3% of the land area is covered by natural forests. Smoke fills the air inside the cramped dwellings, giving rise to respiratory problems, especially among children. About 10% of the homes of the population that earns less than G1,000 a month (US$ 45) are built on unsafe terrain such as embankments or swamps and have an average area of 9.5 m^2 for a family of six to eight persons. In the slums of Port-au-Prince the population density can be as high as 1,800 per hectare. Because of the unequal distribution of income (4% of the population holds 66% of the national wealth and 10% of the population has almost nothing), the poor are forced to turn to nature in order to survive. The use of inappropriate agricultural practices on steep terrain accelerates soil erosion, then tropical rains wash the soil out to the ocean, clogging urban sewers with mud on the way. The surface water is contaminated with organic waste because of the ineffective management of excreta and household refuse. As a result of excessive exploitation of the phreatic layer in the Cul-de-Sac plain (Port-au-Prince), both for irrigation purposes and for drinking water, a saltwater front is gradually invading the subterranean freshwater.

Organization of Public Health Care Services

Health Promotion

Two developments are of note in the area of health promotion: creation of the Health Communication and Education Unit, and official adoption of the National Health Promotion Charter. From the organizational standpoint, communication activities are integrated into various Ministry of Health programs, and these programs collaborate with the health media. There is an association of journalists working in this field, as well as a Haitian press federation, both of which have socially conscious aims.

The healthy municipalities initiative got under way at the end of 1998, and by 2000 eight municipal governments had joined in this endeavor. The first national network was established in collaboration with the Ministry of Health.

Disease Prevention and Control Programs

High priority is given to AIDS and tuberculosis control, and these programs receive support from the financial institutions

that work in the health area. In addition, networks have been developed in which NGOs and public and private health services cooperate in carrying out prevention strategies and activities. Under the tuberculosis program, 200 health services are participating in the DOTS strategy and have set up their own monitoring and reporting system. However, this network is not yet sufficiently developed to ensure national coverage. In turn, the AIDS prevention and control program cooperates with NGOs in such undertakings as five-year plans, sentinel serological surveillance, and the prevention of perinatal transmission. In terms of the country's participation in the Expanded Program on Immunization, lack of organization and failure to assess coverage led to the accumulation of a large susceptible population, resulting in an epidemic of measles and an outbreak of polio associated with circulating vaccine-derived poliovirus. Vaccination coverage is shown in Figure 3. The Program on Vector-borne Disease Prevention does not have information on the status of dengue or malaria. A survey of lymphatic filariasis conducted in all the municipalities of the country showed that it is possible to obtain enough basic information to carry out control or elimination activities.

A program for the feeding of schoolchildren and the control of parasitoses was initiated in 2000 with the participation of the French Technical Cooperation Trust Fund, the World Food Program, PAHO/WHO, and the Ministries of Education and of Health.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

The health sector has no established health information system that would generate a culture of use and analysis of information for decision-making. The sentinel surveillance system has been limited to the monitoring of nine diseases in 50 health facilities. Until the end of 1999 a local NGO was responsible for this system. Starting in 2000, the Ministry of Health's epidemiology service assumed the task of maintaining it and extending it to the other public health establishments in the country. However, lack of human resources and funds for the purpose has prevented this mission from being accomplished.

With support from PAHO/WHO, epidemiologists from the central and departmental levels came together at a meeting in November 2000 and prepared a Strategic Plan for Epidemiological Development based on six strategic lines of action: 1) ongoing training of epidemiologists through national programs and international courses (the 10 epidemiologists in the sector were trained more than eight years ago), 2) development of a national-level Epidemiological Surveillance System under the responsibility and management of the departments and with the participation of all health institutions, 3) creation of a public health laboratory network and a national reference laboratory, 4) analysis and systematic dissemination of information on the health situation at both the national and departmental level, 5) integration of epidemiological surveillance activities into health programs, and 6) regional integration for the exchange and analysis of information and subsequent intervention, especially in cooperation with the Dominican Republic.

Potable Water and Excreta Disposal Services

Access to water that is adequate for human consumption is one of the main problems in Haiti, both in rural areas and in the cities. The proliferation of clandestinely built dwellings and installations has made it necessary to limit the availability of piped water to only a few hours a day, and in some cases to cut it off entirely, forcing hundreds of thousands of women and children to go with containers in search of water. The Metropolitan Autonomous Station for Potable Water (CAMEP) is the State enterprise responsible for the distribution of potable water. Its daily output averages between 100,000 and 130,000 m^3, compared with an estimated need of 250,000 m^3. At the same time, vendors also sell water from trucks, making it a costly resource to which the poor have no access.

In 1999 the potable water supply system reached 47% of the population in the Port-au-Prince metropolitan area, 46% in secondary cities, and 48% in rural areas. Of the country's total population, 34.3% get their water from rivers or natural sources (especially in rural areas), 20.7% use public fountains or taps, 19.4% purchase water in buckets, 11.8% have access to wells, 8.7% have piped water inside the home, 2.7% collect rainwater, 0.3% purchase it from water trucks, and 2.1% have other sources.

Between 1995 and 1999 coverage with excreta disposal systems increased from 43% to 44% in urban areas and from 16% to 18% in rural areas. Household sewage is disposed of using individual sanitation systems such as household latrines, septic tanks, and gutters, when these alternatives are available. Forty-seven percent of the refuse from the capital and 44% from secondary cities is dumped at uncontrolled sites. There is no control over the disposal of hospital waste.

Food Safety

The Ministry of Agriculture has a food control laboratory, but it mainly processes samples for monitoring purposes and plays a minor role in the regulation of imported food. The same is true with regard to food and beverages produced nationally, which are sometimes prepared using traditional methods. It is impossible to exercise any control over the sale of prepared food, most of which is sold in the streets and prepared under unsanitary conditions.

Food Aid Programs

It is estimated that 159,000 tons of food aid were received by Haiti in 1994. In the 1990s, 68% of the food aid came from the United States of America, 9% from the European Union, 7% from Japan, 6% from Canada, 6% from the World Food Program, and 4% from France. Canadian cooperation increased considerably starting in 1997. The principal NGOs that have carried out food aid programs in Haiti are CARE, CARITAS, and Catholic Relief Services, which work in coordination with local nongovernmental organizations and sometimes with the public sector.

Organization of Individual Health Care Services

In the area of mental health, the university-level Mars and Kline Psychiatric Center and the Défilé de Beudet Center are government institutions that operate in the Port-au-Prince metropolitan area. Outside the capital there is no public institution that provides mental health care, but there are a growing number of small private centers. Mental health is not considered a national priority.

Blood banks have been under the management of the Haitian Red Cross since 1986. Although it is not sufficient, financial support is received from several institutions to cover the cost of providing safe blood to public and private health services. The Red Cross has six transfusion centers in the departmental capitals, one of which is at the National University Hospital of Haiti. There are also transfusion centers in private institutions, but they are not part of the national network because the supervision of blood safety cannot be guaranteed. The transfusion centers screen for HIV, syphilis, and hepatitis B and C.

Health Supplies

There are three pharmaceutical laboratories that have been officially designated to produce drugs for national use, and their combined output covers between 30% and 40% of the market in Haiti. As of March 1998 there were 58 entities in the country engaged in importing pharmaceutical products and 5 devoted to distribution. Drugs are dispensed at numerous sites; in addition to official points of sale such as pharmacies (265 of them as of 1998), there is an unauthorized circuit in which drugs are freely sold on the streets, in markets, and at places of business throughout the country.

The public sector has an essential drug program, together with a decentralized logistic system operating in all parts of the country, which guarantees the availability of drugs and supplies in public, mixed, or private nonprofit institutions. The PAHO Essential Drug Program (PROMESS) purchases generic products on the international market and handles their distribution to public health institutions. In 2000 the drugs and supplies distributed to the priority programs were vaccines (US$ 3.2 million), contraceptives (US$ 1.1 million), and drugs for the treatment of tuberculosis (US$ 0.3 million). Of this volume, 58% went to decentralized institutions located outside the Port-au-Prince metropolitan area. The State's total expenditure on drugs and supplies represented 3% of the public health budget in 1996–1997, or 1.6 Haitian gourdes (US$ 0.10) per capita. The value of drugs and supplies distributed by PROMESS in 1997 came to US$ 5.7 million (US$ 0.80 per capita), and in 2000 this figure was US$ 6.8 million (US$ 1.00 per capita).

The National Association of Importers and Distributors of Pharmaceutical Products estimated the total value of the private market for pharmaceutical products at between US$ 25 million and US$ 30 million in 1999. This amount would correspond to a per capita expenditure of US$ 3.90, which would mean that 80% of the country's expenditure on drugs is made by the private sector.

With the problems involved in regulating the sector, it is impossible to know the precise volume of pharmaceutical products available on the market. In the public sector there is no national list of essential drugs, nor is there a national formulary that establishes amounts and specifications for the drugs, supplies, and equipment used in public health institutions. To some extent, the basic markets for health technology, drugs, and other supplies are beyond the Ministry of Health's control.

Human Resources

Human resources in the health area are insufficient and unequally distributed in the country. In 1998 the number of physicians was estimated at 2.4 per 10,000 population, and in 1996 the number of nurses was 1 per 10,000 and of auxiliaries, 3.1 per 10,000. In 1998 there were sizable differences in the distribution by departments. In the Department of the West the number of physicians was 5.8 per 10,000 population, whereas in the Department of the Center this figure was only 0.2 and in the Department of the Southeast it was 0.3. The number of nurses ranged from 1.77 per 10,000 population in the Department of the North to 0.2 in the Department of the Center, and auxiliaries ranged from 4.7 in the Department of the South to 1.5 in the Department of the Southeast. Despite the country's needs, lack of funds has prevented the Ministry of Health from creating new positions for physicians and nurses. This situation, along with financial considerations, has prompted many new professionals to go into private practice or to emigrate to other countries.

In 1999 the government signed a bilateral cooperation agreement with Cuba, under which a network of 500 Cuban health professionals have been working in 62% of the municipalities of the country, both in the hospitals and in the primary care health services. This collaboration with Cuba will continue for five years, until the return of a first group of 120 young Haitians now studying medicine in Cuba under another provision of the agreement. These new health professionals will work for the State in their respective places of origin for a minimum of 10 years.

In the past, only the public sector was involved in the training of health personnel, through its School of Medicine and Pharmacy, School of Dentistry, School of Medical Technology, and four national nursing schools, located in Port-au-Prince, Cap-Haïtien, Cayes, and Jérémie. More recently there has been a proliferation of private schools, which has raised the problem of recognition of the diplomas by the State. Of the four private medical schools, only one is officially recognized. Several schools for nurses and nursing auxiliaries are operating without authorization, and others have not been registered. In 1998 there were nine recognized nursing schools, and nine additional ones were being evaluated. In 2000 a school for nurse-midwives was reopened, and it has already produced 45 graduates.

The National University's School of Medicine and Pharmacy graduates about 90 physicians and 35 pharmacists a year. In order for these graduates to obtain a license to practice in Haiti,

the State requires them to devote a year to social service in a public health institution. In the case of graduates of medical schools outside Haiti, a special committee of representatives from the School of Medicine and Ministry of Health reviews the individual's file and conducts such examinations as may be deemed necessary prior to approval of the candidate, after which he or she must then devote a year to social service.

For the most part, oversight of training of health personnel and of professional practice is ineffective. The lack of a national examination or other official certification is a serious obstacle to standardizing competency in the various health professions. In cooperation with PAHO, the Ministry of Health has begun a review of the current situation and is formulating a national curriculum for nursing studies.

In view of the heterogeneous nature of the health system, the integration of training activities could only be achieved as a long-term objective. Since 1998, with assistance from France, the Center for Public Health Administration Training and Information has been training a dozen public sector hospital administrators and directors each year, and the Haitian Foundation for Diabetes and Cardiovascular Diseases has been offering health workers basic training modules on the timely diagnosis and treatment of diabetes and arterial hypertension.

Health Research and Technology

The Epidemiology and Research Service under the Ministry of Health is responsible for planning and carrying out research contributing to the fulfillment of policies and programs in the area of disease prevention and control. However, financial limitations and lack of personnel trained in the execution and analysis of research have kept the service from carrying out its mandate. Several institutions are conducting research, but their studies are outside the scope of any national committee and are not approved or overseen by the Ministry.

Health Sector Expenditure and Financing

Public funds spent on health represent only 0.8% to 1% of the GDP, even though the State allocates approximately 10.5% of its budget to this area. The Ministry of Health's allocation increased from US$ 6 million in 1991 to US$ 57 million in 1999. However, in real terms the amount is actually less, taking into account inflation and depreciation of the gourde vis-à-vis the US dollar. Since 1996 the allocations have remained unchanged because that year's budget was the last one to be approved by the Parliament. As a result, most of the monies have been spent on salaries, which in 1996–1997 took up 78% of the total Ministry of Health budget. The investment budget depends largely on foreign aid, which during the same period covered 69% of all health expenditures. Overall execution of the investment budget was 49%, with 60% at the central level and 38% in the departments. This gap can be attributed to excessive centralization, cumbersome procedures for requesting funds, and lack of a new national budget since 1996. As a result, activities have slowed down or even halted, and morale is low. With a view to overcoming these hurdles, operational spending was decentralized in 1998 in all the departments except the Department of the West.

External Technical Cooperation and Financing

Nine specialized agencies of the United Nations system have offices in Haiti, and six of these work in the health sector. In addition, there is cooperation with the IDB and the European Union and, bilaterally, with USAID, CIDA, and the governments of France, the Netherlands, and Japan. There is also a representative of the United Nations Secretary General, who mainly handles political matters in close collaboration with the coordinator of the International Civilian Support Mission in Haiti.

The Ministry of Health's Bureau of Planning and External Cooperation coordinates the activities carried out with bilateral, multilateral, and private cooperation agencies in the health field. The United Nations agencies have been especially involved in the following areas: health sector reform, reproductive health, children's health, family planning, vaccination, nutrition, potable water and sanitation, health services development, sexually transmitted infections and AIDS, gender issues in health, and essential drugs.

When Haiti joined CARICOM, regional integration was strengthened. However, there are still not many collaborative activities with the Dominican Republic, with the one so far being a technical cooperation project on the prevention and control of canine rabies that has included field activities, joint meetings, and visits by technicians to both countries.

FIGURE 1. Gross domestic product, annual growth (%), Haiti, 1991–2000.

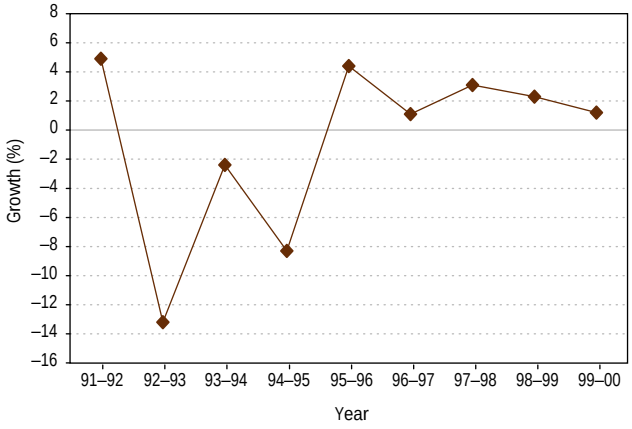


FIGURE 2. Population structure, by age and sex, Haiti, 2000.

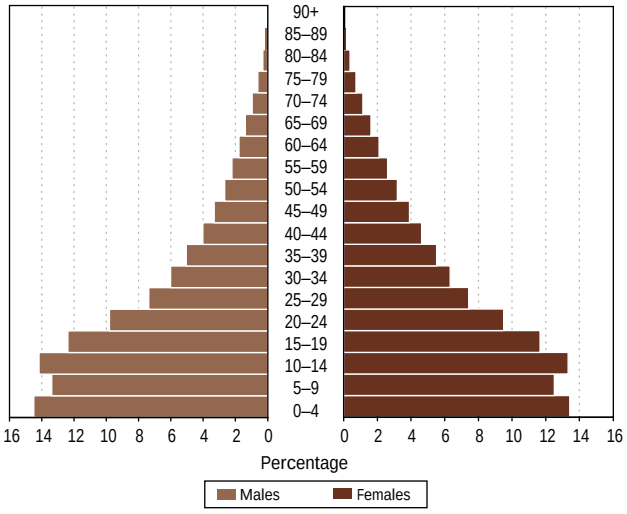
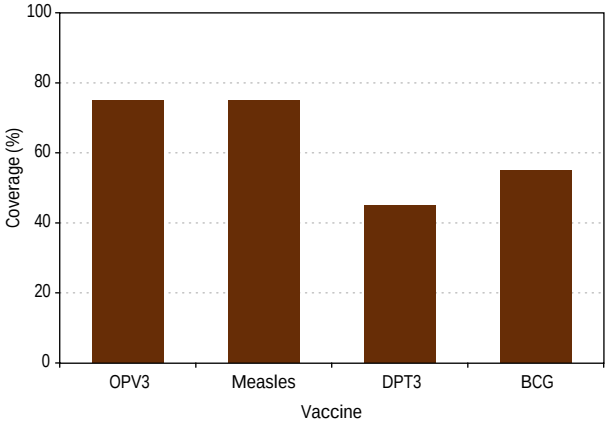


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Haiti, 2000.



HONDURAS

OVERVIEW

The Republic of Honduras has an area of 112,492 km^2, consisting of predominantly mountainous terrain interspersed with 19 river basins. In 2000, it had an estimated population of 6,194,926, with a density of 55 inhabitants per km^2 and an annual population growth rate of 2.8%. Some 44% of the total population lives in urban areas, and the proportion of women is 49.6%. Administratively, the country is divided into 18 departments, 298 municipalities, over 3,000 towns, and more than 27,000 caseríos (settlements consisting of fewer than 1,000 inhabitants).

The age distribution of the population reveals a preponderance of young people: 43% is under 15 years of age, and 21% is between 15 and 24 years (Figure 1). Nine different ethnic groups have been identified in the country; together, they represent approximately 12% of the total population, living in poverty in scattered and remote areas.

For the past two decades Honduras has been engaged in a transition to formal democracy, and throughout that period it has basically been faced with two major stumbling blocks: on the one hand, obstacles stemming from the country's ancestral problems of poverty, unemployment, and its deficiencies in housing, education, and health, and on the other, the institutional weakness of bodies that are of key importance to the strengthening of democracy. During the final years of the century just past, the economy was characterized by a marked dependence of the gross domestic product (GDP) on exports of goods and services, with little growth of domestic consumption. In 1999, the GDP registered a drop of 1.9% from its level of the previous year owing to the effects of Hurricane Mitch, which devastated the country in October 1998. The damage to the economy was reflected in a 4.6% reduction in per capita GDP, and it would have been much greater had it not been for international aid, particularly in the form of major donations and loans and the deferral of payments on the servicing of the foreign debt. Figure 2 shows the trend of the GDP between 1991 and 2000.

The worst effects of Hurricane Mitch were felt in the agriculture and livestock sector, where production declined 8.7% and led in turn to a major fall in exports (–9.4%). In this sector, the crop that suffered the worst damage was bananas, where the production level dropped 77%, followed by plantains (72%), rice (53%), beans (41%), and coffee (11%). Activity in the livestock sector fell off 2.8% and in fisheries, 1.3%, mainly because of a decline in shrimp-raising (4.2%). The economic program for the 1999–2001 period included structural State reforms principally aimed at privatization, modernization, and improved efficiency of the public sector, as well as strengthening of the financial system.

The country's geographic and demographic areas experienced unequal rates of growth in 1995–2000. Support channeled to productive agro-industrial areas served to build up a strong "agro-industrial corridor" in the central third of the country, while the remaining two-thirds were bypassed. In a comparison of the relationship between the monthly cost of the basic food basket and the corresponding per capita wage, it was found that paying for the food basket in 2000 would have required 2.3 wages per capita in rural areas and 2 in urban areas. In 1999, a significant portion of impoverished households headed by women (23.7%) were concentrated in the country's two most populous cities: Tegucigalpa (37.7%) and San Pedro Sula (41.3%).

In the industrial sector, *maquiladoras* continued to generate employment: according to figures reported in September 2000 by the Honduran Maquiladora Association, this industry generated a total of 125,000 direct jobs, 72% of them held by women. The indirect benefits of employment in *maquiladoras* reached 1.2 million persons, counting both dependent family members and suppliers of services (food, transportation, etc.) to employees. Furthermore, it is expected that the number of jobs created by this industry will grow in tandem with increased benefits under the preferential trade systems established within the framework of the Caribbean Basin Initiative.

Mortality

Because of the limitations on the availability of continuous records over the last decade, Honduras has turned to the use of surveys; however, these studies have been carried out at different times and have used different methodologies and degrees of

representativeness in the sampling, so that comparisons and analysis are difficult, as is the measurement of inequalities. According to Ministry of Planning estimates, the crude mortality rate in 1996 (the most recent year for which information is available) was 5.8 per 1,000 population, with a total of 32,666 deaths, of which 18,510 corresponded to males and 14,156 to females. Fifteen percent of all the deaths were reported by hospitals.

The Bureau of Statistics and Census estimated 47% underregistration of mortality in 1999. That same year, the leading causes of registered mortality in the public health establishments were diseases of the circulatory system (986 deaths), accidents (569), malignant neoplasms (249), AIDS (236), and tuberculosis (134).

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

In 1998, this group represented 15% of the total population. The National Epidemiology and Family Health Survey of 1996 (ENESF-96), using the indirect method, estimated infant mortality for 1991–1995 at 36 per 1,000 live births. Because of the different procedures used to arrive at the calculations, it is difficult to compare this rate with the 42 per 1,000 live births estimated by the indirect method in 1993. According to the survey mentioned above, neonatal mortality accounts for more than half of all infant mortality in the country (53%), while acute respiratory infections and diarrhea with dehydration are the two leading causes of death in children under 5 years old.

Ministry of Public Health hospital statistics for 1999 indicate that respiratory distress syndrome of newborn was the leading cause of death in infants under 1 year (12.2%), followed by bacterial sepsis of newborn (6.5%), with a total of 1,888 reported deaths. The predominant group of causes in children under 5 years of age was infectious diseases, especially respiratory infections (24%) and intestinal infections (diarrhea with dehydration) (21%).

Schoolchildren (5–9 years)

According to 1998 projections by the United Nations Population Division, children between 5 and 9 years of age represented 14% of the total population. In partial results from a specific study of deaths, the Bureau of Statistics and Census reported that there were 375 registered deaths in this age group in 1994, which corresponded to 2.3% of all deaths in the country (16,019).

As provided in the Constitution of Honduras, primary education is the only level of education that is compulsory, and it is free of charge for children 6–12 years of age. The Ministry of Public Education estimated that during 1998–2000 primary enrollment increased at an annual rate of 1.3%, reflecting the incorporation of some 13,000 new pupils a year. It has been calculated that in 2000 school coverage was 96% at the primary level, with a recidivism rate of 8% and an estimated dropout rate of 3%. The Ministry of Education has determined that in 1999 only 35% of those who completed the primary cycle went on to the secondary level.

Adolescents (10–14 and 15–19 years)

In 1998, this age group represented more than one-third of the country's total population (33.5%). Data from the Bureau of Statistics and Census for 1999 indicate that 66% of the nation's economically active population (EAP) consisted of adolescents 10–19 years old. That same year, the Bureau of Criminal Investigation reported that there were more than 400 gangs, with some 26,000 members, most of them adolescents and youths (80%). A 1996 study conducted by the National Institute for the Prevention of Alcoholism, Drug Addiction, and Drug Dependency, which surveyed 1,631 students 14–24 years of age at 12 secondary schools in different parts of the country, found that 42% had used alcohol at least once, 17% had smoked, 17% had taken stimulants in pill form, 2% had tried marijuana, and 0.7% had used cocaine.

Ministry of Public Health statistics for 1999 on all hospital care provided by public establishments show that out of 215,611 discharges from hospitalizations for all causes, 17% of the patients were adolescents (10–19 years of age). Of all adolescent discharges, 47.8% of the hospitalizations were for conditions involving the female reproductive process, and of all care related to pregnancy, childbirth, and the puerperium, 27% was provided to adolescents. According to the same source, the second most frequent hospital discharge diagnosis in this age group was violent acts (mainly injuries and poisoning) and the third leading diagnosis was diseases of the digestive system.

According to ENESF-96, adolescent girls aged 15–19 had a fertility rate of 136 births a year per 1,000, compared with 243 births a year per 1,000 women aged 20–24. The survey also revealed that 20% of the women aged 15–24 had had their first sexual encounter before they were 15 years old, and 51% before they were 18. The National Male Health Survey 1996 (ENSM-96) found that more than 75% of those interviewed had had their first sexual encounter before they turned 18. From ENESF-96 it was learned that only 6% of the women 15–24 years of age had used some form of contraception in their first sexual encounter, but among women aged 15–19 who were living in a consensual union, 27% used some method of family planning.

The Ministry of Public Health's Division of Sexually Transmitted Diseases and AIDS reported a cumulative total of 11,789 confirmed cases of AIDS as of December 2000, and one-fifth of all the cases (2,226) corresponded to the population between 10 and 24 years of age. Hospital records show that there were 156 deaths in the adolescent population in 1999, more than 50% of which were attributed to "external causes of morbidity

and mortality," a figure that reflects, in part, the limitations of the country's death records.

A study of deaths in women of reproductive age conducted by the Ministry of Public Health in 1997 found that maternal mortality was almost four times greater in girls aged 12–14 years (391 deaths per 1,000 live births) than in the overall population of women of reproductive age (108 per 1,000 live births).

Adults (20–59 years)

According to the population projections for 2000, persons between 15 and 59 years of age represented more than half (53%) the country's total inhabitants. According to statistics from the Ministry of Public Health for this age group in 1999, women accounted for three of every four hospital visits and discharges. In the case of almost half the discharges (48%), the care provided was directly related to the female reproductive process (pregnancy, childbirth, and the puerperium), and these cases corresponded to 66% of all female discharges. ENSM-96 found that only 50% of the male respondents 15–60 years of age had consulted a state health service at least once a year. The survey results also indicated that 50% of Honduran women between 15 and 44 years old living with a sexual partner in a consensual union practiced contraception, while 39% of those aged 20–24 years living with a partner used contraceptive methods, and among those 35–39 years of age the percentage was 58%.

Hospital statistics show that as of December 2000 a total of 11,789 confirmed cases of AIDS had been registered in Honduras, of which 90% were in patients between 15 and 59 years old, and 61% were in males. The only information available on maternal mortality comes from studies conducted in 1990 and 1997, but they were based on different methodologies and the results are not comparable. The 1997 study found a maternal mortality rate of 108 per 100,000 live births. Of the deaths studied, 47.7% occurred at home, compared with 35% in State-run hospitals, with the remaining percentage in private institutions. Almost half the deaths (47.1%) were due to hemorrhagic complications in the third trimester of pregnancy, followed by hypertensive disorders of pregnancy (preeclampsia and eclampsia), 19%; infections, 15%; and other causes.

The Elderly (60 years and older)

As of 1999, 6.2% of the total estimated population corresponded to adults aged 60 and over, of whom 41% were living in urban areas and 59% in rural areas. The Multipurpose Household Survey conducted in 1999 found that 28.2% of older adults were widows and widowers—22.7% women and 5.4% men. More than half the older adult population (52.6%) were illiterate, and the proportion was larger among women (57.4%).

Ministry of Public Health statistics for 1999 indicate that 10.2% of outpatient consultations in the public health system corresponded to older adults, an increase of 0.5% relative to 1997. Mortality data by cause of death are not available for this segment of the population.

Workers' Health

Data for 1999 from the ongoing Multipurpose Household Survey conducted by the Bureau of Statistics and Census show that jobs had increased at a rate of almost 5% a year, or faster than the growth of the economically active population, thus raising employment levels in the workforce. As a result, unemployment was only 3.7% in 1997–1999. At the beginning of the 1990s the EAP numbered 1.6 million, and by the end of the decade it had reached 2.4 million. This rise of almost 50% was due especially to the steady increase in the participation of women in the labor market, which went from 32.2% in 1996 to 39.1% in 1999, while the rate for males saw very little change. Seventy-five percent of the country's workers were illiterate or had only attended primary school. On 1 October 2000 a new wage agreement went into effect that provided for increases in the minimum wage for certain income brackets, economic activities, and businesses, based on their size.

The Disabled

The Ministry of Public Health estimates that more than 1 million Hondurans have some degree of physical or mental disability. Although some data have recently been gathered by the public and private health services, as yet no consolidated official information is available on mortality and morbidity in this population.

Indigenous Groups

There are more than 1 million Hondurans of indigenous or black descent, living as nine culturally differentiated peoples: the Lenca, Chortí, Tolupán, Tawahka, Garífuna, Pech, Nahuatl, Miskito, and the English-speaking blacks. Their languages come from five basic linguistic trunks: the Mayan, Ute, Aztec, Hokan-Siouan, and African. These populations are dispersed throughout the national territory, usually in neglected areas, and large numbers are concentrated near international borders. The Miskito and Chortí live along the border with Nicaragua and Guatemala; the Lenca, one of the most numerous groups, near the border with Guatemala and El Salvador; the Garífuna, English-speaking blacks, Miskitos, Tawahka, and the majority of the Tolupán communities, along the Atlantic coast; and the Pech and Nahuatl, in the central area in the department of Olancho. Approximately 50% of the indigenous people live in coniferous forest regions, while 30% are found along the coasts and 20% inhabit the Tawahka Reserve and the Río Plátano Biosphere Reserve.

The average monthly income of an indigenous household is US$ 60, but for the Lenca, Pech, Tolupán, and Chortí it is only US$ 20 (a very low figure compared with the national average, which was estimated at US$ 82 in 2000) and during lean times many families subsist by hunting, fishing, and collecting roots and fruit

in the forests. The economic situation of the Garífuna and the English-speaking blacks is somewhat better, since they have access to work related to large-scale fishing.

Although specific information about these groups is not available, it can be said that their health status reflects their marginalized situation, lack of access to basic services, and limited social participation, especially in the case of the Lenca, Tolupán, Tawahka, Miskito, Nahuatl, and Pech. Their living conditions are worsened by their geographical isolation and limited access to water supply and basic sanitation services, among other factors. The Garífuna, Miskitos, and Tawahkas live in coastal tropical rainforest and lowland areas and have a high frequency of malaria and other communicable diseases.

The Garífuna and English-speaking blacks are the groups most affected by HIV/AIDS. Between September 1998 and February 1999 the Ministry of Public Health conducted an exploratory transversal seroepidemiological study of 310 individuals (134 men and 176 women) from Garífuna communities in the department of Atlántida (Bajamar, Triunfo de la Cruz, Corozal, and Sambo Creek) and found the following percentages of seroprevalence: syphilis, 2%; hepatitis B, 29%; HIV, 8%; and other sexually transmitted diseases, 38%. In a subsequent survey, conducted in 2000–2001 among 160 women of reproductive age in the same communities, the seroprevalence rates were as follows: syphilis, 1%; hepatitis B, 34%; HIV, 13%; and other sexually transmitted diseases, 9%.

By Type of Health Problem

Natural Disasters

Honduras is especially vulnerable to natural disasters. The departments of Cortés, Atlántida, Gracias a Dios, and Islas de la Bahía, inhabited by 21.4% of the population, are exposed to hurricanes and floods; the departments of Yoro, Francisco Morazán, Comayagua, Lempira, Intibucá, and Santa Bárbara, with 44.4% of the population, are at risk for floods and mudslides; and the departments of Valle, Choluteca, La Paz, and El Paraíso, with 14.3% of the population, tend to have droughts, floods, and earthquakes. In addition, forest fires are very common.

In the last four years Honduras was struck by two major disasters: Hurricane Mitch and its aftermath in October-November 1998, and a severe drought in 2000, which affected more than 85,000 people in the southern region of the country (Choluteca, Valle, La Paz, Francisco Morazán, and El Paraíso). Hurricane Mitch unleashed torrential rains (more than 600 mm in just five days), producing floods across 11 of the country's 18 departments and affecting 1.5 million inhabitants, with a death toll of 5,657 deaths plus 8,058 people unaccounted for and 12,272 injured. More than 285,000 lost their homes and were forced to take refuge in 1,375 temporary shelters. It is estimated that 60% of the country's roads were damaged, cutting off communication with more than 81 cities. Of the country's 28 hospitals, 23 had partial or total breakdowns in their water distribution systems; in addition, 123 health centers were damaged, and 68 of them had to close down. The economic damage to the health services network in terms of both direct and indirect costs was calculated at US$ 62 million. According to ECLAC estimates, national losses associated with Hurricane Mitch amounted to almost US$ 3,800 million—equivalent to 70% of the GDP, or close to 100% of the foreign debt.

According to data from the weekly epidemiological register, which compiles information on cases of notifiable diseases reported by the Health Service Production Units throughout the country, by the fifth epidemiological week of 1999 there was a cumulative total of 1,059 cases of classic dengue and 4 cases of hemorrhagic dengue, compared with the two weeks prior to Hurricane Mitch, when the weekly reports were down to 200 cases. After Hurricane Mitch there were three reported cases of cholera, one of them confirmed both clinically and epidemiologically; and in 1999 there were another three, one from Mosquitia and two from Santa Bárbara. By the end of the fifth epidemiological week of that year a cumulative total of 23,464 cases of diarrhea had been reported.

Leptospirosis appeared in Honduras for the first time in the wake of Hurricane Mitch, with an outbreak of 172 cases, 28 of them confirmed in the laboratory and the rest diagnosed clinically or epidemiologically, and 7 deaths. The outbreak was controlled by surveillance and epidemiological monitoring, which has also made it possible to detect outbreaks of diseases with the potential to cause epidemics, such as malaria, dengue, and diarrheal diseases.

As a direct consequence of the floods that followed Hurricane Mitch, the central markets of Tegucigalpa were contaminated by a sewage backflow, the result of heavy damage to the drainage system that runs through the city's main cloaca. However, the most serious risk factor contributing to the outbreak of foodborne diseases was the population's lack of knowledge about hygienic practices. Coordination between the various agencies following Hurricane Mitch made it possible to meet the population's needs in an integrated and effective manner, thus strengthening the bases for the response of the United Nations system through the group responsible for disaster management.

Vector-borne Diseases

In Honduras, malaria has been considered endemic since the 1950s, when a program was set up to eradicate it. Because the exact number of cases that occur each year is unknown, calculations are based on the number of positive laboratory samples (thick blood slides) reported by the Ministry of Public Health's malaria laboratory network. In 1997, a total of 373,364 thick blood slides were examined, of which 91,799 (24.6%) were diagnosed as positive. However, in 1998 only 250,688 slides were examined, or one-third fewer than the year before, and of this num-

ber, 44,337 (17.7%) were positive, with an annual parasite index (API) of 9.25. At the end of 1999, a total of 249,105 slides had been examined and 51,911 (20.7%) were positive, with an API of 10.52. The northern coastal area (department of Colón, Health Region No. 6) continued to have the largest number of malaria cases: in 1999, 36% of all the cases in the country came from that area, followed by Health Region No. 7 (department of Olancho), with 17%. As of the end of 2000, a total of 35,122 cases had been registered in the country as a whole. According to official reports, *Plasmodium falciparum* was implicated in about 5% of the reported cases and *P. vivax* accounted for the rest. However, an independent study conducted during 1998–2000 in the area of Tocoa (department of Colón), based on active surveillance, found that more than 40% of the cases detected were attributable to *P. falciparum*. Although the 35,122 cases reported in 2000 represented a decline relative to 51,911 in 1999, blood studies during the same period were down from 250,411 to 175,577, reflecting a marked deterioration of epidemiological surveillance. Health Regions 6, 7, and 8 had the highest APIs and accounted for 64% of the malaria cases in the country.

Surveillance for dengue is conducted with the assistance of clinical diagnosis. The disease has been persistently endemic in Honduras since 1998, when 28,064 cases were reported and the confirmation of hemorrhagic cases (77 that year) was systematized. In 1999, there were 17,835 cases of classic dengue, 36% less than the year before, and 78 reported cases of hemorrhagic dengue. In 2000, there were relatively few cases up until the end of September, when 13,795 were reported in an epidemic concentrated mainly around Tegucigalpa. Nevertheless, the total number for that year was 23% less than the figure for 1999. Of all the cases in 2000, 30% (4,206) were reported from the Tegucigalpa metropolitan region. There were 308 reported cases of hemorrhagic dengue in 2000 in association with the epidemic, and most of them were in Tegucigalpa. The predominant circulating serotype as of mid-1999 was dengue-3, but from that time to the end of 2000 the primary agent was dengue-2. In 1999, there were 8 deaths from hemorrhagic dengue, for a case-fatality rate of 20%, and in 2000, there were 10 deaths, half of them in the group aged 5–14 years, with a fatality rate of 3%.

In 1998, the prevalence of Chagas' disease was estimated at 7%, and 20% of the chronic cardiopathies diagnosed that year were deemed to be chagasic in origin. Screening of transfusional blood for this disease is compulsory in Honduras. According to the Central Chagas' Disease and Leishmaniasis Reference Laboratory, serologic surveys conducted throughout the country in 1998 and 1999 yielded seropositivity rates of 14.5% and 18.4%, respectively. In 2000, a study of 1,380 cardiopathic cases compatible with Chagas' disease found that the largest percentage of seropositive reactors was in Health Region No. 1 (department of Francisco Morazán), with 60%, followed by Region No. 2 (departments of Comayagua, La Paz, and Intibucá), with 34%, and Region No. 3 (departments of Cortés, Yoro, and Santa Bárbara), with 29.4%. The chief measures that have been taken are: screening of donated blood, entomological surveys to ascertain the infestation indexes of the vectors *Rhodnius prolixus* and *Triatoma dimidiata*, seroprevalence surveys, house-to-house spraying in infested areas, and research.

Documentation is available only on the behavior of cutaneous form of leishmaniasis. In 1996, a total of 1,234 cases were reported, 867 (70%) of them from the department of Olancho (Health Region No. 7). In 1997, there were 1,208 registered cases, and in 1998 there were 991, with a significant percentage again concentrated in Olancho in both years. In 1999, only 694 cases were reported, 340 (49%) of them from Health Region No. 7 (Olancho). No explanation has been offered for the decline in incidence, which according to the Department of Vector-borne Diseases in the Ministry of Public Health, went from 22.0 per 100,000 population in 1996 to 10.1 per 100,000 in 1999. Action has mainly taken the form of diagnosis and treatment of cases, passive surveillance, training, and research.

Diseases Preventable by Immunization

There have been no cases or suspected cases of polio since 1989. During 1998–2000, vaccination coverage against this disease in children under 2 years old was over 90%. The last clinical case of measles was reported in 1996, and no mortality from this disease has been registered since 1991. Vaccination coverage of children under 2 years old was 98% in 1998–2000. Figure 3 shows immunization coverage of infants under 1 year in 2000.

Coverage with DPT (diphtheria, pertussis, and tetanus) vaccine in the population under 2 years of age has been at least 94% since 1997. The country has had no reported cases of diphtheria since 1981. Pertussis, however, has exhibited an uneven pattern, with several outbreaks in recent years (more than 648 cases and 28 deaths in 1996–2000). In 2000, 96 cases of this disease were detected, with 1 death. Most of the cases were in infants under 1 year, and of those affected, 25% were under 2 months old. A surveillance system for tetanus was established in 1993, and as of 2000, it had registered a cumulative total of 81 cases. Males over 49 years of age were most affected, with a case-fatality rate of 50%. In 2000, there were no cases of neonatal tetanus.

BCG vaccination coverage to protect against tuberculosis was over 97% except in 1999, when a problem with the vaccine caused the rate to fall to 93%. In 2000, there were only four cases of tubercular meningitis; all were in children under 5 years of age, and two of them had lived with tuberculosis patients.

Rubella was controlled with MMR (measles, mumps, rubella) vaccine from 1997 until 2000, when the program switched to the pentavalent vaccine (MMR, *Haemophilus influenzae* type b vaccine, and hepatitis B vaccine). The change of vaccines and associated logistic coordination resulted in a lowering of coverage, and to compensate, a national immunization day was held in June 2000 for the entire population from 2–4 years of age, regardless of their previous vaccination record, which achieved

coverage levels of over 95%. In 2000, 158 cases of rubella were reported, 94% of them in children under 5 years of age. Surveillance for hepatitis B was initiated in 1996, and from that time until 2000, a total of 208 cases were documented. No deaths have been reported since 1998.

Intestinal Infectious Diseases

Measures to control cholera were stepped up during 1996–2000 in response to epidemics in neighboring countries and the situation following Hurricane Mitch at the end of 1998. In 1997, a total of 90 cases were recorded, most of them from outbreaks in the departments of Cortés, Olancho, and Gracias a Dios. In 1998 (prior to Hurricane Mitch), an outbreak was reported in Mosquitia (department of Gracias a Dios), which accounted for 289 (94%) of the 306 cases recorded that year and caused 12 deaths (case-fatality rate: 3.9%). In 1999, there were only 57 cases and 3 registered deaths (case-fatality rate: 5.3%), and the cases came from the departments of Cortés, Gracias a Dios, and Santa Bárbara. Diagnostic capacity improved substantially beginning in 1999, and the majority of cases were confirmed in the laboratory. Only 15 cases of cholera were reported in 2000, with 3 deaths in the department of La Paz (case-fatality rate: 20%).

Diarrhea was endemic in the population in 1996–2000. During this period, some 200,000 cases were reported annually, 85% (170,000) of them in children and adolescents under 15 years old. The situation was complicated by an increase in reported cases of bloody diarrhea (dysentery): in 1998, there were only 5 cases of dysentery, but the number soared to 2,340 in 1999, and in 2000 there were 1,929. In 1998, 64% (1,496) of the cases were in the population under 15 years of age, and in 2000, the proportion was 72% (1,392 cases). As of the end of 2000, this phenomenon was still being studied and no concrete explanations had been found.

Chronic Communicable Diseases

During 1997–1999, an average of 4,700 tuberculosis cases were registered annually, compared with an annual average of 4,267 cases in 1992–1996. In 1999, nearly 75,000 sputum smears were examined and 4,568 cases of tuberculosis were reported, 56% (2,558 cases) of which were diagnosed in the laboratory and 44% on the basis of X-rays and clinical criteria. The proportion of males was 55%, and the highest rates were in the departments of Gracias a Dios, Cortés, and Francisco Morazán (the last two have the country's largest urban centers and 20% of its population). The occurrence of tuberculosis in association with AIDS/HIV infection increased during 1996–2000. The DOTS strategy (directly observed treatment, short course) has been applied in Honduras since 1998, and in 1999 this approach made it possible to treat and cure 67% of the cases detected that year.

In 1998, the National Leprosy Program was resumed after an interruption of almost two years (1996–1998). By the end of 1998, the program had contacted and followed up on 78 patients, 10 (13%) of whom were still receiving multidrug therapy. In 1999, despite greatly expanded epidemiological surveillance, improved diagnostic capacity, and active case-finding, the number of cases was only down to 72.

Acute Respiratory Infections

Acute respiratory infections have been rising steadily at an average annual rate of 5%. About 90,000 cases were reported in 1996, and by 1998 the figure had risen to 98,790. Surveillance for pneumonia and bronchopneumonia was introduced in 1999, and in that year 78,263 cases were reported, followed by 82,077 in 2000, representing an annual increase of 5%.

Zoonoses

Rabies has been on the decline. Despite higher figures reported in 2000, the number of cases decreased between 1997 and 2000: in 1997, there were 22 cases of canine rabies and 1 case of human rabies; in 1998, there were 7 of canine rabies and none of human disease; and in 1999 canine rabies was down to 5 cases, with 3 in cattle. In 2000, improvements were made in the country's capacity to investigate and document suspected cases, as well as to take, store, and submit samples to a laboratory for analysis, and as a result, there was an increase in the number of cases detected, with the following figures reported at the end of 2000: 15 cases of canine rabies, 3 cases in cattle, 3 in cats, 1 in an equine, and 1 human case. Canine vaccination coverage increased from 50% in 1997 to 68% in 2000.

HIV/AIDS

Of all the cases of AIDS reported in Central America, 60% were from Honduras, and 60% of the country's 11,789 confirmed cases as of December 2000 were from the departments of Cortés (specifically, the metropolitan area of San Pedro Sula) and Francisco Morazán (Tegucigalpa). In addition, 3,419 asymptomatic carriers were reported, making for a cumulative total of 15,208 HIV-positive cases since 1985. In the transmission pattern of the disease, sexual behavior predominates, accounting for 91% of the cases (83% in heterosexuals, 5% in bisexuals, and 3% in homosexuals), while blood transfusions accounted for 1% and mother-to-child transmission, also 1%, with a rising trend in the last-mentioned form over recent years (6.1%). Health Region No. 3 had the largest number of cases (5,520), followed by the Tegucigalpa Metropolitan Region (2,235), Health Region No. 6 (1,641), and Health Region No. 4 (664). With reports now being received from 100% of the departments and municipalities, it can be seen that the epidemic is on the rise in rural areas.

In 2000, the male-female ratio was 1.2 (Figure 4). As of September 2000, 40% of all the cases registered between 1985 and 2000 were in the population aged 25–34 years, and 70% of the patients were between 20 and 40 years old. The period 1998–2000 saw increased measures to combat this disease based

on the First Strategic Plan to Fight AIDS, as well as on national policies aimed at the prevention of HIV/AIDS, which gave rise to creation and approval of the Special Law on AIDS.

Nutritional and Metabolic Diseases

According to the ENESF-96 survey, 96% of the children born during 1992–1996 had been breast-fed at some time, and 42% of those under 4 months old had been breast-fed exclusively, but this practice usually tended to cease at 6 months of age. Ministry of Public Health hospital statistics show that in 1997 the proportion of newborns weighing less than 2,500 g was 9.7%.

Anemia in women of reproductive age affected one in every four women, and one in every three of those who were pregnant. According to the Micronutrient Survey conducted in 1996, 26% of nonpregnant women and 32% of those who were pregnant were anemic. Vitamin A deficiency is a major public health problem: about one in every seven children have subclinical vitamin A deficiency (plasma retinol level lower than 20 mg/dL), and one in every three are at risk for subclinical deficiency (20–30 mg/dL). In the first height census, carried out in 1986, the prevalence of malnutrition was 39.8%, and as of 1997, this percentage had increased to 40.6% at the national level, with 26% corresponding to moderate malnutrition and 14% to severe malnutrition. In 1997, the prevalence of malnutrition by area of residence was 28.5% in urban areas and 57.6% in rural areas.

Diseases of the Circulatory System

No information is available that could be used to assess trends. According to hospital data for 1999, arterial hypertension was the seventh most important cause of morbidity at the national level. In turn, data from the epidemiological surveillance system for that year show that a total of 35,064 services were provided, and the Metropolitan Health Region (Tegucigalpa) had the largest number (9,566), followed by Region No. 6 (5,304), No. 2 (4,475), and No. 1 (4,183).

Malignant Neoplasms

There is no national cancer registry, but nongovernmental organizations keep records on the subject. The Emma Romero de Callejas Cancer Center, one of the best known of these and with the broadest coverage, registered 456 cases in 1998, 67.8% of them in women. Forty-four percent of the patients were residents of the department of Francisco Morazán; 69.2% of the women treated were between 35 and 69 years old; and, of the males, 21% were between 5 and 14 years of age, while 30.6% were between 60 and 79 years. In 1999, this institution treated 406 patients; 64% had been referred by another establishment and were treated at the Center, and of these, 61.2% had been referred by State hospitals and health centers or the Honduran Social Security Institute (IHSS). The most frequent sites of primary cancers in women were the uterine cervix (34.4%) and the breast (17%), and in men the leading sites were the eye, brain, and central nervous system (16%), followed by the hematopoietic and reticuloendothelial system (15%), and the genitals (4%).

The Emma Romero de Callejas Cancer Center reported that it provided outpatient services for 709 patients in 2000. Only 395 of the cases (45% of those treated) were subjected to pathological laboratory analysis for the hospital registry; 68% of these patients were women and 32% were men, and they ranged in age from 40–59 years old. Fifty-three percent of the patients resided in the department of Francisco Morazán (Health Region No. 1). In 1999 and 2000, the Center treated 240 patients for malignant tumors of the uterine cervix, and 86% of them were between 30 and 69 years of age.

Accidents and Violence

The mortality and morbidity records on accidents and violence have not been subjected to systematic review and analysis, and therefore information on the associated risk factors is insufficient. The most reliable data are from the cities of Tegucigalpa and San Pedro Sula.

The Bureau of Forensic Medicine of the Public Ministry estimated the 1999 homicide rate for the San Pedro Sula metropolitan area at 95 per 100,000 population, representing an increase of 11.5% relative to 1998 and 17% with respect to 1997. According to this same source, the accident rate in this area increased from 23 per 100,000 in 1997 to 31 per 100,000 in 1998 and 36.5 per 100,000 in 1999. In the last-mentioned year the suicide rate was 3.5 per 100,000; no information on suicide was available for previous years. The Bureau reported that the Tegucigalpa metropolitan area had a homicide rate of 47.5 per 100,000 in 1997, 57 per 100,000 in 1998, and 51 per 100,000 in 1999. The area's accident rate, according to the same source, was 42.5 per 100,000 in 1997, 37.5 per 100,000 in 1998, and 43.5 per 100,000 in 1999. Suicides in the metropolitan area increased from 8.5 per 100,000 in 1997 to 9 per 100,000 in 1998 and 9.5 per 100,000 in 1999.

A 1999 study of persons treated at the San Pedro Sula Regional Hospital for violence-related injuries revealed that most cases occurred on weekends between 6:00 p.m. and 12:00 midnight. The instrument used most often by the aggressors was a firearm (48%), followed by a cutting or thrusting weapon (38%) and a blunt object (14%), and 86.5% of those injured were men, with a median age of 25 years.

From its creation in 1993 until 1999 the Family Counseling Program dealt with 10,535 cases of family violence, and 9,268 (88%) of the victims were females, compared with 1,267 males. Thirty-six percent of the cases (3,826) were classified as emotional abuse, and females were most affected, with 3,427 cases (32% of them classified as physical abuse). Of the 1,678 cases of sexual abuse (16%), 1,582 affected women. The rest were classified as follows: negligence and abandonment, 159 cases (121 in women); property destruction and economic abuse, 147 cases (all in women); and other types of abuse, 1,386 cases (906 in women).

Oral Health

The Ministry of Public Health services provided 233,140 dental consultations to 25,969 patients during the period under study. Prevention measures, consisting essentially of fluoride rinses, were extended to schoolchildren 6–14 years of age.

Emerging and Re-emerging Diseases

During 1998–1999, Honduras developed the technical capacity to diagnose leptospirosis. The first case was diagnosed in 1998 at a hospital in San Pedro Sula, presaging an outbreak that appeared four days after Hurricane Mitch. In 1999, a total of 39 cases were diagnosed in different parts of the country, the majority in males 15–49 years of age.

In 1998, activities were initiated making it possible to diagnose hantavirus, and in 1999 two surveys suggested the presence of a virus related to the hantavirus family, with a seroprevalence of 11% in 549 samples taken from the general population in communities in the southern part of the country (department of Choluteca).

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The reform process in Honduras has gone through various stages: modernization of the State (1990), the national initiative emphasizing access to health services (1996), the new agenda for health (1998), and transformation of the health sector (2000). From 1996–1998, the Ministry of Public Health made access to health services the focal point of sectoral reform and modernization. In 1998, when the country suffered the worst natural disaster in its history as a result of Hurricane Mitch, the federal government established policy guidelines for 1999–2001 that took into account the need to actively promote health sector reform within the framework of the national reconstruction process. These policy guidelines call for immediate action to rebuild the health system to meet the basic needs of the Honduran people and the introduction of a series of progressive changes (organizational, administrative, and operational) that will ensure access to health services with a higher level of equity, efficiency, and quality. The fundamental objective of the reconstruction policy is to reestablish and strengthen the services network through a shared strategy for transformation of the sector that will optimize the utilization of resources, expand coverage, and improve coordination of the institutions involved.

In the year 2000, the Ministry of Public Health stressed decentralization as the central element of sectoral reform, with the goal of improving services in terms of access and quality, comprehensive care for priority problems, training of human resources, financing, introduction of a new health care model, strengthening of the Ministry's leadership role in the sector, and timely provision and control of supplies through an integrated information system. Also that year a plan for institutional strengthening was mapped out with a view to guiding, enabling, and promoting the decentralization of health services.

Health Sector Reform

The health sector reform strategy is based on the principles of universality, solidarity, equity, efficiency, participation, quality, and transparency, as established in the policy guidelines for 1991–2001. Fulfillment of its objectives will depend on implementation of four basic lines of action: institutional development of the Ministry of Public Health, decentralization and local development, health promotion, and reorganization of the health care model based on strengthened management.

One of the pillars of sectoral reform is strengthening the leadership role of the Ministry of Public Health to enable it to effectively perform its functions of sectoral management, health regulation, guaranteeing insurance coverage for the population, orderly management of financing, delivery of services, and performance of essential public health functions. To improve institutional management at its different levels and promote solutions at the level at which a problem has arisen, as well as to monitor the implementation of plans and projects, links were established between the Ministry's Coordinating Council and the Technical Council for Institutional Management. To improve and strengthen the information system, a Management and Financial Information System was introduced in 1999 and a Management Information System was implemented in 2001, both of which are designed to serve as management support tools for the information system as a whole. To support the coordination and management of external cooperation, a Master Plan for Investments in Health was drawn up.

To advance decentralization and local development, viewed as the central elements of the reform, emphasis was placed on getting municipalities to pool their efforts and developing management commitments and agreements, thus enhancing the democratic process, fostering social partnerships, creating greater equity between municipalities, and cultivating a concerned citizenry.

Because it furthers decentralization and the democratic participation of the population, the health promotion strategy has become the basic instrument of sectoral transformation.

With regard to reorganization of the health care model and the strengthening of management, efforts to improve the leadership role of the Ministry of Public Health included a series of seminars held in 2001 for management executives in the various health regions. In an exercise aimed at remedying the imbalance between the available supply of hospital services and the demand, as well as ensuring the effectiveness of the services network, teams were assigned to the 12 regional and area hospitals and asked to prepare data entry profiles to characterize the situation in each hospital and identify its most pressing needs. In an-

other exercise that same year, a large number of participants representing different areas of the country took part in assessing the performance of essential functions in the public health system as a first step toward self-evaluation.

The Health System

Institutional Organization

The health sector consists of two subsectors: the public and the private. The first consists of the Ministry of Public Health, the Honduran Social Security Institute (IHSS), the National Water Supply and Sewerage Service, and the National Institute for the Prevention of Alcoholism, Drug Addiction, and Drug Dependency. The Ministry of Public Health is responsible for playing a leadership and regulatory role in the sector, drafting policies, and in general, guaranteeing the people's constitutional right to health. There are 1,477 registered Health Service Production Units, of which 1,167 come under the Ministry of Public Health and 61 are hospitals, which together have a total of 4,093 beds, or 1.1 beds per 10,000 inhabitants.

The Ministry of Public Health services cover 60% of the population, while the social security system, including the IHSS, and the services provided by the armed forces and the National University of Honduras (UNAH) take care of between 10% and 12% of the population; private services meet the needs of another 10%; and the remainder of the population is without access to health services. The Ministry of Public Health is organized into 9 regions and 42 areas that administer health services and carry out health promotion, curative, and health protection activities in specific geographic areas (this organizational structure does not coincide with the political-administrative divisions of the country). The services provided by the Ministry of Public Health are organized into seven operational levels. According to the latest data available, its 1,167 Health Service Production Units consist of 6 national, 6 regional, and 16 area hospitals, 23 maternal and child health clinics, 3 peripheral clinics, 289 health centers with a physician and dentist on duty, and 824 rural health centers.

Hurricane Mitch affected 123 Health Service Production Units; 115 of them suffered varying degrees of damage and 8 were totally destroyed, but authorities managed to restore services within a relatively short period of time. In 2000, the Ministry of Public Health hospitals recorded 228,623 discharges, 40% of which involved child delivery care. Of all the discharges, 38% were from national hospitals, 29% from regional hospitals, and the remainder from area hospitals and maternal and child health clinics.

The IHSS has only two operational levels: hospital care in one of two hospitals—the Specialized Medicine Hospital in Tegucigalpa (242 beds) and the Regional Hospital in San Pedro Sula (240 beds)—and outpatient care in five peripheral clinics. The 482 beds offered by the IHSS compare with the 652 it had available in late 1998, when the Medical-Surgical Hospital in Tegucigalpa was closed down and merged with the Maternal and Child Care Hospital to form the current Specialized Medicine Hospital. In 2000, the IHSS provided 1,267,646 medical consultations and recorded a total of 52,413 hospital discharges.

Developments in Health Legislation

In 2000, renewed impetus was given to health regulation processes under the leadership of the Ministry of Public Health and the underlying legislation was updated. The Health Code was revised and regulations were drawn up for the licensing of public and private health establishments based on the definition of criteria governing relationships between nongovernmental organizations (NGOs) that operate in the health field.

Although legislation on drugs had been enacted in 1992, the enabling regulations were revised in 2000 to include specific new provisions relating to the Public Health Registry of Vaccines and Herbal Remedies. Formulation of the National Drug Policy and progress made on the Integrated Rehabilitation Policy (2002) strengthened the Ministry of Health's leadership role in this area.

Within the framework of the Customs Union, the Ministry of Public Health adopted a number of technical standards, including a manual on Good Manufacturing Practices, a manual on self-inspection by the pharmaceutical industry, and drug risk criteria. The CA-4 countries (El Salvador, Guatemala, Honduras, and Nicaragua) launched programs to harmonize their regulatory requirements in 2001 and 2002.

Private Participation in the Health System

The private sector consists of 303 registered clinics and hospitals—a figure subject to confirmation based on the results of the census to be completed in 2002. Of the 31 private hospitals, only 16 report statistics to the Ministry of Public Health: with 575 beds, they recorded 11,678 discharges in 2000.

Health Insurance

Public insurance, which operates through the IHSS, provides coverage for 37.1% of the economically active population. It offers a regime of benefits that covers both the insured individuals and their beneficiaries (wives and children under 5 years old). Private insurance, acquired through voluntary affiliation, is provided on the basis of plans agreed upon either individually or collectively. The percentage of population covered under policies issued by private insurers is unknown.

Organization of Regulatory Actions

The Ministry of Public Health's Department of Pharmacy is responsible for the regulation of medicinal drugs and has concentrated its efforts on the Public Health Registry, where it has listed 8,725 drugs, 83.4% of them proprietary and the remainder generic. Sanitary inspection and monitoring is oriented toward

controlling the distribution network but not the pharmaceutical industry itself, which is not subject to regular inspection and for the most part does not adhere to Good Manufacturing Practices. With regard to vaccines, only those acquired through the private sector are registered, not those from the Expanded Program on Immunization (EPI). Herbal remedies are not listed. Quality control of drugs is carried out by the Official Laboratory, which performs between 1,500 and 2,000 analyses per year. In 2000, a random sampling of 88 drugs was analyzed. There is no program in place for guaranteeing the quality of drugs; there is no regulation of laboratory reagents or medical devices and equipment; and there are no basic lists of such supplies or regulations governing their procurement.

Environmental Quality

The country's water-producing micro basins have been affected by rapid deforestation (estimated at 800 km^2 a year) in recent years, which has had harmful effects on both the quality and the quantity of water produced. Progress in the provision of potable water and sanitation services in general has been limited over the past five years. Investment in the sector during the last two years has been channeled mainly toward the rehabilitation of infrastructure damaged by Hurricane Mitch, and the funds have been provided in large part by donor countries.

In 1999, national water supply coverage in Honduras was 80.9%, 72.2% provided through household connections and 5.7% by aqueducts or connections near the home. Of the population without household connections, 2.6% got their water from hand-driven wells; 2.6% from pump wells; 2.2% from purchased sources; and 11.7% from public spigots or fountains. A total of 3,310 urban and rural aqueducts were operated and maintained by the National Autonomous Service, the municipal governments, and 2,528 water boards. There were 1,382 authorized water boards and 2,226 hydraulic systems. Of the 3,310 aqueducts, only 2,226 provided water all year round. In all, 98.1% of the systems worked only intermittently and just 31.2% of them were disinfected; of the latter, 51% were in urban areas. A total of 1,884 hypochlorinators had been installed in rural aqueducts, but only 638 were working.

According to 1999 data, 71.1% of the population had access to some form of excreta disposal; 26.6% had connections to sanitary sewers, 16.8% had septic tanks or pits, and 27.7% had latrines. In all, 67 municipalities disposed of some of their wastewater in sanitary sewerage systems, but there were only 51 installations for the treatment of household wastewater and sewage, one with a percolating filter, 3 with septic tanks, 23 with oxidation ponds, 20 with Imhoff tanks, 2 with aerated ponds, and 2 with biofilters. The total annual volume of wastewater collected by sewer systems connected to a treatment system was 111,840,000 m^3, corresponding to 30,182 tons of organic load a year.

Of the 298 municipalities, 47 provided refuse collection services, principally in urban areas, which covered only 47% of the population residing in these jurisdictions. Annual refuse production was estimated at 842,358 tons, of which 257,574 tons were collected. There were 48 garbage dumps, 4 sanitary landfills, and 1 crematorium.

Since 1995 there has been regular monitoring of air quality in Tegucigalpa and intermittent monitoring in San Pedro Sula and La Ceiba, the results of which indicate that concentration levels of suspended particles have consistently exceeded the standard international limits. Nor have standards for ozone and nitrous oxides been met during certain periods of the year, especially in the dry season, when there are more forest fires and harvested fields and vacant lots are burned.

Organization of Public Health Care Services

Health Promotion

The Ministry of Education coordinates sporting events with a view to encouraging healthy lifestyles. Several new bodies were created, including the National Commission on Abuse Prevention, a government office on women's affairs, and 20 interinstitutional councils at the regional level to respond to and prevent family violence. The Office of the Public Prosecutor now has a division specifically devoted to the prosecution of offenses against minors, one for the prosecution of offenses against women, and a bureau that deals with drug trafficking.

In February 2001 an interinstitutional committee coordinated by the Ministry of Public Health presented civil society with a proposal to address violence in which priority is given to prevention. At about the same time, the San Pedro Sula municipal government presented community leaders with a proposal for the prevention of violence based on interventions at the level of various population groups—preschoolers, schoolchildren, adolescents, and adults—with a component on safety as well.

The National Congress has been working on a new code for the protection of children, as well as laws designed to combat alcoholism and drug addiction, a new penal code, a law creating the Children and Family Institute, and a special law on family violence. The Office of the National Commissioner for the Protection of Human Rights has also been strengthened, with special attention given to minor offenders, battered women, and abused minors. Social communication activities are being increasingly incorporated into municipal health planning.

Disease Prevention and Control Programs

The Ministry of Public Health's Bureau on Population Risks has departments devoted to epidemiology, maternal and child care, chronic diseases, sexually transmitted infections, AIDS, tuberculosis, mental health, emergency care, sanitation, vector-borne diseases, public health, rehabilitation and the disabled, and food and nutrition. All perform essentially normative functions.

At the regional level, prevention and control programs are headed by a regional epidemiologist, and it is at that level that actions aimed

at the principal health problems in the respective geographic areas are planned, executed, and evaluated, with the support and participation of technical groups in the various fields of health. These multidisciplinary teams assume the responsibilities described above at the regional level. In addition, some municipalities within the health areas have formed health surveillance teams.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

The Ministry of Public Health promotes the strengthening of multidisciplinary health analysis teams (analysis units) in the different health areas and at the regional and central level. During 1999–2002, this initiative was implemented on a demonstration phase basis in Health Region No. 7 (department of Olancho) with the intention of later extending it to the municipal level.

Up until 2000, epidemiological surveillance was based on a network of 1,190 reporting units, which together constituted the "Action Alert" system, and the percentage of those making weekly reports that year ranged from 70% to 80%. The public health laboratory network was strengthened thanks to technical and financial resources received following Hurricane Mitch.

Organization of Individual Health Care Services

Ambulatory, Emergency, and Inpatient Services

Data supplied by the Ministry of Public Health indicate that in 1996 there were 1,334 health establishments, of which 730 (55%) came under the Ministry, 184 (14%) belonged to the IHSS, 417 (31%) were in the private sector, and 3 (0.2%) were run by the Armed Forces. There were 15,236 hospital beds, of which 7,234 (47%) corresponded to the Ministry, 1,706 (11%) to the IHSS, 5,796 (38%) to the private sector, and 500 (3%) to the Armed Forces. According to these figures, the overall bed-population ratio would be 1:500; however, there are some discrepancies between the different sources regarding the number of beds available.

In 1996, the total number of outpatient consultations in Ministry establishments came to 5.8 million, with 2.2 million emergency room visits (0.3 per inhabitant). Hospital discharges came to a total of 372,000 (50 per 1,000 population). There is no updated information available on the output of the IHSS and other public institutions.

Auxiliary Diagnostic Services and Blood Banks

Honduras has a national blood policy, a National Blood Plan, a National Blood Reference Center (the Honduran Red Cross National Blood Program), 26 blood banks, and 29 blood collection centers. In 2000, a total of 38,328 blood units were collected; 18.3% were voluntary donations, 8.8% paid donations, and 72.8% replacements by family members. All donations are screened for HIV, hepatitis B, hepatitis C, syphilis, and *Trypanosoma cruzi*.

Specialized Services

In 2000, an information system was installed at the principal public and private institutions that provide rehabilitation services, including the Fundación Teletón [Telethon Foundation], the IHSS, and the San Felipe General Hospital. A document outlining national policies on rehabilitation was drawn up and submitted to the National Congress for consideration and approval. Community-based rehabilitation services were created and incorporated into the five centers that offer basic care. Under a tripartite Mexico-Canada-PAHO initiative supported by the Government of Honduras, a successful operation has been providing care since September 1999 for the victims of antipersonnel landmines laid along the country's border with Nicaragua and El Salvador.

Mental health care consists mainly of hospital services. There are two psychiatric hospitals: the Santa Rosita Hospital for Chronic Cases and the Dr. Mario Mendoza Hospital for Acute Cases. At the central level the Mental Health Department in the Ministry of Public Health performs a technical and normative role, working in coordination with mental health teams in the nine health regions. At the local level there are multidisciplinary teams, which for the most part have not received specialized training in mental health; however, there are a few community health programs carried out by postgraduate psychiatric students at health centers in Tegucigalpa. Most psychiatrists work in the two hospitals mentioned above.

The network of maternal and child health services consists of care units for low-risk deliveries at 32 maternal and child health clinics and seven maternity homes located in eight of the country's health regions. In addition to attending low-risk deliveries, the maternal and child health clinics examine the women with a view to detecting any signs of reproductive risk so that they can be referred on a timely basis for more complex care. The maternity homes, on the other hand, are intermediate units that offer shelter to any pregnant woman, with or without signs of obstetric risk, prior to delivery of the child at a third-level hospital, to which each home has access. There are no high-complexity specialized services available for delivery or puerperal care. Among the strategies designed to implement the National Program of Comprehensive Care for Adolescents is a proposal to approach the problems of this population group by creating special spaces set apart for their care.

The IHSS provides services for 14,680 pensioned and retired persons throughout the country. The IHSS Unit for Retired and Pensioned Persons offers a program that includes seminars to aid in preparing for retirement, classes in various handicrafts, and courses offering support for the management of projects.

A National Law on Disaster Preparedness was enacted in 1999 by means of Decree 09-90-E of 1990 and its enabling regulations. The new legislation establishes the Standing Committee on Disaster Preparedness and regional, departmental, and municipal committees responsible for adopting the necessary policies and

measures in the event of disasters. The Ministry of Public Health's National Department of Emergencies coordinates activities at the national level through the Health Commission. At the local level, activities are coordinated by regional and area health teams and the Health Service Production Units. During emergencies, Emergency Operation Centers are set up at the different levels.

The Ministry of Public Health, working with the National Health Services Program and the National Maintenance Center, conducted studies on structural, nonstructural, and functional vulnerability at four of the country's hospitals located in areas exposed to multiple hazards. The steps taken to reduce vulnerability to natural disasters included the application of minimum risk-reduction standards in each service. The disaster preparedness program includes such activities as ongoing training of health-sector and community personnel, with emphasis on the development of community emergency plans. Hospital emergency planning includes mitigation activities.

Health Supplies

Some 15,000 drugs are available on the pharmaceutical market. In 1998, the demand for drugs was estimated at US$ 89,232, while the net overall supply was valued at US$ 134,624. Total spending on medicinal drugs amounted to 1.9% of the GDP in 1997 and 1.7% in 1998. There are currently 42 pharmaceutical laboratories financed by national capital which produce between 15% and 20% of the drugs consumed; the rest are mainly imported from other Central American countries and the United States.

The national distribution network for medicinal drugs consists of 88 wholesalers (drugstore chains), 656 private pharmacies, 242 dispensaries, 200 medical kiosks, and an undetermined number of informal vendors and stores where herbal and other natural remedies are sold. These pharmacies are not evenly distributed throughout the country; they tend to be concentrated in the more developed areas (the Atlantic coast and the central part of the country). Similarly, 60% of the 500 community-managed drug funds are found in the departments of Choluteca, Comayagua, Intibucá, and Lempira.

The State does not have any drug price control programs, and the Ministry of Industry and Commerce only controls the profit margin on imported pharmaceutical products. The Ministry of Public Health has a list of basic drugs that includes 271 active principles and 365 pharmaceutical preparations. The cost of drugs amounted to 13.8% of government spending on health in 1996, 14.6% in 1997, 12% in 1998, and 8.3% in 1999.

Human Resources

Availability by Type of Resource

During 1996–2000, the supply of human resources in the health field saw sustained growth in some areas. For example, while there was a steady rise in the number of professionals graduating in general medicine, the number of professional nurses declined during this same period. According to cumulative enrollment records for the same period reported by UNAH, 3,009 students were registered in medical school, 880 were studying nursing, and 37 were training as radiology technicians. In 2000, there were 5,287 registered physicians, 2,002 (37.8%) of them working in the public subsector, 353 (6.6%) in the IHSS, and 2,932 (55.4%) in the private subsector, for an average ratio of 8.8 per 10,000 population. Also that year there were 1,957 registered nurses, 887 (45.3%) of them working in the public subsector, 140 (7.1%) in the IHSS, and 930 (47.5%) in the private subsector, for an average ratio of 3 per 10,000 population. There were also 581 dentists, only 2% of whom were working in the public subsector, for an average ratio of 2.6 per 10,000 population.

In 2000, only 3.7% of the 1,752 registered pharmacists were working in the public subsector, and the average ratio was 0.3 pharmacists per 10,000 population. Between 1996 and 2000, the UNAH School of Pharmacy graduated an average of 71 pharmacists a year. As of the year 2000, 51 pharmacists were working in the Ministry of Public Health, 22 of them hospital pharmacists covering 15 of the country's 28 hospitals. The IHSS has only six pharmacists. Also that year 78 persons graduated with a master's degree in public health; 82 nurses completed their studies as specialists in maternal and perinatal health, and 22 nurses graduated as specialists in family health. Mid-level and auxiliary nursing technicians included 724 anesthesia technicians (0.4 per 10,000 population), 650 radiology technicians (0.4 per 10,000), 2,358 laboratory technicians (0.6 per 10,000), 400 microbiologists (0.5 per 10,000), and 7,256 nursing auxiliaries (11.8 per 10,000).

The postulates of health reform call for the strategic monitoring of personnel development, but there is no human resources information system in place to back up such a process or support the Ministry of Public Health in the training, production, and utilization of human resources.

Training

UNAH is responsible for the training of health professionals. A program for the preparation of psychologists was initiated at Our Lady of Peace Catholic University in 1999, and psychologists with degrees from foreign universities also work in the country. The Ministry of Public Health has establishments for the training of auxiliary and mid-level technicians.

Health Research and Technology

Organization and Financing of Scientific Activity and Training for Research

The Honduran Science and Technology Council is responsible for coordinating the sector's science and technology subsystems,

and it enlists the public and private academic subsectors and nongovernmental organizations in the formulation and validation of national policy on scientific and technological research. The Council also administers the Program for the Support of Scientific Development and Innovation in Honduran Youth, which is designed to encourage creativity in high school and university students and independent professionals, to be applied to the development of science and technology.

Technological Development

A project financed by the Organization of American States (OAS), the Investment Program for the Scientific and Technological Development of Central America and Panama, was initiated in 1999 for the purpose of designing and formulating investment programs in 14 research areas, including the calibration of hospital equipment, support for laboratories, and strengthening the regulatory role of the Ministry of Public Health. The year 2000 saw the launching of the Ibero-American Program of Science and Technology for Development, which trains human resources in the fields of scientific and technological research to aid in the solution of specific problems and the implementation of programs of social interest.

Scientific and Technical Documentation

In 2000, three scientific journals in the health field were being published regularly: *Revista Médica Hondureña*, *Honduras Pediátrica*, and *Revista de los Posgrados de Medicina*. Only the first of these is cited in the LILACS database. The National Library of Medicine has a trained staff that receives medical journals from a number of countries. The Virtual Health Library, operated by the Library of Medicine, seeks to provide the entire country with access to health information. The Ministry of Public Health, the IHSS, and other organizations have small documentation centers which for the most part lack the necessary infrastructure, specialized human resources, equipment, and budget for the purchase of publications.

Health Sector Expenditure and Financing

In 1999, the sector received financing from the following sources: families, which account for 53.7% of national spending on health; the Government, which contributes 32.9%; the IHSS, 7.8%; nonprofit institutions, 4.3%; and private insurance firms, 1.3%. Between 1993 and 1999, financing for the Ministry of Public Health rose 91.6%, mainly thanks to a 117% increase in external funding (a large proportion in the form of long-term reimbursable loans), while over the same period support from the national treasury was reduced from 67.3% to 61.7%. Donations and nonreimbursable loans represented 12.7% of the total. IHSS financing, which comes from participant contributions, was seriously endangered because the amounts paid in did not cover expenses. The private sector financing—the sum of spending by families, nonprofit organizations, and private insurance companies—amounted to 59.3% of the total expenditure.

Per capita public spending on health increased 15.5%, while public spending on health as a percentage of central government expenditure declined from 10.1% in 1993 to 8.6% in 1998. Similarly, public spending on health in relation to total public spending also decreased, from 7.2% to 6.7%. Up until 1998 per capita public spending on health had been trending downward, but in 1999 it took an upward turn at the expense of external financing. Total per capital expenditure on health dropped 24.1% between 1995 and 1999.

External Technical Cooperation and Financing

Prior to Hurricane Mitch, the proportion between external cooperation and national funding for health fluctuated only slightly, remaining at around 22% for external financing and 78% in national funding. After the hurricane, however, the flow of both technical and financial cooperation increased considerably.

In May 1999, a group of cooperating countries and agencies met in Stockholm and committed financial assistance amounting to a total of US$ 2,763.4 million to all sectors. Of this sum, US$ 2,211.8 had been subscribed as of December 2000, demonstrating the high level of support extended by the international community. This support was seen not only in the funds allocated by the Stockholm Consultative Group but also in those received from other sources of cooperation throughout the national reconstruction and transformation process. Contributions during the emergency and humanitarian aid phases came to US$ 97.3 million (4.4%), while the bulk of US$ 1,897.4 million (85.8%) was provided during the reconstruction and transformation phase. The remaining 9.8% of the contributions went for debt relief and other unspecified types of aid.

The United Nations external cooperation agencies represented on the Health Sector Committee lent support to the country during the emergency, rehabilitation, and reconstruction phases through projects designed to contribute to primary health care, health and nutrition, water and sanitation, institutional strengthening, the health services network, local management of risks, and emergency medical care, amounting altogether to a total of US$ 240,158,187. This data refers to USAID, JICA, IDB, the World Bank, UNFPA, GTZ, UNICEF, and SIDA (from a survey conducted by PAHO in May 2001). Resources allocated and channeled by PAHO amounted to US$ 9,283,985.

In addition, SIDA made a contribution of US$ 1.7 million, 20% of which was assigned to Honduras, to implement the Central American Project for Vulnerability Reduction and Disaster Preparedness in the Countries Affected by Hurricane Mitch.

Of the total resources contributed and subscribed, bilateral external cooperation for all sectors amounted to US$ 1,113.2 million (50.3%), and nonreimbursable funds totaled US$ 945.8 mil-

lion (84.5%). Among the largest contributors were Germany, Japan, Spain, Sweden, and the United States, and the outstanding contributors of reimbursable funds, which came to US$ 167.4 million (15%), included Italy, Kuwait, and Spain.

Multilateral cooperation amounted to US$ 1,099.3 million (49%), and nonreimbursable funds totaled US$ 298.8 million (27.2%). Among the largest contributors were WFP, the Inter-American Bank for Reconstruction and Development/ International Development Association (IBRD/ IDA), UNDP, and FAO. Reimbursable funds came to US$ 800.5 million (72.9%), and the main contributors were the IDB, IBRD/IDA, and the Central American Bank for Economic Integration.

Total nonreimbursable funds amounted to US$ 1,244.6 million, while total reimbursable funds were US$ 967.9 million.

FIGURE 1. Population structure, by age and sex, Honduras, 2000.

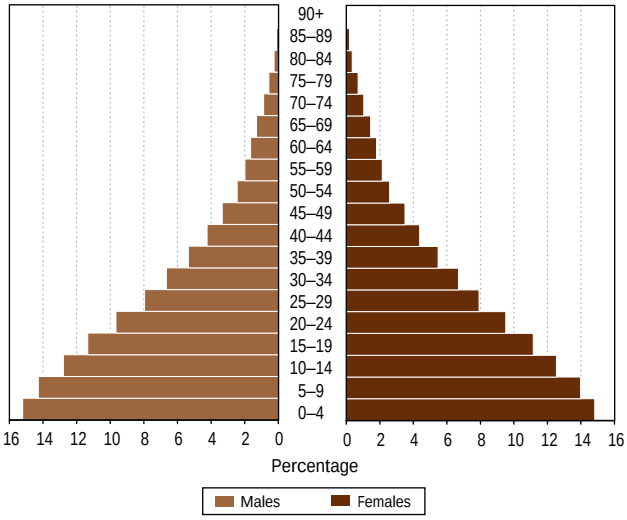


FIGURE 2. Gross domestic product, annual growth (%), Honduras, 1991–2000.

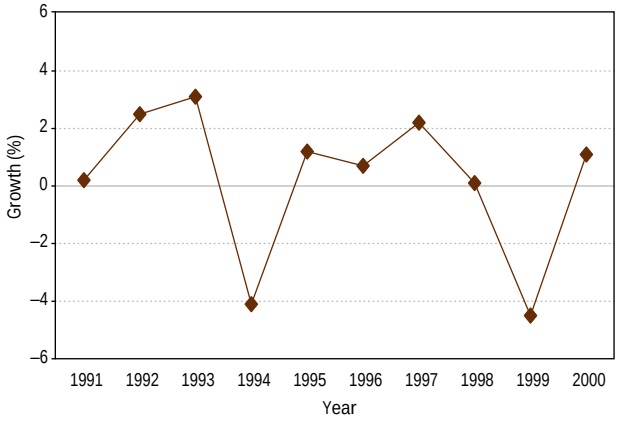


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Honduras, 2000.

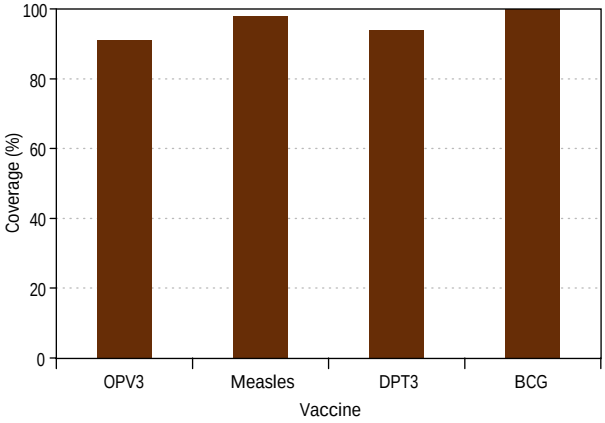
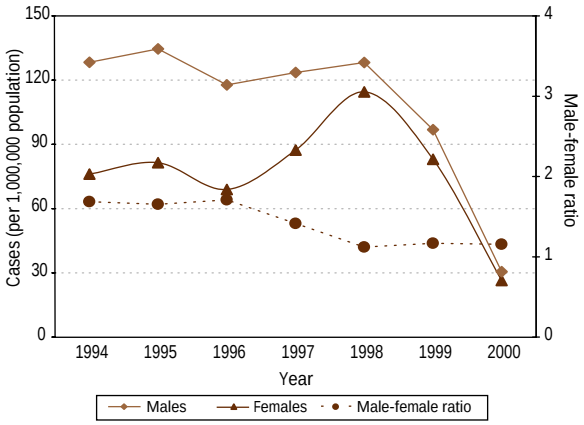


FIGURE 4. AIDS incidence, by sex, with male-female ratio, Honduras, 1994–2000.



JAMAICA

OVERVIEW

Jamaica is the third largest, and the largest English-speaking, island in the Caribbean Sea. Located 150 km south of Cuba and 160 km west of Haiti, it covers an area of 11,424 km^2 and is divided into 14 parishes. There are two main cities—Kingston, the capital, on the southeast coast, and Montego Bay, on the northwest coast. Portmore, in an area contiguous to the Kingston Metropolitan Area, is also an urban center.

Jamaica's system of government is based on the Westminster parliamentary model, and the country has enjoyed a relatively stable democracy since independence in 1962. The Governor General represents the Queen of England as the head of state. A cabinet of ministers, selected from the bicameral legislature and headed by the Prime Minister, forms the executive branch of government.

Jamaica's economy is open and import-dependent, particularly for food and fuel. Tourism, bauxite mining, and primary agricultural exports, including sugar and bananas, are the traditional mainstays of the economy, and were the main contributors to gross foreign exchange earnings in 1999. In addition, private remittances from abroad played an increasingly important role in the economy.

The economy has been experiencing considerable restructuring and realignment. The structural adjustment program, initiated in 1983, continued into the 1990s and was marked by the removal of foreign exchange controls and further deregulation of the market. The 1990s saw rapid inflation, reduced consumption, and higher levels of poverty. The economic downturn, combined with the increasing cost of servicing an expanding public debt, poses fiscal challenges for the Government.

In 1999, GDP at current prices was estimated at J$ 256.8 billion, or approximately US$ 6.6 billion. As measured by the growth in GDP at constant prices, the economy contracted by 0.4% in 1999, following a 0.5% decline in 1998, and marking the fourth consecutive year of decline (Figure 1). Consistently high interest rates and weak competitiveness are among the factors impeding growth. Inflation increased from 6.2% in 1998 to 8.2% in 1999, largely due to exchange rate movements and higher oil prices.

Through expenditure cuts and strong revenue measures, the Government was able to reduce the central government deficit from 7% of GDP in the 1998–1999 fiscal year to 5% in the 1999–2000 fiscal year. Although exports stagnated, a reduction in imports, combined with improved tourism receipts and growing remittances, resulted in a narrowing of the external current account deficit to about 3% of GDP in the 1999–2000 fiscal year, down from 5% of GDP in 1998–1999. Improved private capital inflows towards the end of fiscal year 1999–2000 helped increase net international reserves.

Progress towards attaining an acceptable standard of health for all is likely to be strongly influenced by social factors, such as access to potable water and education. The 1999 Jamaica Survey of Living Conditions revealed disparities in access to water. Most households in urban areas, especially the Kingston Metropolitan Area, have residential water connections. However, residents of rural communities and the poorest 20% of the population were more likely to access water through public standpipes, rivers, and ponds. Although expenditure on water is higher in higher consumption households, the percentage of household income spent on water was higher among poorer families.

The official estimate of unemployment has remained at 16%, suggesting an increase in the informal economy. The findings of the Survey of Living Conditions highlight the fact that poverty is still a major issue in Jamaica. In 1999, a decline in real mean per capita consumption was accompanied by an increase in the proportion of the population below the poverty line (17% compared with 16% in 1998). Poverty was greater in rural areas and in female-headed households relative to male-headed ones.

The population was estimated at 2.6 million at the end of 2000, an absolute increase of 16,000 over the 1999 estimate. The annual population growth rate has decreased from 1.0% in 1996 to 0.6% in 1999 (Table 1). There are no indigenous populations on the island.

TABLE 1. Selected demographic indicators, Jamaica, 1996–1999.

Year	Mid-year population	Births	Deaths	Net migration	Crude birth rate (per 1,000 population)	Crude death rate (per 1,000 population)	Crude rate of natural increase (per 1,000 population)	Annual rate of population growth (%)
1996	2,515,400	59,200	16,900	–18,100	23.5	6.7	16.8	1.0
1997	2,540,300	59,400	15,100	–18,600	23.4	5.9	17.5	1.0
1998	2,563,700	56,900	16,200	–20,100	22.2	6.3	15.9	0.8
1999	2,581,700	53,600	17,400	–21,000	20.8	6.8	14.0	0.6

Source: Jamaica, Statistical Institute of Jamaica, Demographic Statistics, 2000.

The Jamaican population has undergone demographic changes that have altered societal dynamics. Death rates are relatively low, while birth rates, though moderately high, are declining. In 2000, the crude death rate was estimated at approximately 5.1 per 1,000 population and the crude birth rate at 20.0 per 1,000, resulting in a population that is aging, but is still moderately young.

In 1999, the population's male-female ratio was approximately 99:100. Children age 0–14 years accounted for 31% of the total population in 2000 (Figure 2). The working-age population (15–59 years) was estimated at 59% of the total population in 1999, with the 15–34 years age group accounting for 32%. The proportion of the population age 60 years and older was 9.7% in 2000. This group grew at an average annual rate of 1.6%, making it the fastest growing segment of the population. The potential for continued rapid growth of this age group is high, given declining fertility and mortality rates and rising life expectancy. With nearly 10% of the population age 60 years and over, the provision of health care and other support services to elderly persons presents an economic challenge. In 2000, the dependency ratio was estimated at 68.

According to the 2000 estimates, approximately 43% of the population live in the largely urban parishes of Kingston, St. Andrew, and St. Catherine (Kingston Metropolitan Area). Migration from rural to urban areas has been one of the distinctive features of population change. The Survey of Living Conditions indicated that in rural areas, the proportions of children and of persons age 65 years and over were 36% and 9.6%, respectively, well above the national average. Thus, the dependency ratio in rural areas was also higher than the national average. The Kingston Metropolitan Area, on the other hand, had the largest proportion of population age 15–64 years (63%), compared to the national average of 58%.

The achievement of zero population growth has been a major objective of Jamaica's National Population Policy. The decline in fertility in 1997, as measured by the total fertility rate of 2.8 children per woman, was entirely due to a decrease in fertility among women age 25 and older. The proportion of unplanned pregnancies remains high, ranging in 1997 from 83% among women 15–19 years of age to 50% among women 30–34 years of age.

Infectious diseases, maternal and infant mortality, and childhood diseases have all decreased significantly, resulting in longer life expectancy. In 1998, life expectancy at birth was estimated at 75 years (73 years for males and 77 years for females). Gains in life expectancy benefited females more than males, as evidenced by the gradually widening gap between male and female life expectancies.

A major achievement in the 1990s has been the increase in education at all levels. Approximately 86% of the population age 15 years and older are literate, and school enrollment rates are high. Enrollment in 1999 was over 95% for children age 3–14 years, and was 83% for 15–16-year-olds. Only slightly more than half of adolescents age 17–19 years were enrolled in school.

Access to and utilization of educational opportunities varied across socioeconomic groups and among regions. From age 14 years on, school enrollment levels are much higher in the richest 20% of the population and in urban areas. Attendance rates in a one-month reference period showed that approximately 80% of students were absent 1–5 days and 13% were absent 6–10 days, with irregular attendance occurring more frequently among the poorest groups and in rural areas. The three major reasons for absenteeism were lack of money, school closure, and illness. A large and growing cohort of out-of-school youth with few employment opportunities is contributing to health and other social problems, including high fertility, substance abuse, crime, and violence.

Mortality

Mortality statistics are based on the underlying cause of death listed on death certificates. Ninety-three percent (14,365) of the 15,372 deaths registered in 1999 were certified by physicians or coroners; 13% of certified deaths were coded as symptoms and ill-defined conditions, mainly because of incomplete information on causes of death and poor death certification by some physicians.

TABLE 2. Number of deaths and mortality rates, by broad groups of causes, Jamaica, 1999.

	Total		Males		Females		
	Deaths	Mortality rate (per 100,000 population)	Deaths	Mortality rate (per 100,000 population)	Deaths	Mortality rate (per 100,000 population)	Male-female mortality rate ratio
Communicable diseases	607	23.6	363	28.2	244	18.9	1.5
Conditions originating in the perinatal period	629	24.4	321	24.9	308	23.8	1.1
Diseases of the circulatory system	4,452	172.4	2,069	160.7	2,383	184.2	0.87
External causes	1,872	72.5	1,590	123.5	282	21.8	5.7
Neoplasms	2,475	95.9	1,270	98.7	1,205	93.1	1.1

Diseases of the circulatory system accounted for 4,452 (31%) of all certified deaths in 1999, and had the highest death rates for males and females (Table 2). This was the only broad cause group in which females had higher mortality rates than males (male-female rate ratio of 0.87). Neoplasms accounted for 2,475 (16%) deaths, and was the third leading cause of death for males and the second for females. External causes accounted for 1,872 (13%) of all certified deaths and had the second highest mortality rate for males, and the fourth for females. Conditions originating in the perinatal period accounted for 629 (4%), and communicable diseases accounted for 607 (4%) of all certified deaths. The estimated mortality rates for 1990–1995 are shown in Figure 3.

The growth of urban communities in Jamaica has also had important health implications, as it has increased the risk of social problems, as shown by the growing importance of homicides and accidents among the leading causes of death in 1999. An important component of the latter category is transport accidents, which represent approximately 85% of all accidents.

The gender differential in mortality is greatest for such external causes as homicides and accidents. The crude death rate from homicides for males is almost 10 times greater than for females, and for accidents, the male rate is 4 times greater than for females. Most deaths in both categories were young adult males. Males also had higher death rates than females for malignant neoplasms, heart disease, and HIV/AIDS. However, the risk of dying from cerebrovascular disease, hypertension, and diabetes was higher for females.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Reliable statistics on infant and child mortality have been unavailable since the late 1970s. Only 881 infant deaths were registered in 1999, which yields an infant mortality rate of approximately 16 deaths per 1,000 live births, which is generally regarded as an underestimate. There were 941 certified deaths among children 5 years of age and younger in 1999. Analysis of those registered deaths showed that conditions originating in the perinatal period continued to be the most important cause of mortality among children age 5 years and younger, accounting for 67% (629) of deaths. Congenital defects accounted for 86 (9.1%) deaths, communicable diseases 47 (5.0%), external causes for 26 (2.8%), and HIV/AIDS 21 (2.2%). Homicides (10 deaths) and transport accidents (7 deaths) were the largest contributors to deaths due to external causes. Other leading causes of death in this group include influenza and pneumonia, and nutritional deficiencies.

The two major groups of causes contributing to infant mortality are communicable diseases and perinatal conditions. Communicable diseases are associated with increased perinatal transmission of HIV and such poverty-related conditions as inadequate safe water, sanitation, literacy, and education. Conditions originating in the perinatal period are related to access to quality emergency obstetric and intranatal care.

Acute respiratory tract infections, poisoning, unintentional injuries, gastroenteritis, and violence are among the leading hospital discharge diagnoses for this group. Children under 5 years accounted for 61% of poisonings, 35% of burns, and 30% of asthma cases presenting at accident and emergency departments of government hospitals in 1999.

Though not one of the top five causes of death in children under 5 years, gastroenteritis remains an important cause of morbidity, accounting for 6% of visits to curative clinics at health centers in 1999. Forty-two percent of cases suffered some amount of dehydration, and less than 1% had severe dehydration; 3% were referred for hospital admission. Since 1995, the case fatality rate for gastroenteritis has been less than 1%.

Trained health professionals delivered 95% of babies born in 1999. Approximately 98% of newborns are exclusively breastfed at birth, but only about one-half are reported to be exclusively breastfed by the time the infant is brought to the health center for

the six-week postnatal check. In general, however, those children under 5 years of age who attended clinic in 1999 had good nutrition levels. In 1998, the prevalence of undernutrition was 4.7%. Among clinic attendees, moderate undernutrition declined from 6.4% in 1989 to 4.7% in 1999, while severe undernutrition dropped from 0.3% to 0.1% over the same period. The Survey of Living Conditions indicated that improvements noted among clinic attendees were applicable to the wider community. Children from poorer households were more likely to be undernourished and to experience growth retardation as a result, and infants at the weaning stage were also more prone to undernutrition. No differences were observed by gender. Success in this area may be attributed to improvement in education levels and establishment of nutrition clinics in high-risk areas.

Immunization coverage declined between 1997 and 1999, but improved in 2000, with coverage levels in 2000 of 94% for BCG, 86% for polio, 86% for DPT, and 88% for measles (Figure 4). Analysis of regional variations reveals that coverage was highest in the southeast and western regions and lowest in the northeast and southern regions. A shortage of public health nurses, midwives, and transportation makes provision of health care to children under 5 years difficult.

Schoolchildren (5–9 years)

In 1999, children age 5–9 years accounted for 20% of cases of accidental laceration, 14% of burns, and 10% of poisonings presenting at accident and emergency departments. Acute respiratory infections, poisonings, unintentional injuries, gastroenteritis, and violence were among the leading hospital discharge diagnoses for this group. A 1995 study on worm infestation among 7–10-year-olds revealed a 4% and 9% prevalence of *Trichuris* and *Ascaris*, respectively, though this was not associated with the presence of anemia.

Children in this age group often become victims of violence. In 1999, 5–9-year-olds accounted for 11% of cases of sexual assault and 6% of injuries inflicted with blunt objects presenting at accident and emergency departments. Children who live on the streets are especially vulnerable, and their numbers continue to increase; most of these children are boys. Government-operated child guidance clinics have been registering increased demand for services. The main problems identified among approximately 1,200 children seen in these clinics in 1999 included attention deficit, adjustment, and conduct disorders.

Adolescents (10–14 and 15–19 years)

One in every five Jamaicans is an adolescent. In general, they enjoy good health, accounting for only 2% of deaths in 1999. Ill health, disability, and death among Jamaican adolescents are usually related to high-risk behaviors. Injuries, behavioral disorders, reproductive health conditions, respiratory disease, and cardiovascular disease (associated with rheumatic heart disease) are common among adolescents.

In 1999, the major causes of hospitalization among adolescents 10–14 years of age were injuries, respiratory diseases, including asthma, and neoplasms. Injuries and respiratory diseases were also the main causes of deaths occurring in hospitals.

Among the 15–19 years age group, obstetrical conditions among females and intentional injuries among males were the leading causes of hospital admission. Injuries, cardiovascular diseases (associated with rheumatic heart disease), and HIV/AIDS were the leading causes of death in this age group.

The 1996 Caribbean Adolescent Health Survey (CAHS), conducted islandwide among 2,635 school-age adolescents in grades 9, 11, and 13, highlighted the prevalence of risk behavior among the adolescent population. Thirty-six percent of 10–19-year-olds reported engaging in sexual intercourse, with initiation of sexual activity reported as early as 13 years of age for females and 11 years for males. Fifty percent of these adolescents reported more than three sexual partners in their lifetime. Fifty-three percent had never used contraceptives and only 39% of sexually active adolescents in the 15–19 years age group reported using a condom at last sexual intercourse. These findings are supported by the results of the Jamaica Reproductive Health Survey (JRHS) conducted a year later. This survey also found that by age 20 years, 39% of women had borne their first child. The age-specific fertility rate among adolescent girls age 15–19 years increased to 112 per 1,000 women in 1997. According to the JRHS, 59% of 15–19-year-old females married or living in a common law relationship reported using contraceptives, the most popular primary methods being the condom (27%) and the oral pill (18%).

Adolescents age 10–19 years accounted for 53% of cases of sexual abuse seen in accident and emergency departments in 1999. According to police reports, this age group also accounted for 40% of reported cases of sexual assault and carnal abuse. Rates of HIV infection, as reported by the Epidemiology Unit, were three times higher in adolescent girls than boys, while AIDS was among the five leading causes of death in this age group.

The CAHS reported that 35% of boys and 21% of girls smoked cigarettes. Marijuana use was reported by 8% of boys and 3% of girls, and cocaine use by 2.1% of boys and 0.6% of girls. The findings were reinforced by a 1997 study on patterns of substance use and abuse among post-primary students.

Adolescents accounted for 23% of intentional injuries and 20% of accidental injuries treated at accident and emergency departments in 1999. Police reports also indicated that the 10–19 years age group represented 15% of homicide victims and 16% of non-fatal shooting victims in 1999. Except in cases of sexual assault, violence is predominantly male-on-male, as males vastly outnumber females both as victims and perpetrators. Suicides accounted for 2 deaths among 10–19-year-olds in 1997, 14 in 1998, and 6 in 1999.

The CAHS found that 11% of students surveyed had been involved in fights in which weapons were used, and 22% carried a

weapon (usually a knife) to school. The study identified depression and suicide ideation among this group, as 26% of students reported feeling so down and discouraged they felt like giving up, and 11% had attempted suicide. On a positive note, the study also identified protective factors, such as school and family connectedness and religion/spirituality, and found that 85% considered their family environments to be supportive and that 78% exhibited achievement motivation.

A limitation of the data presented is that the studies were based on school populations, and thus do not include data on out-of-school youths. However, it is reasonable to speculate that out-of-school youths engage in similar risk behaviors, especially given the high levels of unemployment among them and their limited access to educational and other opportunities.

Adults (20–59 years)

Women have traditionally utilized health care services more than men. Visits to curative, family planning, STI, dental, casualty, and outpatient services have allowed for closer monitoring and earlier diagnosis of health conditions in women. Reproductive health conditions are the main reason for women's contact with all levels of the health system. Other important health problems include HIV and other sexually transmitted infections, diabetes, hypertension, and cancer.

Women's reproductive health is monitored through a network of prenatal and postnatal clinics. In 2000, 67% of pregnant women made an average of 4.3 visits per pregnancy to prenatal clinics at government health centers. Few data are available on women who receive prenatal care exclusively through the private sector; however, over 95% of all deliveries occur in public hospitals. Maternal mortality is estimated at 110 per 100,000 women. Complications such as hypertension in pregnancy and postpartum hemorrhage are the main causes of maternal mortality.

In 2000, syphilis and hemoglobin testing was carried out on 75% and 74% of women attending clinics at health centers, respectively. The level of syphilis in the prenatal population declined from 6% in 1996 to 2% in 2000. The prevalence of anemia (Hb <10 g/dl) in pregnant and lactating women remained high at 15%. These levels may also reflect pre-pregnancy levels, as testing is done at the first prenatal visit.

Under the HIV/STI sentinel surveillance program, 1.2% of the 1,925 prenatal clinic attendees tested were positive for HIV. Some 36% of the positive cases were in the age group 20–24 years, 26% were in the 25–29 years age group, and 16% were in the 15–19 years age group.

Postnatal visits by mothers to clinics represented coverage of 73% of the estimated births in 2000. Sixty-eight percent of women attending postnatal clinics were recruited as family planning acceptors.

Fifty percent of Jamaican women of reproductive age (15–49 years), 66% of whom are married or in a common-law relationship, were current users of a family planning method. The 1997 JRHS showed a decline in pill usage from 36% to 32%, and increases in the use of condoms from 15% to 26% and injectables from 14% to 17%. The survey also found that among former contraceptive users, one-third previously used the pill, one-third used condoms, and 14% used injectables. In 1999, 93% of family planning clients accessing public sector services were women. Although the services continued to be offered at 316 government health centers and 8 nongovernmental centers, there was an 8% decline in the number of clients. This may reflect a partial shift to the private sector for contraceptive supplies.

The prevalence of hypertension and diabetes is high among women age 20–59 years. Diabetes was an important cause of death in 1999, accounting for one of every nine deaths, and the rate of diabetes among women increased from 51.8 per 100,000 population in 1990 to 59.9 per 100,000 population in 1999.

Breast and cervical cancer are leading causes of cancer mortality in this group. The risk of these conditions can be reduced through lifestyle modifications and thus should be a stronger focus of health promotion efforts.

Little is known about the prevalence of intimate partner violence in Jamaica. Analysis of 6 months of data from the Jamaica Injury Surveillance System in three major hospitals (in Kingston, Montego Bay, and Clarendon) shows that 30% of violence-related injuries experienced by women were inflicted by their male intimate partners. Only two rapes were reported in 2000, suggesting that rapes are underreported. The Constabulary Statistical Department reported that in 2000, 100 women were victims of homicide. A 1999 study at the Women's Crisis Centre outlined a profile of abused women, showing that 50% of abused women were 30–39 years old, and 89% were in longer-term relationships (i.e., married or common-law). Emotional and psychological abuse were reported by 98% of respondents, sexual assault by 59%, and physical assault with or without a weapon by 90%. The respondent's home was the site of 94% of assaults. Of those injured, only 26% reported the incident to the police.

Men account for a mere 20% of visits made to curative services and for 7% of visits to family planning services.

Cancer of the prostate, trachea, bronchus and lung, and stomach are the five most common causes of cancer death among males. In 1999, cardiovascular diseases and diabetes mellitus were leading causes of hospital admission and death among adult males.

Injuries continue to be the leading cause of morbidity among men age 20–44 years. In 1999, over 60% of all intentional injuries seen at accident and emergency departments were men in that age group. Accidental injuries and motor vehicle accidents were also more common in men. Higher levels of substance abuse and multiple sexual partners are risk factors that increase the vulnerability of this group. HIV/AIDS and STIs are among the leading causes of morbidity and mortality, with 26% of all AIDS cases reported in this age group.

The Elderly (60 years and older)

Persons age 60 years and older accounted for 9.7% of the population in 2000. The male-female ratio is 0.89:1 for this age group, and 0.71:1 for persons age 70 and older. In 1999, cardiovascular disease was the leading cause of hospital admission among persons age 60 and older, followed by diabetes mellitus. The leading cause of hospital deaths in 1999 was cardiovascular disease, followed by diseases of the respiratory system.

Sixty-three percent of persons age 75 years and older are heads of households, and are predominantly female. The majority of elderly persons (82%) live with at least one family member, 1.8% live with non-relatives, and 1% are institutionalized. The Survey of Living Conditions reported that elderly men were twice as likely to live alone than elderly women. Elderly males living alone were likely to be poor, with weak family links, and in need of social assistance. The prevalence of poverty among the elderly population was 9%.

The main noncommunicable diseases affecting the elderly were hypertension (43%, with prevalence rising to 55% among females), arthritis (40%), overweight (34%), and diabetes (10%). Sixty percent of diabetes and hypertension clinic attendees are over age 60. A survey published in 1996 found that the main causes of disability among the elderly were visual impairment and arthritis.

The National Council for Senior Citizens functions under the mandate of the National Policy for Senior Citizens, and concentrates on four major policy areas: education, health, income, and social security. Health activities include clinics and health fairs, where screening tests for diabetes, hypertension, and visual acuity are carried out. Workshops and health talks are held throughout the year. Senior citizen clubs operate in all parishes. In 1999, 541 clubs provided services to over 25,000 members, 73% of whom were females and 21% of whom were homebound. The Council assists the elderly with obtaining access to services such as food stamps, poverty relief, national insurance, drugs (under the Jamaica Drug for the Elderly Programme), and transportation.

Workers' Health

Approximately one-third of the employed labor force is self-employed, and most employment sectors are not required to report occupational health data. These factors increase the difficulty in monitoring workers' health. In 1999, the Industrial Health and Safety Division of the Ministry of Labour monitored 1,497 factories islandwide that employed 46,088 workers, or 5% of the employed labor force. The male-female ratio was 1:1, but more men were employed in the sugar industry and more women in apparel manufacturing. The division received reports of 223 accidents from these factories, for an accident rate of 4.8 per 1,000 workers, an increase over 1996 when 3.2 accidents per 1,000 workers were reported. The case fatality rate among these workers was 2.2 deaths per 100,000 workers in 1999, down from 12.5 per 100,000 in 1996. Among the 4,000 workers in the mining industry, an injury rate of 11.7 per 1,000 workers was reported in 1998, with no fatalities.

Workers' rights are protected under the Workers Compensation Act, National Insurance Act, Industrial Safety Act, the Juvenile Act, and the Employment of Women Act. The Employment of Women Act regulates conditions of work for women. The Juvenile Act seeks to ensure that children under the age of 12 years do not work, and outlines the type of work to be undertaken and conditions of work for minors. In keeping with ILO, PAHO, and CARICOM initiatives, the Occupational Safety and Health Act, which is in draft stage, aims to regulate the surveillance of diseases and injuries occurring in the workplace and to establish joint responsibility among workers and management for monitoring workers' health and safety.

The Disabled

Less than 10% of Jamaica's population is disabled. Physical disability is the most common disability (29%). Fourteen percent of the disabled population have multiple disabilities, 12% visual disability, 8% mental illness, and 5% mental retardation.

A survey conducted in 2000 among 4,200 children age 2–9 years reported that in relation to their age, 5.6% were "not able to understand," 4.4% were learning disabled and not able to speak or be understood, 2.6% were mentally challenged, 1.0% had difficulty seeing, 0.9% had delays in standing or walking, 0.6% had difficulty hearing, and 0.5% had abnormal seizures.

The National Policy for Persons with Disabilities discussed in Parliament in 2000 aims to improve the status and condition of persons with disabilities so that they can enjoy a better quality of life. The Jamaica Council for the Disabled is responsible for coordinating and implementing the policy in collaboration with the various governmental and nongovernmental agencies that provide services for this group.

By Type of Health Problem

Natural Disasters

Between 1996 and 2000, the major disasters in Jamaica were floods in the parishes of Portland and St. Mary. The Office of Disaster Preparedness and Emergency Management, a quasi-governmental agency, has overall responsibility for reducing the impact of disasters and emergencies and for coordinating emergency and relief operations. However, the Ministry of Health coordinates the formulation of national plans and relief operations that ensure that the health sector can respond to disasters through prevention, preparedness, and mitigation programs. The Ministry of Health/Jamaica Defence Force Casevac Services are responsible for transferring patients who require a higher level of emergency care than that available at the referring hospital.

Major activities related to emergency and disaster management included activating the Ministry of Health and the National

Emergency Operations Centre to direct, control, and coordinate the response to the flooding that occurred in 1998–2000; and training health personnel in emergency cardiac care, basic and emergency life support for adults and children, and mass casualty management.

Vector-borne Diseases

There were no indigenous cases of malaria, which was eradicated in the 1960s. In 2000, there were seven imported cases of malaria.

An outbreak of dengue occurred in 1998, with 1,509 reported cases. In 2000, there were 25 cases reported. No cases of plague or yellow fever were reported, as has been the case for the past 50 years. Yellow fever vaccinations are administered for travelers to endemic countries.

Diseases Preventable by Immunization

No cases of measles, polio, diphtheria, or neonatal tetanus were reported for the period 1996–2000. Immunization coverage in 2000 was 94% for BCG, 86% for DPT, 86% for polio, and 88% for MMR (Figure 4). Active surveillance for cases of acute flaccid paralysis, measles, rubella, and congenital rubella syndrome continued in 2000. One case of rubella was reported in 2000. During 1996–2000, there were 15 cases of congenital rubella, with the last cases reported in 1998. There were 36 laboratory-confirmed cases of hepatitis B infection in 1996 and 174 in 2000.

Intestinal Infectious Diseases

No cases of cholera were reported during 1996–2000. Typhoid fever is endemic and seven confirmed cases were reported in 2000, a decrease from the 32 cases reported in 1996.

The case fatality rate for gastroenteritis cases was less than 1% for 1995–2000. In 1999, 9.7% of 1,859 travelers surveyed had diarrhea.

Chronic Communicable Diseases

There were six new cases of leprosy in 2000. Jamaica maintained its elimination status with a case detection rate of 0.27 per 100,000 population.

In 2000, 118 new cases of tuberculosis were confirmed, for a case detection rate of 4.5 per 100,000 population. This rate has remained constant since 1990. Sixty-two percent of these new cases were males and 38% females; 53% of cases were in the age group 15–44 years. Four cases (3.4%) were under 10 years; all these were contacts of adult cases. Tuberculosis patients are screened for HIV and in 2000, 16 cases (14%) were co-infected with HIV.

Acute Respiratory Infections

Respiratory tract infections accounted for 17% of all curative visits to health centers in 1999. Survey data has shown that 73% of clinic visits for acute respiratory infection were due to upper respiratory tract infections, and 18% to lower respiratory tract infections; 9% of visits were due to asthma.

Respiratory tract infections accounted for 12% of all visits to accident and emergency departments of hospitals in 1999, with asthma accounting for 49% of these visits. Respiratory tract infections represented 13% of hospital admissions (excluding obstetric cases).

Zoonoses

No cases of rabies were reported during the review period. However, 24% of samples received in 2000 were seropositive for *Leptospira*, compared to a seropositivity rate of 51% in 1998.

HIV/AIDS

The cumulative number of AIDS cases in Jamaica from 1982 to 2000 was 5,099. There were 3,125 male and 1,974 female cases, for a male-female ratio of 1.6:1. Analysis of the age and sex distribution of incident cases revealed that the AIDS case rate among females age 10–19 years was three times higher than among males in the same age group. The case fatality rate was 61% at the end of 2000. There were 414 cases in children, with a case fatality rate of 54%.

The national incidence of AIDS in 2000 was 352 per 1,000,000 population (Figure 5). The parish with the highest AIDS incidence (761 per 1,000,000 population) was St. James Parish, followed by the parishes of Kingston and St. Andrew (combined incidence of 557 per 1,000,000 population).

The main mode of HIV transmission was heterosexual transmission (61% of cases). Mother-to-child transmission accounted for 8% of cases, homosexual/bisexual contact for 7%, and intravenous drug use for less than 1%. Transmission of HIV via transfusion of contaminated blood accounted for less than 1% of cases, as universal testing of all blood products was instituted in 1985. The mode of transmission has not been determined for 25% of cases.

HIV prevalence among blood donors was 0.36% in 1997 and 0.47% in 2000. Prevalence among prenatal clinic attendees was 1.0% in 1997 and 1.3% in 2000, and among STI clinic attendees was 6.4% in 1997 and 4.1% in 2000. HIV prevalence among migrant farm workers was 0.08% in 2000, compared with 0.01% in 1997.

Sexually Transmitted Infections

Rapid testing for syphilis using the toluidine red unheated serum test (TRUST) was started in 1994. The prevalence rate of infectious syphilis was 20.6 per 100,000 population in 1996 and 10.4 per 100,000 population in 1999. There were 36 cases of congenital syphilis in 1996 and 17 cases in 1999.

Nutritional and Metabolic Diseases

A 1996 population-based study found that the prevalence of diabetes in the population age 25–74 was 13%, and that the

prevalence of obesity was 16% (BMI >30 kg/m^2). A 1998 Ministry of Health intervention study among clinic patients showed that 63% of diabetic patients were controlled.

Diseases of the Circulatory System

In 1999, cardiovascular disease was the second leading cause of death, with 2,184 deaths and a rate of 84.6 per 100,000 population. It accounted for 13% of hospital discharge diagnoses (excluding obstetrics), and was the leading cause of death among hospital inpatients, accounting for 33% of deaths.

A 1996 population-based study found that the high prevalence of cardiovascular disease was associated with lower education levels, illustrating that increasing education attainment plays a role in reducing the disease rate. A positive correlation between the use of medical services and income has been established. Jamaican women in all socioeconomic groups use medical services to a greater extent and have a higher probability of being tested for disease at a younger age than men. The employment rate among both men and women was significantly lower among those with a noncommunicable disease, especially diabetes. The survey also found that the prevalence of hypertension (blood pressure >140/90 mmHg) in the population age 25–74 years was 25%. A 1996 study of clinic patients indicated that 20% of patients with hypertension were appropriately managed. This finding was supported by a 1998 Ministry of Health intervention study among clinic patients that showed that 24% of hypertensive patients were controlled. Side effects of medication (reported by 22% of patients) and intermittent availability of drugs were major reasons for patients' noncompliance with medication.

Data from a behavioral risk survey reported in 1999 found that 36% of males and 11% of females ever smoked, 59% of males and 40% of females did regular exercise, and 3.9% of males and 16% of females reported they were obese.

Malignant Neoplasms

There were 2,407 deaths due to malignant neoplasms in 1999, with a rate of 93.2 per 100,000 population. Among males, prostate cancer caused 30% of cancer deaths (28.9 deaths per 100,000 population), lung cancer caused 17% (15.9 per 100,000 population), and stomach cancer caused 9% (9.1 per 100,000 population). Among females, important sites in cancer deaths in 1999 were the breast (18%), cervix uteri and other unspecified uteri (14%), and colon and rectum (8%), with death rates of 15.8, 12.9, and 7.1 per 100,000 population, respectively.

Over a six-month period in 1999, 30,000 Pap smears were done in the public and private sectors, covering an estimated 40% of the target population of women age 25–55 years. A 1.3% prevalence of cervical intraepithelial neoplasia (CIN III) and carcinoma in situ/carcinoma (CIS/CA) was found in 17,000 Pap smear results reviewed in 1999.

Accidents and Violence

Injuries were the leading hospital discharge diagnosis (excluding obstetrics) among males 5–45 years of age. Injuries accounted for 17% of hospital discharge diagnoses (excluding obstetrics) in 1999. Three surveyed hospitals (Kingston Public, Cornwall Regional, and May Pen) documented more than 12,000 injuries in a six-month period in 1999, accounting for 9.4% of all accident and emergency department visits. Violence-related injuries accounted for 49% of injury visits at accident and emergency departments. In 1999, data from the Jamaica Injury Surveillance System showed that 53% of patients were in the 20–34 years age group, and that 63% of patients were males.

Accidental injuries accounted for 3% (4,030) of injury visits at accident and emergency departments. Thirteen percent (525) of accidental injury cases were admitted to hospital. Males represented 64% and females 36% of accidental injuries; falls accounted for 35% of accidental injuries, and occurred mainly in the under 5 years age group and in the 60 years and older age group. Accidental lacerations accounted for 32% of unintentional injuries. Half of accidental injuries occurred in the home; 9.4% (328) occurred at industrial or farm worksites, and mainly affected males 25–44 years of age.

Motor vehicle accidents accounted for 2% (1,769) of the accident and emergency department visits in the surveyed hospitals. They accounted for 16% of all injury visits, with 21% resulting in hospital admission. Sixty-nine percent of patients were males, and 47% were 10–29 years of age. Passengers commuting in motorcars accounted for 36% of injuries.

Emerging and Re-emerging Diseases

There were 17 reported cases of *Haemophilus influenzae* meningitis during 1999–2000; 75% of cases were children between the ages of 6 months and 5 years.

Mental Health

In 2000, schizophrenia accounted for 49% of patients seen at mental health clinics; mood disorders accounted for 30%, substance abuse for 8.3%, organic mental disorders for 5.8%, and disorders of childhood/adolescence for 4.2%.

In 2000, the male-female ratio of patients with schizophrenia was 1.3:1, with most patients over the age of 20 years. The male-female ratio of patients with mood disorders was 0.5:1; organic mental disorders, 1:1; and substance abuse, 5.5:1. In 1999, 1,156 children were seen in child guidance clinics, with diagnoses of attention deficit, adjustment, and conduct disorders.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Ministry of Health's mission is to promote physical, mental, social, and spiritual well-being, as well as enhanced quality of

life, by empowering individuals and communities and ensuring access to adequate health care through the provision of cost-effective, promotive, preventive, curative, and rehabilitative services, in partnership with other stakeholders. In addition to its role as the main provider of health services, the Ministry of Health is responsible for defining national health policy, formulating health programs, and designing, operating, and controlling health systems.

The Ministry revised its health policy in 1997. Major health policy goals are to continue to pursue strategies to effectively manage the health sector; emphasize promotive and preventive health programs; monitor standards; and ensure access to adequate diagnostic, curative, and rehabilitative health care. These goals break down into the following operational objectives, which address current priorities:

- improve organization, management, and financing of the health sector;
- assure the security, health, and development of children at risk;
- rehabilitate children who exhibit antisocial behaviors;
- change values, attitudes, and practices related to the maintenance of good health;
- prevent, identify, and control the incidence and prevalence of injury and disease in a timely manner;
- develop, implement, and monitor standards to promote health and maintain a healthy environment;
- and ensure in a cost-effective way early and efficient diagnosis, cure, and rehabilitation of those who have been ill.

Three-year corporate plans and annual operational plans were developed with the involvement of stakeholders.

Health Sector Reform Strategies and Programs

The objectives of health sector reform are to strengthen the capacity and capability of the health system to meet the health sector's new challenges; to improve quality of care; to provide health care that is available and accessible to all; and to foster stronger public-private collaboration. The main elements of the reform process are decentralization and integration of services; restructuring of the Ministry of Health at the central level; promotion of quality assurance standards; broadening financing options; and creating partnerships with the private sector.

The Health System

Developments in Health Legislation

The National Health Services Act of 1997 allowed for the establishment of Regional Health Authorities, Regional Boards, and Parish and Hospital Management Committees that advise the Boards. This was supported by the Decentralization of Management of Health Care Act (1997), which replaced the Hospital Act, and allowed the appointment of Regional Health Boards to manage health care delivery on a decentralized basis. The Mental Health Act (1997) was amended to allow for delivery of a comprehensive mental health program, regionalization of services, integration of all three levels of health care, and the redevelopment of the main psychiatric hospital.

With respect to quality assurance, there were amendments to acts governing the health care practice of various professionals and requiring registration of additional groups. The Community and Private Health Facilities proposals, including the Nursing Home Bill, were enacted to allow for the registration and licensing of private health facilities (formerly nursing homes), and to regulate both public and private community facilities. The Day Care Centre Regulation and Management Act was also amended during the review period to improve the regulation of these facilities.

Promotion of individual responsibility for health was supported by the Seat Belt Law (1999), which mandated the use of seat belts, and by the Drug Abuse Amendment Act.

Three new regulations under the Public Health Act were enacted in 2000, including food establishment and facility regulations impacting on tourism.

Decentralization of Health Services

Decentralization of the health sector began in 1996, with the creation of Regional Health Authorities and the initiation of the restructuring of the Ministry of Health. With the establishment of Regional Health Authorities, decision-making capacity (especially relating to budgetary issues) was removed from individual hospitals and parishes and vested in the Authorities. In addition, some central level managerial functions were devolved to the Authorities. The four regions—South-East, North-East, Western, and Southern—are each headed by a Regional Director and governed by a Board. Service Level Agreements were developed for each region.

The Ministry of Health is divided into two broad areas—administrative and technical services. Administrative services, headed by the Permanent Secretary, are carried out in the areas of human resources, policy and planning, budgeting and finance, and health facilities maintenance. The Permanent Secretary is also responsible for the National Registration Unit, Children Services, and the Registrar General's Department. The Chief Medical Officer is responsible for the Technical Services Divisions. The three main Divisions are Health Services Planning and Integration; Health Promotion and Protection; and Standards and Regulation. The Divisions are responsible for policy advice and development; professional guidance; quality, standards, and regulation; planning service development; special programs and projects; monitoring health status (research); international health collaboration; and intersectoral collaboration.

Private Participation in the Health System

Private health care is provided by general physicians and specialists, and by private laboratories, pharmacies, and hospitals. Data from the Survey of Living Conditions suggest that private participation in health care is mainly at the level of ambulatory care; less than 5% of individuals requiring hospitalization use private hospitals. Furthermore, a 1996 study of use of and satisfaction with health services showed that people were more likely to use public facilities for preventive health care, such as family planning services, immunization, and prenatal care, but utilize private health services for ambulatory curative care. Nongovernmental organizations also provide ambulatory heath care, targeting the poorer segments of the population.

Health Insurance

A pre-implementation unit for the national insurance plan was established and several studies were conducted. Jamaica has only one specialized health insurance provider that offers individual and group plans; this provider paid US$ 27.2 million in medical claims in 1999. Life insurance carriers also provide group health plans; such companies paid US$ 22.6 million in claims in 1997.

The Survey of Living Conditions indicated that health insurance coverage increased slowly but steadily over the period 1990–1997, but did not increase over the period 1997–2000. The survey showed that in 1999, national health insurance coverage was 12%. This estimate was supported by figures from the health insurance providers, which showed that the total number of individuals covered (287,396) was 11% of the estimated end of year population for 1998. The survey also found marked and persistent differences in health insurance coverage among population groups in Jamaica. In 1999, health insurance coverage was highest in the Kingston Metropolitan Area (22%) compared with other towns (13%) and rural areas (6.5%). Differences by consumption quintile also exist, ranging from almost no coverage for the poorest quintile (0.4%), but steadily increasing with each successive quintile, to a high of 33% coverage in the wealthiest quintile. Persons age 60 years and older had significantly lower levels of health insurance coverage compared with younger individuals.

Organization of Regulatory Actions

Health Care Delivery

The Ministry of Health established the Standards and Regulation Division in 1999. The Division's core functions include policy formulation; maintenance of an effective regulatory and legislative framework; effective enforcement of standards and regulations; and development of health care standards and protocols. By the end of 2000, the Division developed standards for maternity centers and nursing home staff.

Protocols for the management of chronic diseases, initially diabetes and hypertension, have been developed. In addition, criterion-based clinical audit was introduced to survey the competence of health professionals in the management of major obstetrical emergencies.

The Government Chemist is responsible for testing drugs and other chemicals, and the Bureau of Standards is responsible for monitoring food standards and safety.

Certification and Professional Health Practice

All health professionals must obtain national certification and registration under the relevant registration bodies.

Environmental Quality

The Environmental Health Unit was reorganized under health reform and now has six broad areas of responsibility: occupational health and safety; port health and quarantine; air pollution; water and wastewater; solid waste management; and food safety and veterinary public health. Other agencies with some responsibility for environmental health include the National Resources Conservation Authority, the National Water Commission, the Pesticide Control Authority, the Government Chemist, the National Government Laboratory, the Bureau of Standards, and the ministries of Agriculture, Water, and Housing. The Environmental Control Division conforms with international chemical and biological standards for food safety, water, and sewage; enforcement of standards falls under the Public Health Act.

The central level structure of the Environmental Control Division is replicated at the regional level, with public health inspectors responsible for water quality inspectors, inspections, and monitoring. Public health inspectors are also responsible for monitoring wastewater plants and food safety. Standardized inspection tools for data gathering and inspection are now available to public health inspectors.

Management of municipal solid waste falls under the jurisdiction of the Ministry of Local Government, while the Ministry of Health provides technical advice and enforces relevant public health legislation. Hospital waste is the responsibility of the Ministry of Health.

In 2000, the Environmental Control Unit (ECU) and the Bureau of Standards established a Codex committee. The ECU collaborated with the Ministry of Agriculture in the inspection and certification of food exports. The procedures for hotel inspection and for inspection of imported food were standardized.

The Pesticide Control Authority is responsible for minimizing the adverse effects of pesticides on the environment and human health. In 1999, Jamaica signed the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Pesticides and Chemicals in International Trade, and was accepted as a member of the Coordinating Group of Heads of Pesticides Boards of the Caribbean Region.

Organization of Public Health Care Services

Health Promotion

The health promotion strategy focuses on changing lifestyles in order to prevent and control obesity, encourage smoking cessation, and improve the management of diabetes and hypertension. The objective is to increase physical activity and reduce the prevalence of obesity to 15% in adolescents and to less than 30% in the population over age 20 years. The ministries of Health and Education have collaborated with NGOs to develop interventions, including annual camps, aimed at building resiliency and life skills among children and adolescents.

The national HIV/STI program is multisectoral and multidisciplinary, and focuses on surveillance, STI control, behavior change communication, laboratory testing, research, monitoring, and evaluation. The National AIDS Committee (NAC) advises the Ministry of Health on policy regarding HIV/AIDS. The main role of the NAC is to advocate with its 60 member organizations, which are drawn from Government, community organizations, and religious and private groups with links to the community. NAC subcommittees and parish AIDS committees address technical, educational, legal, ethical, funding, care, and support issues. Program activities appear to have borne fruit in the stabilization of HIV prevalence, increased condom use, reduction of sexually transmitted infections, and a high level of public awareness of HIV/AIDS.

Main strategies for the promotion and protection of infant and child health include care during pregnancy, childbirth, and the postnatal period for mothers and newborns, as well as the promotion of nutrition and prevention of infection. Encouraging male participation in both preventative and curative health care services remains a challenge. Men's clinics, mass media campaigns, workplace programs, and parenting programs focusing on male responsibility are among the ongoing activities that seek to involve men in disease prevention and treatment programs.

Given the high levels of unemployment among out-of-school youths, and their limited access to educational and other opportunities, the Ministry of Health has embarked on a comprehensive program to deliver youth-friendly services aimed at enhancing resiliency by building life skills.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Communicable disease surveillance in Jamaica is conducted using both active and passive systems, and includes public and private sentinel primary care facilities, hospitals, laboratories, and select hotels. Data obtained from the various surveillance systems are disseminated nationally via weekly bulletins and internationally (to CAREC) via weekly reports. Additionally, the Division of Health Promotion and Protection produces the *Epi News* newsletter, and formulates special reports for the media and other agencies as necessary. In 1999, there were 49 sentinel and 28 hospital active surveillance sites reporting weekly to the Unit, with on-time reporting over 90%. The surveillance system was expanded in 1999 to include injuries and maternal deaths. In 1999, the Jamaica Injury Surveillance System was established in the accident and emergency departments of hospitals with computerized information systems.

Surveillance for HIV/AIDS cases is carried out by case finding/active surveillance and by passive surveillance. Active surveillance is carried out by contacting laboratories, hospitals, hospices, and public and private physicians. AIDS case reporting is estimated to be 90% complete.

Collaborations continued with the National Public Health Laboratory, CAREC, and the University Hospital of the West Indies for confirmation of cases of diseases. Special projects initiated by CAREC and PAHO in 1999 included the Physician-based Sentinel Surveillance System and the Survey for Invasive Bacterial Meningitis, Septicemia, and Pneumonia in Children. Training in the use of geographic information systems continued in 1999.

Public health laboratories, including the National Public Health Laboratory, provide testing services in public hospitals, though not all services are provided in all hospitals. Areas of testing include microbiology, cytology, hematology, chemistry, histology, and immunology. The National Public Health Laboratory, located in Kingston, is a referral service offering a wide range of services, including environmental testing. In 1999, over 1.7 million tests were done by the laboratory services.

Potable Water, Excreta Disposal, and Sewerage Services

To improve the quality of rural water supplies, a new technology to disinfect drinking water (SANILEC) was introduced in eight parishes. The ventilated improved double pit was introduced to protect underground water supplies, especially in rural areas where running water is lacking.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

The health system offers primary, secondary, and tertiary care. Ambulatory care at the community level is delivered through an islandwide network of 343 health centers ranging in type from I to V. The type I center provides service that is closely integrated into the community. It is staffed by one midwife and at least two community health aides who are responsible for delivering basic maternal and child health, nutrition, family planning, and immunization services, all with a large educational component. Each subsequent level serves a larger population, provides a higher level of expertise in terms of staffing, and provides treatment for common illnesses and injuries. The highest level, type V, includes comprehensive health centers located in urban areas, which provide a wide range of ambulatory services and are equipped with laboratories.

Secondary and tertiary care services are offered via 23 government hospitals and the teaching hospital of the University of the West Indies. Together they have a combined capacity of 4,802 beds. These hospitals are classed as "A," "B," "C," or "Specialty," epending on the level and type of services provided. Type A hospitals are situated in larger urban areas and provide the most specialized services, such as outpatient specialty clinic services and inpatient services in more than four basic specialist service areas. Referrals to type A hospitals are made from type B and type C hospitals. A type B hospital is usually situated in an urban area and provides inpatient and outpatient services in at least four basic specialties: general surgery, internal medicine, obstetrics and gynecology, and pediatrics, as well as X-ray and laboratory services. Type B hospitals support referrals from type C hospitals, which are located in rural population centers and provide general outpatient and inpatient services. Complicated cases are referred to type B and A hospitals.

Approximately 38% of the population utilize the public sector for ambulatory care, 57% use the private sector, and 5% use both sectors. Private sector health services are provided through an extensive network of professionals offering specialist services, and by family doctors throughout the island. These are supported by a range of paraprofessionals, private laboratories, and radiological, dental, and optical facilities. Nongovernmental organizations such as church and service clubs, the Heart Foundation of Jamaica, the Diabetic Association, the Red Cross, Jamaica AIDS Support, Addiction Alert, Community for the Upliftment of Mentally Ill, and other groups also provide health services for a nominal fee.

The surgical specialties available in public hospitals include dental, otorhinolaryngologic, ophthalmologic, general, neurologic, orthopedic, pediatric, and plastic surgery. Operations performed from 1997 to 1999 were mostly elective, averaging approximately 22,433 (55% of total) operations annually, while emergency services and day surgery averaged approximately 10,596 (25%) and 7,881 (19%) operations, respectively.

Auxiliary Diagnostic Services and Blood Banks

The blood bank receives blood from 12 blood collection centers. All blood is screened for HIV, HTLV, HbsAg, HCV, and VDRL. Blood components are also produced for transfusion.

Specialized Services

Rehabilitation services offered in the public sector include physiotherapy, social work, speech pathology, and occupational therapy. These services are currently limited to type A, some type B, and specialty hospitals, with minimal services offered at type C facilities. While private hospitals mainly offer physiotherapy services, other therapists offer consultations or provide domiciliary services, though usually only in the major urban centers. The Sir John Golding Rehabilitation Centre, a 71-bed institution in Kingston, offers short- and long-term rehabilitative services. NGOs at the Centre provide support for the disabled by making prostheses, shoes, and wheelchairs; operating a craft workshop; and assisting with providing schooling, skills training, and housing for the disabled.

Health Supplies

Jamaica has a national formulary; a vital, essential, and necessary drug list; and policies relating to the use of generic drugs. The procurement and distribution of pharmaceuticals and medical supplies for the public health sector is done through Health Corporation Limited (HCL). In 1996, HCL supported Jamaica Drug for the Elderly by providing a basic package of drugs at a nominal cost through the public and private sectors. In 1997, Drug Serv, a program to provide drugs through low-cost retail outlets, was implemented to supplement public dispensing of drugs. In 1998–1999, 87% of HCL's drug sales were made to health departments and hospitals. Despite these initiatives, public sector hospital pharmacies met only 65% of the demand for prescribed drugs. Over 90% of the vaccine supplies for the immunization program are procured through the PAHO Revolving Fund for Vaccine Procurement.

The Survey of Living Conditions reported that three-quarters of those reporting illness and seeking care purchased their medication at private pharmacies. While use of these facilities tended to increase with wealth, over half of the poorest 20% of the population used private pharmacies, which may in part reflect public sector hospital pharmacies' shortfall in filling prescriptions.

Human Resources

Availability by Type of Resource

Health personnel shortages exist in all major categories except general practice physicians, dental nurses, and community health aides. For example, in 1999, only 26 of 35 mental health officer posts were filled, and the cadre of mental health officers needs to be increased from 35 to 86 to meet the growing need in the community and decrease the workload at referral institutions. Training programs have not been able to meet the demand for health personnel except medical doctors. The shortage of nursing personnel is the most severe, though a shortage of health administration and management personnel also exists. Shortages are compounded by the continual loss of public sector personnel to the private sector, and by migration of personnel to other countries, particularly the U.S. and England.

Training

Training programs are offered for all categories of health personnel at both the basic and postbasic levels. During 1999, the main school for training public health nurses and inspectors, the West Indies School of Public Health, was transferred to the Faculty of Health and Applied Science of the University of

Technology, which is under the direction of the Ministry of Education. Training for dietitians has also been transferred to the Faculty of Health and Applied Sciences. Training for nurses continued in the schools of nursing of the Ministry of Health, community colleges, and at universities.

Health Research and Technology

The use of evidence-based data to guide program development has been merged with the concept of Essential National Health Research. Linkages with the University of the West Indies, the Caribbean Health Research Council, and other regional and international organizations have guided research initiatives and training within the Jamaican health service.

Since 1995, a number of information systems have been introduced to improve program monitoring and evaluation, including the Patient Administration System, the injury surveillance system, and a wastewater monitoring system.

Advances in health technology, such as the use of laparoscopic techniques for diagnosis and treatment, have increased service delivery options and contributed to decreased morbidity and length of stay for many surgical conditions. The purchase of new diagnostic equipment, such as computerized axial tomography (CAT) scan and magnetic resonance imaging (MRI) machines, resulted in major capital outlays in the private sector during the review period.

Health Sector Expenditure and Financing

The main source of data on expenditure on public and private health care is the Survey of Living Conditions, which examined expenditure on curative care during a four-week reference period. During 1990–1999, expenditure (at constant prices) on both private and public health care increased. Higher relative increases were seen in public sector care, though the cost of public health care was still significantly lower, representing less than one-third of private health care costs.

The Ministry of Health's budget grew from US$ 118.2 million in 1995–1996 to US$ 188.2 million in 1999–2000. The Ministry's budget as a percentage of the Government budget fluctuated over the period, rising from 5.3% in 1995–1996 to 7.0% in 1997–1998, and falling to 4.7% in 1999–2000. The health budget as a percent of GDP ranged from 2.6% to 3.5%. Although the budget increased significantly in nominal terms, it showed little noticeable growth in real terms. Most of the increase in expenditure has been in the area of personal emoluments, which rose from 41% of the health budget in 1995–1996 to 73% in 1999. Though the Ministry of Health has set the target of 25% of its budget to be allocated to primary health care, this has not been achieved, and during the 1990s, allocation to primary health care ranged from 20% to 23% of the health budget.

Although in existence for several years, user fees have never made a significant contribution to the public sector budget. However, in recent years the fee schedule was revised. Since 1996, fee collection has steadily increased in both absolute terms and as a percentage of the health budget; fee collection as a percentage of the health budget doubled in the years when the fees were increased.

External Technical Cooperation and Financing

Technical cooperation and financial support from intergovernmental organizations and through bilateral and multinational agreements facilitated significant upgrading of Ministry of Health facilities and services. Cuba, Germany, Japan, Italy, the Netherlands, and the European Union, as well as such organizations as the IDB, ILO, PAHO/WHO, UNICEF, USAID, and UNDCP, have contributed to disease prevention and control, drug abuse prevention and control, health promotion, human resource development, and infrastructural improvement programs. Community-based activities of some of these agencies focused on environmental health and sanitation through the provision of safe water and acceptable means of excreta disposal.

In addition to affiliation with PAHO/WHO, other regional cooperation in health includes Jamaica's membership in CARICOM's Council for Human and Social Development, which provides a coordinated focus for its health activities. As a member of CARICOM, Jamaica subscribes to the Caribbean Cooperation in Health Initiative, Phase II.

FIGURE 1. Gross domestic product, annual growth (%), Jamaica, 1990–2000.

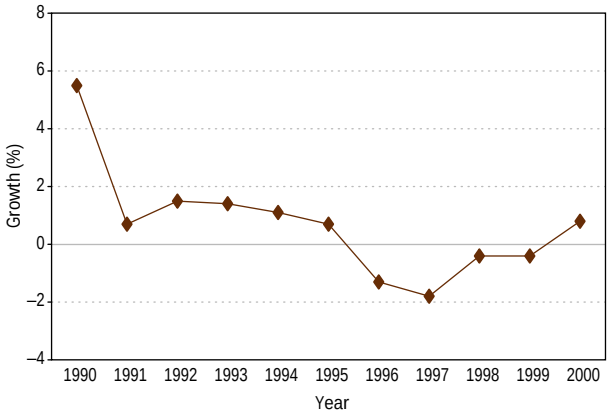


FIGURE 2. Population structure, by age and sex, Jamaica, 2000.

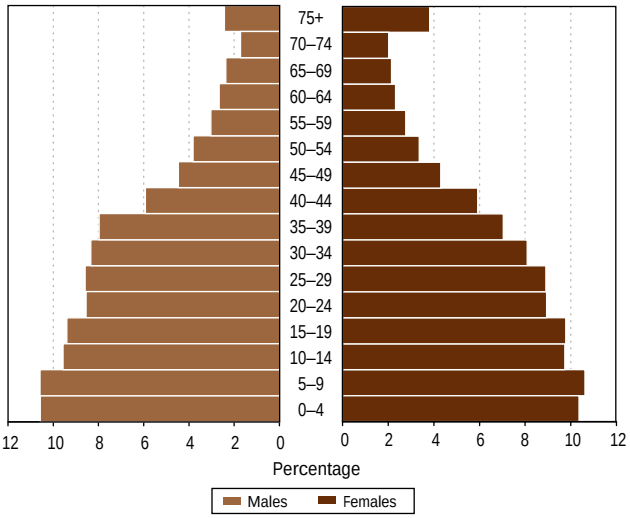


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Jamaica, 1990–1995.

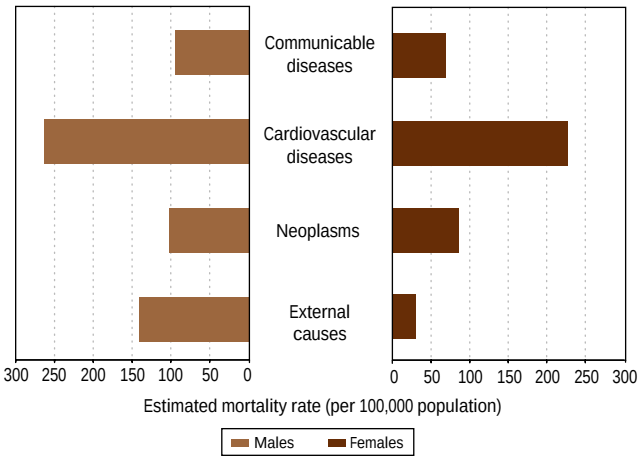


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage for women of childbearing age, Jamaica, 2000.

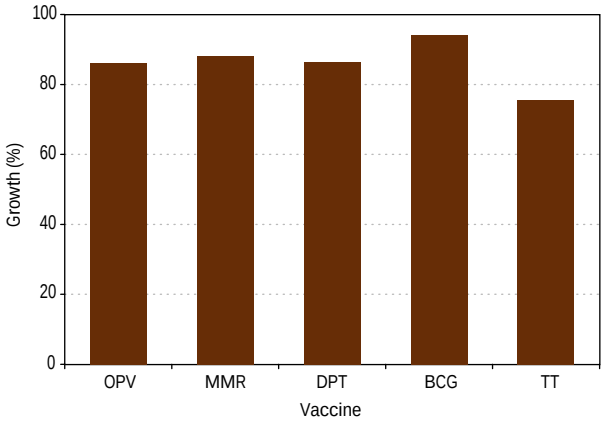
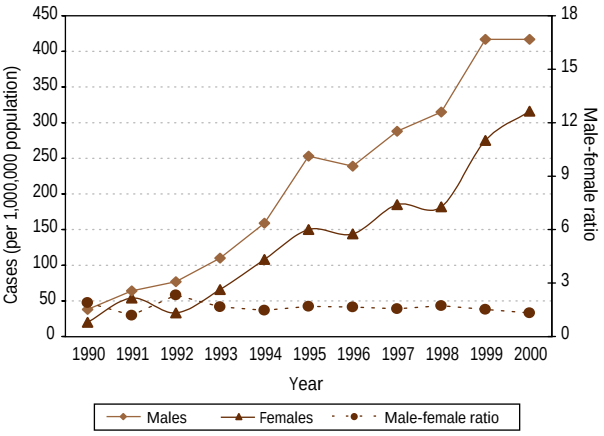


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Jamaica, 1990–2000.



MEXICO

OVERVIEW

The United Mexican States is a representative and democratic republic consisting of 31 states and the Federal District (Mexico City, capital of the country) joined together in a federation. The federal and the state governments are hierarchically equal and abide by the principles of autonomy with association. The municipal level is the third order of government, and there are a total of 2,444 municipalities. The National Political Constitution divides the powers of government into the executive, legislative, and judicial, and it also calls for a change of government every six years. The political situation in recent years has been characterized by democratization and increased political plurality. The presidential election of July 2000 brought a new political party to power for the first time in seven decades and with it, changes in the relationships between the political forces within the federal government structure.

Mexico's economic reform has advanced rapidly in the last few years, benefited by trade and financial activity carried out within the context of globalization, with the following results: lower tariffs, elimination of import permits, liberalization of commercial transactions, strengthening of the federal treasury, reduction of public sector funding, deregulation of internal production, and legal autonomy of the Central Bank of Mexico. The country has increased its geopolitical and economic presence and influence in the region, the Hemisphere, and the world as a result of its participation in the North American Free Trade Agreement, the Organization for Economic Cooperation and Development, and trade agreements with the European Economic Community and other countries in Latin America and Asia.

During 1994–2000 economic policy was aimed at fostering the expansion of productive activity and employment, channeling more resources toward social spending, reducing inflation, and bolstering the economy both fiscally and financially in order to safeguard against crises like those experienced in previous years. There was strict monitoring of monetary and fiscal policy, coupled with steps to control inflation and the decision to allow the exchange rate of the peso to float freely. Following the economic crisis of December 1994, by 1996–1997 the macroeconomic foundation for recovery was in place. However, in 1998 the Asian crisis and a drop in oil prices made it necessary to cut public spending by US$ 3,000 million.

The GDP rose 6.9% in 2000, the largest increase in 19 years. That same year, exports amounted to a total value of US$ 122,000 million, representing an increase of 23% over 1999, with an 89% growth in oil exports and a 19% increase in all others. In 1999 the deficit in the balance of trade was US$ 4,500 million, while the current account deficit in the balance of payments was mostly covered through direct foreign investment and long-term financing from external sources. Inflation was under 10%, the lowest rate in recent years, thanks to a policy of fiscal and monetary restraint and to strengthening of the Mexican peso relative to the US dollar. High prices for oil in 1999 and 2000 generated greater-than-expected public revenue, permitting early paydown of debt with the International Monetary Fund (Figure 1).

In 2000, 60% of direct foreign investment came from the United States of America, and at the same time 90% of Mexico's exports (equal to one-third of the country's GDP) went to that market. In recent years the government has developed a strategy for placing Mexican products on the international market, which has attracted investment from other emerging markets.

With regard to the country's social situation, as of 2000 the population living below the poverty line numbered 40 million, and almost 18 million were living in abject poverty. In 1997 Mexico had a human poverty index of 11%, which ranked it in seventh place among the developing countries. The unemployment rate in 2000 was 2.3%, representing a reduction relative to 1998 (2.8%) and 1997 (3.7%). During the year 2000 employment in the maquiladora industry increased 14%. The average length of unemployment during the period from 1998 to January 2000 was 1 to 4 weeks, and most unemployed workers with experience had left their former jobs because they were dissatisfied with the working conditions.

In 2000 the General Population and Housing Census found that 53% of the employed population was working in commerce and services, compared with 28% in industry and 16% in the pri-

mary sector. The Census also found that 53% of wage-earners had health care benefits. The number of private dwellings came to 21.9 million, electric power reached 95% of the homes in the country, 86% of the households had television sets, and 9.4% had computers. The state of Oaxaca had the highest percentage of dwellings with earthen floors (39%), and the proportion was lowest in the Federal District (1.2%).

The 2000 Census also found that 87% of the population between 6 and 14 years of age knew how to read and write (88% of the girls and 87% of the boys), and the figure rose to 91% in the population over 15 years of age. In rural areas slightly more than 20% of the people do not know how to read or write. The average years of schooling completed was 7.6 (7.8 for males and 7.3 for females), with a range from 9.7 years in the Federal District to 5.6 in Chiapas. In the male population, 73% had completed primary school, while for women the proportion was 69%, and 7.4% of the men and 11% of the women were illiterate. Although a larger proportion of females complete primary school, the percentage who enroll in secondary school and continue their studies is smaller.

According to the same source, 40% of the residents in the country reported that they were affiliated with a social security institution, with the lowest proportions in the states of Chiapas (18%) and Guerrero (20%) and the highest in Coahuila (70%) and Nuevo León (66%). Almost the entire population (96%) said that they had availed themselves of health services in some form: 39% had used social security; 34%, the private sector; and 23%, services provided by the Secretariat of Health.

In 2000 the population growth rate was 1.4%, and the total population was 97.4 million (51% females and 49% males), compared with 94.2 million in 1997. In terms of age distribution, 33% of the population was under 15 years old, and the median age was 22 (Figure 2). The dependency rate in 2000 was 64%, and there were an estimated 60.1 dependents per 100 persons between the ages of 15 and 64 years. The general fertility rate declined from 2.7 in 1997 to 2.4 in 2000, and the states with the highest rates were Guerrero (3 children per woman), Puebla (3.0), Chiapas (2.9), and Oaxaca (2.9). The average number of children per woman aged 25–29 was 2.3 in rural areas and 1.4 in the cities.

Migration to the interior of the country increased during 1997–2000. The percentage of population not living in the place where they were born was 19%; among men the reason for moving was most often work-related (20%), while for women it was usually family considerations (22%).

The population continues to be predominantly urban: three out of every four people live in urban areas, and 29% of the population resides in 5 of the country's 32 metropolitan areas. It has been estimated that in the last five years 1.6 million Mexican citizens have emigrated, 96% of them to the United States. Of those who left during this period, 17% returned. In 2000 the net loss to international migration was slightly more than 301,000.

Life expectancy at birth rose from 73.3 years in 1994 to 75.3 years in 2000 (77.6 for women, and 73.1 for men). The increase in life expectancy in the last five years is attributable in part to a decline of more than 20% in infant mortality. The WHO calculated that disability-adjusted life expectancy was 62.4 years for men and 67.6 years for women. An analysis shows that the greatest losses in terms of years of healthy life were due to noncommunicable diseases and injuries, and within these two groups the largest percentages corresponded to diabetes mellitus (5.8%), homicides and violence (4.8%), ischemic heart disease (4.5%), and motor vehicle accidents, although damages produced by perinatal conditions (7.7%), respiratory infections (3%), cirrhosis of the liver (2.9%), and malnutrition (1.9%) also played an important role.

Mortality

During 1997–1999 mortality remained constant in absolute terms, with the average general mortality rate for the period being 439 per 100,000 population. The states with the lowest rates were Quintana Roo, Guerrero, Campeche, and Chiapas, where they ranged from 282 to 400 per 100,000, while the highest rates were in the Federal District, Puebla, Oaxaca, and Chihuahua, at 521 to 551 per 100,000.

Most mortality during 1999 was due to noncommunicable diseases, which were responsible for 78% of all deaths, followed by external causes (accidents, homicide, suicide), which accounted for 13%, and communicable diseases, representing 9%. The mortality rate in males was 509 per 100,000 population and in females, 396 per 100,000. For both sexes, heart disease was the most frequent cause of death, with rates of 72 and 69 per 100,000, respectively, followed by malignant neoplasms (53 and 54), diabetes mellitus (45 and 51), and accidents (56 and 18). Figure 3 shows mortality adjusted for underregistration by broad groups of causes for 1995–2000.

The leading causes of death in 1999 were heart disease (71 per 100,000), malignant neoplasms (55), diabetes mellitus (47), accidents (36), diseases of the liver (28), cerebrovascular diseases (26), and conditions arising in the perinatal period (20). Homicide (13) and suicide (3.4) were in ninth and eighteenth place, respectively. Although mortality from infectious diseases has declined (5.7), HIV/AIDS (4.3) and tuberculosis (3.3) continue to be public health problems.

There are significant differences between the states. Mortality from ischemic heart disease was highest in Sonora (72 per 100,000 population), Chihuahua (67), the Federal District (69), and Nuevo León (62) and lowest in Tlaxcala (24), Chiapas (25), and Oaxaca (30). In contrast, mortality rates from intestinal infectious diseases in children under 5 years were highest in Chiapas (44), Tlaxcala (42), and Oaxaca (40), while the lowest rates were in northern states, including Coahuila (7.1), Nuevo León (7.9), and Sinaloa (9.1).

Infant mortality declined from 44,377 deaths (16.9 per 1,000 live births) in 1997 to 40,283 in 1999 (14.5 per 1,000). There were

also declines in neonatal and postneonatal mortality as well as in deaths in children under 5 years, which went from more than 9,000 in 1997 to 7,800 in 1999. Similar patterns were also seen in schoolchildren, although the decreases were not as great. Maternal mortality, on the other hand, increased from 1,266 deaths in 1997 to slightly more than 1,400 in 1999, and deaths in the population of reproductive age (15–64 years) rose from 165,000 in 1997 to slightly more than 167,000 in 1999.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Mortality rates in the first year of life, both crude and adjusted for underregistration, declined significantly between 1990 and 2000. More than 80% of the deaths in children under the age of 5 occur in the first year of life. The crude infant mortality rate decreased from 16 per 1,000 live births in 1997 to 15 in 1999. The leading causes of death continued to be conditions arising in the perinatal period, congenital malformations, and influenza and pneumonia. There were 30% more deaths in males than in females. The infant mortality rate for 2000 estimated by the Brass method differed significantly between the states, ranging from a high of 33 per 1,000 live births in Guerrero to a low of 12.1 per 1,000 in Coahuila. Neonatal and postneonatal mortality declined from 9.7 and 6.7 per 1,000 live births, respectively, in 1997 to 8.6 and 5.8 per 1,000 in 1999. Perinatal mortality also decreased in terms of both its components: fetal growth retardation went from 6.4 per 1,000 live births in 1997 to 6.1 in 1999, and prematurity fell from 7.3 per 1,000 live births in 1997 to 6.6 in 1999.

In the group of children 1–4 years old the mortality rate decreased from 1.1 per 1,000 children of this age in 1997 to 1.0 per 1,000 in 1999. The leading causes of death were accidents (21.3 per 100,000); congenital malformations, chromosomal deformities and anomalies (10.6); and intestinal infectious diseases (8.8). The index of excess male mortality, despite fluctuations, increased during the period by 4.5 percentage points, from 116% to 121%.

The crude mortality rate in the population under 5 years old fell from 4.8 per 1,000 children of this age in 1997 to 4.4 per 1,000 in 2000. The largest reductions were seen in intestinal infectious diseases, which went from 33 per 100,000 in 1997 to 25 per 100,000 in 1999, and acute respiratory infections, which fell from 68 to 47 per 100,000 during the same period.

Schoolchildren (5–14 years)

General mortality in those 5–14 years old decreased from 36 per 100,000 population of this age in 1997 to 34 in 1999. The leading causes of death in 1999 (all with lower rates than in 1997) were accidents (11 per 100,000), primarily involving motor vehicles; malignant neoplasms (4.7); and congenital malformations (2.1). Boys had the largest proportion of deaths from any cause, with a male-female ratio of 2:1. Accidental injuries were the leading cause of morbidity in this age group and accounted for more than 22% of the hospitalizations in Secretariat of Health institutions in 1999, followed by diseases of the respiratory tract (16%). The states of Puebla, Chiapas, Oaxaca, and Tabasco had the highest mortality rates for the school-age population, while Nuevo León, Coahuila, and Durango had the lowest rates.

The records of the National Integrated Family Development System show that ambulatory treatment of boys and girls increased by almost four times between 1996 and 1999, from 8,824 office visits to 43,797. In 1999 there were 128,819 minors doing marginalized work (14,322 in the Federal District), with a small proportion of them (under 8%) living in the streets.

Adolescents and Youths

In 1999 accidents were the leading cause of death in adolescents and youth aged 15–24 years, with a rate of 31 per 100,000 in this population group, followed by homicidal assaults (14), malignant neoplasms (6.5), and intentionally self-inflicted injury (5.7). That same year it was estimated that for males in the population aged 15–19 the suicide rate was 2.5 times as high; accidental deaths were 3.8 times as high; and the rate for homicide and other injuries was 6.5 times as high.

The fertility rate in this group declined from 84 per 1,000 women in 1990 to 70 in 1999, the lower rate being attributed to the increased use of contraceptives. During 1998, 23% of the pregnant women attended at Secretariat of Health services were between 15 and 19 years of age, and 24% of the hospital deliveries corresponded to women under 20 years old. Thirty-three percent of the young women who received obstetric care accepted some form of contraception before they were discharged from the hospital.

According to the National Addiction Survey, the consumption of psychoactive substances by adolescents 12–17 years old increased between 1993 and 1998. As of 1998, 4.2% of them had used illicit drugs at some point in life. The drugs used most often were marijuana (2.9%), inhalants (1.3%), and cocaine (1.2%), with the use of cocaine growing the fastest of the three. More than 1 million adolescents (12%) were smokers (16% of the males and 7.4% of the females), and 56% of them had started the habit when they were between 11 and 14 years of age. Drinking increased among adolescents of both sexes, and the indicator of high alcohol consumption (five or more drinks in one session at least once a month) was reached by 14% of the males and 1.5% of the females. Moreover, drinking continued to be associated with other dangerous behaviors such as high-risk sexual practices (23%), drunken driving (16%), and attempted suicide (9%).

Adults

In 1999 general mortality was 283 per 100,000 in the population aged 15–64 years (360 per 100,000 in males), having remained stable since 1997. The states of Oaxaca, Baja California,

Chihuahua, and Puebla had the highest mortality rates in 1998, while Quintana Roo, Aguascalientes, Campeche, Nuevo León, Yucatán, and Zacatecas had the lowest.

Accidents, mainly involving motor vehicles, were the leading cause of death in 1997, with a rate of 41 per 100,000 population. In 1999, however, the rate for accidents was down to 39 per 100,000, and the category had fallen to second place, superseded by malignant neoplasms, with a rate of 40 per 100,000. Heart disease was the third-ranking cause of death in 1997 (31 per 100,000), but in 1999 the rate was lower (29 per 100,000) and diabetes mellitus assumed third place (31 per 100,000).

In 1999, 66% of the persons hospitalized in Secretariat of Health institutions were between 15 and 44 years of age. Hospitalizations related to pregnancy, delivery, and the puerperium accounted for 67% of the total, followed by disorders of the digestive system (6.4%) and accidental injuries (6.3%). In the Federal District mental illness affected 9.0% of adults aged 18–65 years, and major depressive episodes were the most common condition (7.8%), with a ratio of 2.5 women for every man.

Maternal mortality was relatively constant over the last decade, with a small increase from 47 per 100,000 live births in 1997 to 51 per 100,000 in 1999. Hypertensive and hemorrhagic complications were the leading causes of death, and the states of Chiapas, Guerrero, Mexico, Tabasco, Tlaxcala, and the Federal District had the highest rates (between 6.5 and 7.0 per 10,000 live births). Cervical cancer decreased from 20 deaths per 100,000 women aged 25 and over in 1998 to 19.51 in 1999, and the rate for breast cancer declined from 15 per 100,000 in 1998 to 14 in 1999.

A study of violence against women found a prevalence of 57% in the urban area of Guadalajara and 44% in rural areas, while 33% of the women who had a hospital-attended delivery reported that they had suffered physical, emotional, or sexual abuse at some time during their pregnancy. A survey conducted in the Federal District metropolitan area found that there had been physical violence in 11% of the sample households, and in 14% of these cases it had been extreme.

In 2000, 70% of the women of reproductive age (15–49 years) with a regular partner were using contraceptives, an increase of 1.2% relative to 1997. The states with the highest percentages were Sinaloa (79%) and Nayarit (76%), and those with the lowest were Guerrero (52%) and Chiapas (57%). In 1999 the most common methods adopted by new contraceptive users were the intrauterine device (26%), injectable hormones (23%), and oral contraceptives (22%), while the use of condoms increased slightly more than 10% between 1998 and 1999.

The Elderly (65 years and older)

General mortality in the group over 65 declined from 4,924 per 100,000 in 1997 to 4,763 per 100,000 in 1999. In 1999 this age group accounted for 49% of all deaths, with a predominance of males (56%). The leading causes of death in 1999 were heart diseases (1,106 per 100,000 adults in this age group), mainly ischemic heart disease (706 per 100,000); malignant neoplasms (612), especially of the trachea, bronchus, and lung (91), prostate (72), and stomach (63); diabetes mellitus (584); and cerebrovascular diseases (417).

A survey of the health and social well-being of older adults conducted in the Mexico City metropolitan area from November 1999 to July 2000 found that 87% of the men knew how to read and write, compared with 78% of the women of the same age, and the rate of cognitive deterioration was higher in women aged 60–80 (13%) than it was in men (8.3%). About 17% of the women and 13% of the men over 80 who were interviewed said that they were living alone, and 22% of the men and 28% of the women had no access to the health services provided under the social security system.

Workers' Health

The number of reported cases of occupational diseases increased from 19 per 100,000 workers in 1997 to 29 per 100,000 in 2000. Hearing disorders and traumatic deafness were the most frequent (45%), followed by respiratory diseases from chemical fumes and discharges (24%) and silicate pneumoconiosis (10%). The cumulative incidence of work-related accidents declined from 317 cases per 100,000 workers in 1997 to 286 per 100,000 in 1999, although the mortality rate increased during the same period from 9.3 to 10 per 100,000. The states with the highest mortality rates in 1999 were Zacatecas (21), Colima (19), and Guanajuato (18).

The case fatality rate for occupational diseases and work-related accidents rose from 2.9 per 100 affected workers in 1997 to 3.6 in 1999, and permanent disability among those who became ill or had an accident increased from 3.9% to 4.7%. The states with the highest disability rates were Chiapas (9.8%), Zacatecas (7.0%), and Tabasco (6.7%).

The Disabled

According to the 2000 Census, 2.2 million inhabitants, or 2.3% of the total population, had some physical or mental disability or long-term health problem, and of this number, 45% were in the economically active age range. Forty-five percent of this population had limitations related to the arms or legs, 29% were blind or could only see shadows, 17% were deaf or relied on a hearing aid, and 10% had some other type of disability. In terms of causes, 32% of the disabilities were the result of a disease, 23% were due to advanced age, 19% were congenital, 18% were secondary to an accident, and 1.9% were attributable to other causes. The states with the largest percentages of disabled persons relative to their total population were Yucatán (2.9%), Colima (2.4%), Zacatecas (2.4%), Nayarit (2.4%), and Campeche (2.3%).

Indigenous Groups

In 2000 there were 6 million people over 5 years of age who spoke an indigenous language, and they belonged to 92 different

groups located throughout the country. Sixty-two percent of the indigenous population was concentrated in 15 states and 531 municipalities, mainly in Yucatán and Oaxaca, where they represented slightly more than 37% of the total population, followed by Chiapas (27%) and Quintana Roo (23%). Of those over 15 years of age, 48% were unable to read or write, versus 8.5% in the nonindigenous population; 28% of the men were illiterate (versus 6.9% in the nonindigenous population), as were 49% of the women (versus 10%). The National Population Council estimated that the general fertility rate among indigenous women in 1995 was 3.8 children per woman, representing a decline with respect to 1990. In 1995 the ethnolinguistic groups with the lowest fertility rate were the Mayans (3.3 per 1,000 women of childbearing age) and the Otomis (3.3), while the Tzeltals (4.3) and the Tzotzils (4.3) had the highest rate. Infant mortality in the indigenous population, corrected for underregistration using the Brass method, was 59 per 1,000 live births in 1997, or twice as high as the overall national rate.

Border Populations

Six states in northern Mexico border on the United States of America: Tamaulipas, Nuevo León, Coahuila, Chihuahua, Sonora, and Baja California. In 1997 the population growth rate in this area was estimated at 4.3%, the crude birth rate was 26 live births per 1,000 population, and the crude death rate was 47 per 100,000—even higher in the states of Nuevo León, Tamaulipas, and Coahuila. The leading causes of death were heart diseases, malignant neoplasms, and accidents, with accidents being the leading cause in the population aged 1–45 years, while heart diseases and neoplasms were the leading causes in those aged 65 and over. In 1999 one-third of the population in the Mexican communities along the northern border was under 15 years of age, and 4% were over 65.

By Type of Health Problem

Natural Disasters

During 1997–2000 a number of serious natural disasters in the central and southern parts of the country affected an estimated area of more than 150,000 km^2 and a total population of more than 6 million, the majority of them poor. In 1997 Hurricane Paulina caused flooding in the states of Oaxaca and Guerrero that affected 900,000 people. The following year severe flooding in the state of Chiapas along the coast and in the Sierra Madre affected 650,000 over an area of 26,000 km^2. In 1999, 90 natural disasters were reported, including floods caused by Tropical Depression No. 11, which affected 594,883 people in the states of Chiapas, Hidalgo, Oaxaca, Puebla, Tabasco, and Veracruz and placed more than 3 million inhabitants at risk in an area of 56,000 km^2. Again in 2000 frequent floods left damage in their wake in the states of Mexico, Tabasco, Tamaulipas, Quintana Roo, Campeche, Coahuila, and Michoacán. In addition, eruptions from the volcano Popocatépetl led to the evacuation of thousands of people in the states of Mexico, Morelos, and Puebla. The government took a wide range of steps in response to these disasters: several workshops in disaster preparedness were offered at the municipal level, an intermunicipal aid fund was set up in 1998 for mutual support in the event of disaster, and the structural and functional soundness of the main hospitals was assessed.

Vector-borne Diseases

The states with the highest incidence of malaria are Oaxaca, Chiapas, and Sinaloa. The year 2000 saw a 45% reduction in the number of cases relative to 1999 and a 71% reduction with respect to 1998. The largest outbreak in the last four years occurred in Oaxaca in 1998 and produced 11,349 cases. The reported rates in Oaxaca fell from 120 per 100,000 population in 1999 to 15 per 100,000 in 2000. In that year Chiapas had 49% of all the cases of the country, and 35% were shared by Chihuahua, Sinaloa, Oaxaca, and Quintana Roo. No deaths from malaria were reported during 1997–2000.

The presence of the vector that transmits classic and hemorrhagic dengue has been reduced, but not by enough to prevent outbreaks. The incidence of classic dengue declined from 52.1 cases per 100,000 population in 1997 to 2.4 per 100,000 in 2000, and only Campeche, Guerrero, and Michoacán had increases in 1999, which were moderate. Hemorrhagic dengue also declined, from 954 reported cases in 1997 to 220 in 1999 and 50 in 2000. The states that had the most recorded cases were Chiapas, Veracruz, Nuevo León, and Oaxaca. Deaths declined from 30 in 1997 to 10 in 1999, and the case fatality rate dropped from 3.8 per 100 patients in 1999 to zero in 2000. Dengue-3 was the serotype in circulation during 1997–2000, and dengue-2 was added in 1999; currently, all four serotypes are in circulation. As part of the international effort to cut back on the use of insecticides, the country reduced its application of DDT by 60% in 2000.

During 1997–2000 there was a cumulative total of 1,424 reported cases of onchocerciasis (1.4 cases per 100,000 population). In 2000, incidence of the disease was down 41.2% relative to 1999 and 61.3% compared with 1998. The states of Oaxaca and Chiapas have the two largest foci, and the population at risk has been estimated at 158,824, residing in 953 localities in 60 municipalities. Leishmaniasis occurred primarily in the states of Quintana Roo, Tabasco, Campeche, and Chiapas, with 1,700 cases reported in 1997. That was 20% more than in 1996 and 40% less than in 1998. There were 20 new cases of Chagas' disease (American trypanosomiasis) in both 1997 and 1998, and in 1999 this figure rose to 42. A study of communities in the state of Veracruz conducted in 2000 found that the incidence ranged from 1 to 20 cases per 1,000 population, and most of the cases were in children and adolescents under 15 years of age. Mortality from this disease remained stable at 10 deaths a year during 1997–1999. Only 13% of the donations received at the

country's blood banks were screened for Chagas' disease in 1999. The number of reported cases of scorpion sting increased almost 30% between 1997 and 2000. In both 1997 and 2000 there were 140 deaths from this cause, and the number was 108 in 1999.

Diseases Preventable by Immunization

The last cases of diphtheria occurred in 1990. Polio has not been reported since 1991, but there is active surveillance for acute flaccid paralysis syndrome, and more than 370 cases are identified annually. In 2000 the surveillance system for exanthematic diseases reported 30 cases of measles among infants under 1 year old and young adults. The 30 cases were in: the Federal District (23) and the states of Mexico (4), Sinaloa (2), and Baja California (1). No cases were reported during 1997–1999. A total of 21,173 cases of rubella were reported in 1999, but this number was down 44.5% in 2000. The states that reported the most cases were Nuevo León, Mexico, and the Federal District.

Cases of mumps dropped from 124,189 in 1997 to 27,911 in 2000. Pertussis fell from 593 cases in 1997 to 53 in 2000. Tetanus declined from 169 cases in 1997 to 103 in 2000, and neonatal tetanus saw a reduction from 44 cases in 1997 to only 9 in 2000. Tubercular meningitis declined from 200 cases in 1997 to 119 in 2000, when it was reported from 20 different states. *Haemophilus influenzae* type b infection was down to 219 cases during 1997–1999, and the vaccine was incorporated into the regular immunization scheme in 1999. After introduction of the hepatitis B vaccine in 1997, the number of reported cases fell from 1,527 in 1997 to 838 in 2000, and 100% of the blood received in blood banks is screened for the virus.

Mexico's immunization scheme includes the following vaccines: BCG, OPV, MMR, Td, and the recently developed pentavalent vaccine that combines DPT, HB, and Hib. In 1999 vaccination coverage in these cases was over 95%: BCG, 99%; DPT, 98%; OPV, 96%; and MMR, 96%. In children aged 1 to 4 years, overall coverage has been consistently above 95%, and in 2000 it reached 98%. The lowest levels were in the Federal District (89%), Baja California Sur (96%), Sonora (96.7%), Baja California (97%), and the state of Mexico (98%). Figure 4 shows immunization coverage of infants under 1 year old in 1999. The coverage levels have been achieved using a combination of two strategies: ongoing vaccination (basic vaccination scheme) and intensive campaigns (national health weeks).

Intestinal Infectious Diseases

Cholera dropped dramatically from 2,263 reported cases in 1997 to only 5 in 2000. During 1997–2000 the case fatality rate was consistently under 1.0%, and in 1999 there were no deaths at all. Consultations for acute diarrheal disease increased from 6,575 per 100,000 visits to the health services in 1997 to 9,453 per 100,000 in 2000. Infants under 1 year old continued to be the group most affected, with a cumulative incidence during the same period of over 28,000 per 100,000 children of this age. In 1997 it was estimated that every child under 5 years old had an average of 2.2 episodes of diarrhea a year. Mortality from diarrheal diseases in children under 5 years declined from 33 per 100,000 in this age group in 1997 to 25 per 100,000 in 1999, and the states with the highest mortality rates were Chiapas and Tlaxcala.

Between 1997 and 2000 parasitoses from ascariasis and other helminthiases ranged from 350 to 479 cases per 100,000 population, with most of them occurring in the country's central and southern states. During the same period the most frequent foodborne diseases were paratyphoid fever (with an annual average of 128 cases per 100,000 population), shigellosis (35 per 100,000), and other bacterial infections (34 per 100,000). Reported cases of foodborne disease declined from 34 per 100,000 population in 1997 to 30 per 100,000 in 2000 (the extent of underregistration for this type of disease is unknown), with no notable differences between the states. During 1997–1999 slightly more than 200 deaths a year were attributed to food poisoning.

Mortality from intestinal infectious diseases fell from fourteenth place in 1997 (7.8 per 100,000 population) to fifteenth place in 1999 (5.7 per 100,000). The age groups most affected continued to be infants under 1 year old (72.1 per 100,000) and the elderly aged 65 and over (38.6), and the states with the highest death rates were Chiapas and Oaxaca.

Chronic Communicable Diseases

Reported cases of tuberculosis were on the rise up until 1998, but after that year they saw a downturn. The cumulative annual incidence of all forms of tuberculosis over the 1997–2000 period was 16 per 100,000 population, with approximately 16,000 new cases reported each year and slightly more than 3,000 deaths a year (estimated underregistration: 30%). Seventy percent of the cases are concentrated in a high-risk area of some 300 municipalities, and the states that had the largest number of registered cases were Tamaulipas, Guerrero, Baja California, and Veracruz. Cases of pulmonary tuberculosis declined from 19 per 100,000 population (18,032 new cases) in 1998 to 16 per 100,000 (16,085 new cases) in 2000. The pulmonary form of the disease accounted for 88% of the deaths reported between 1997 and 1999 (3,666 deaths in 1997; 3,229 in 1999), and in 1999 mortality from this cause (3.4 per 100,000 population) ranked in nineteenth place. The detection rate of pulmonary tuberculosis was still relatively low, reaching about 50% of the expected level for 1999 and 2000. Meningeal tuberculosis declined from 0.19 to 0.12 cases per 100,000 population during the same period. The strategy of directly observed treatment, short course (DOTS) is applied in more than 80% of the diagnosed cases, and about 70% of them are cured. Of the registered tuberculosis cases, 11% are associated with diabetes, 5% with malnutrition, 4% with alcoholism, and 2.5% with HIV/AIDS. This last-mentioned combina-

tion increased during 1997–2000, with an average of 242 new cases per year.

Leprosy is not a public health problem in most of the states. In 1997 overall prevalence of the disease was 0.49 per 10,000 population, and the rate was slightly lower in 1998 (0.43) and 2000 (0.42). In 2000, 414 new cases were detected; 64% of them were multibacillary and 35% were paucibacillary; 12 cases were in children or adolescents under 15 years of age; and 46 of the patients had a grade 2 disability. Deaths declined from 21 in 1997 to 14 in 1998 and 13 in 1999. The leprosy prevention and control program is patterned after the horizontal structure of the health services and follows the WHO multidrug treatment scheme.

Acute Respiratory Infections

Medical consultations for acute respiratory diseases increased from 25,999 per 100,000 office visits in 1997 to 36,876 in 2000. Children under 5 years old continued to be the age group most affected, and within this group, infants under 1 year, with a cumulative incidence for 1997–2000 of over 150,000 per 100,000 consultations for this age group. The cumulative incidence of pneumonia and influenza increased between 1997 and 1999, but by 2000 it was down to 184 per 100,000 population.

Mortality from respiratory diseases, including pneumonia and influenza, decreased from 46 deaths per 100,000 population in 1997 to 43 per 100,000 in 1999, causing the disease to fall from seventh to eighth place among the ranked causes of death. The states with the highest mortality rates (ranging between 31 and 64 per 100,000 consultations) were Puebla, Oaxaca, Chiapas, Jalisco, and the Federal District.

Zoonoses

Over the 1997–2000 period 51 deaths from human rabies were reported: 24 in 1997, 15 in 1998, 7 in 1999, and 5 in 2000 (3 from bats and 2 from skunks). The states with the most cases were Nayarit, Veracruz, Yucatán, and Oaxaca. Slightly more than 500 rabid dogs were reported in 1997, while in 2000 there were 244 laboratory-confirmed cases of canine rabies. Coverage during National Canine Rabies Vaccination Week increased from 10.6 million doses in 1997 to 14.0 million in 2000.

The incidence of human brucellosis cases was 5.2 per 100,000 population in 1997 and 2.2 per 100,000 in 2000. The states with the largest number of reported cases were Guanajuato, Sonora, and Zacatecas, and the principal sources of infection were contaminated milk and other dairy products, especially from goats. Cases of taeniasis decreased in humans, and the incidence of the disease in 2000 was 1.1 per 100,000 population. Human cysticercosis remained stable, with an incidence of 0.65 per 100,000 population in 2000. For both diseases the highest rates were reported in the country's southern states. Deaths from taeniasis and brucellosis remained constant during 1997–1999 at about 15 a year, while cysticercosis produced more than 200 reported deaths annually (0.3 per 100,000 population) during the same period.

HIV/AIDS

Mexico is considered to have been in the fourth stage of the HIV/AIDS epidemic since 1995, with the rate of reported new cases stabilized at 4,000 a year. From the beginning of the epidemic in 1981 up through October 1999, a total of 40,744 cases of HIV/AIDS were reported, and the number may be as high as 64,000 when an estimated 18% underregistration is taken into account. About 150,000 people are HIV carriers. The cumulative incidence of the disease increased from 3.7 per 100,000 population in 1997 to 4.8 per 100,000 in 1998, and then in 1999 and 2000 the rate declined to 1.1 per 100,000 population, which is considerably lower than the prediction model had forecast for 2000 (4.2).

Persons of reproductive age (15–44 years) were most affected, with 78% of the cumulative cases, followed by the group aged 45 and over, with 18%. In those adults 45 and over, 86% of the cases were in men and 14% in women. The majority of patients live in urban areas, and mainly in large cities such as the Federal District, Guadalajara, and Monterrey. Sexual transmission accounted for 85% of the cases; blood transfusions, 12%; perinatal transmission, 2%; and homosexual practices combined with intravenous drug use, 0.7%. Sexual transmission was homosexual in 54% of the cases and heterosexual in 31%. During 1997–2000, 100% of all blood bank donations were screened for HIV.

In 1999 AIDS ranked in sixteenth place among the causes of death, with a general mortality rate of 4.3 per 100,000 population; for men it ranked in fifteenth place (7.4 per 100,000) and for women it was in eleventh place (1.2). Figure 5 shows the trend in the annual reported incidence from 1994 to 1999. The National Council on HIV/AIDS Prevention and Control was created in 1988, followed by implementation of the Comprehensive Strategic Plan for HIV/AIDS advanced by the United Nations Theme Group on HIV/AIDS.

Sexually Transmitted Infections

There was an overall increase in sexually transmitted infections between 1997 and 2000, but with an underregistration of them. The cumulative incidence rose from 3.5 per 100,000 population in 1997 to 3.8 per 100,000 in 2000. During that 1997–2000 period, new cases of gonococcal infection, trichomoniasis, candidiasis, and genital herpes increased, while the incidence of chancroid and lymphogranuloma venereum declined. Acquired syphilis showed a downward trend, ending the period at 1.8 cases per 100,000 population in 2000, as did congenital syphilis, with a total of 67 cases in 2000. Mortality from sexually transmitted infections decreased from 34 reported deaths in 1997 to 19 in 1999; approximately 50% of these deaths were in infants under 1 year old.

Nutritional and Metabolic Diseases

The National Nutrition Survey–1999 found that in children under 5 years of age the prevalence of low weight-for-age was

7.5%, representing a decrease of 47% relative to 1988. Low height-for-age was 18% (22% lower than in 1988), and low weight-for-height was 2.0% (compared with 6% in 1988). Between 1988 and 1999 all forms of malnutrition declined. In 1999 moderate malnutrition was 5.7% in boys and 4.5% in girls, while severe malnutrition was down to 1.1% in boys and 1.3% in girls. Children under 5 years of age were found to have adequate intakes of protein and folic acid, moderately deficient intakes of energy (73.5%) and vitamin A (86.3%), and deficient levels of iron (64%) and vitamin C (64%).

Anemia, defined as hemoglobin concentration levels lower than 11 g/dL in children under 5 years and pregnant women and lower than 12 g/dL in nonpregnant women, was 27% among the children under 5 years old, 26% in pregnant women aged 12–49, and 20% among women of the same age range who were not pregnant, without notable variations among the northern, central, and southern regions of the country. The 1995 National Family Planning Survey found that 17% of the children under 1 year old had not been breast-fed (19% in urban areas). According to body mass index, 30.8% of the women were overweight and 21.7% were obese.

General mortality from nutritional deficiencies decreased from 10.7 per 100,000 population in 1997 to 10.0 in 1999, and it was in eleventh place among the ranked causes of death. Mortality from this cause in children under 5 years old was similar in 1997 and 1999 (14.0 per 100,000 population in this age group). Thyroid volume was assessed by ultrasound in 1999, and the prevalence of goiter was found to be 2.3%, which was lower than the rate reported by the National Iron Deficiency Survey of 1996.

The registered prevalence of diabetes mellitus declined slightly, from 330.3 per 100,000 population in 1997 to 350.2 in 1998 and 292.3 in 1999. In 1998 the group most affected were persons 65 and over, with 1,892 cases per 100,000 population. In 1999 and 2000 the Survey on Health, Well-being, and Aging found that 24% of the elderly population was diabetic, and 70% of the patients were women. Mortality from diabetes has increased in recent years, and the disease has consistently ranked as the third most important cause of death, with a rate of 46.5 per 100,000 population in 1999.

Diseases of the Circulatory System

During 1997–2000 the incidence of cardiovascular diseases was 294 per 100,000 population. The most frequent causes in 2000 were hypertension, which had a cumulative incidence of 402 per 100,000 population, and ischemic heart disease, at 61 per 100,000. The age group most affected was the population 65 and over.

Mortality from heart disease was on the rise until 1997, and the predominant specific causes were ischemic heart disease and hypertensive disease. In 1998 and 1999 there were slightly more than 68,000 deaths from these diseases, with a rate of 71 per 100,000 population in 1999. The states with the highest rates were Sonora, Chihuahua, Nuevo León, and the Federal District.

Malignant Neoplasms

The Histopathological Register of Malignant Neoplasms, which does not have a high level of coverage, reported 90,605 malignant tumors in 1999 (2,695 more than in 1998), with a cumulative incidence of 92 per 100,000 population. Of these patients, 66% were women, 58% were adults aged 15–64, and 29% were in the group aged 65 years and over. The most frequent tumor sites in women were the uterine cervix (34%), breast (17%), and skin (12%); in men, the most common sites were the skin (20%), prostate (17%), and stomach (6%).

Malignant neoplasms were the second leading cause of death in 1999, after cardiovascular diseases. In 1997 the mortality rate was 54 per 100,000 population, and in 1999 it was 55 per 100,000. In this last year the rate was higher in women (57 per 100,000) than in men (53 per 100,000) and the age group with the highest rate was older persons 65 and over (612 per 100,000), followed by adults 45–64 years (141 per 100,000). The tumor sites with the highest mortality rates in men were the bronchus and lung (9 per 100,000 population), prostate (8 per 100,000), and stomach (5 per 100,000), and in women, the uterine cervix (9 per 100,000), breast (7 per 100,000), and stomach (5 per 100,000). The states in the northern part of the country (Baja California Sur, Sonora, Chihuahua, Colima, Nuevo León, Tamaulipas, and Sinaloa) reported the highest mortality rates, ranging between 63 and 72 per 100,000 population.

Accidents and Violence

In terms of general morality, accidents were the fourth most important cause of death, with a rate of 36 per 100,000 population (compared with 35 per 100,000 in 1997), and the male-female ratio was 3:1. Motor vehicle accidents were the most frequent type (25%), followed by pedestrian and bicycling accidents (17%). The states of Mexico, Jalisco, Puebla, and the Federal District, in that order, reported the highest absolute frequencies of these accidents involving motor vehicles, pedestrians, and motorcyclists.

Injuries accounted for slightly more than 12% of all deaths in the country each year. During 1997–1999, 65% of these injuries corresponded to accidents (about 35,000 deaths), 23% to homicide (about 13,000), and 6.1% to suicide (about 3,000). Mortality from homicide and injuries intentionally inflicted by another person declined from 14 per 100,000 population in 1997 to 12 per 100,000 in 1999, remaining in ninth place. Mortality was much greater in males (22 per 100,000) than in females (3 per 100,000). The states with the highest rates were Guerrero, Baja California, Oaxaca, Sinaloa, and Morelos. Suicides declined from 3.6 deaths per 100,000 in 197 to 3.4 per 100,000, and the rates were higher in males (5.8 per 100,000 population) than in females (1.0 per 100,000).

Oral Health

Preliminary results from the National Survey of Dental Caries and Fluorosis conducted in 13 states show an average DMFT index of less than 3 at 12 years of age. More decayed teeth were found (76%) than filled (20%) or missing (1.6%). Table salt is fluoridated, and both the Secretariat of Health and the social security institutes provide general oral care and services for the prevention of dental caries in primary schools, where topical fluoride applications and rinses are used.

Emerging and Re-emerging Diseases

No cases of meningococcal meningitis were reported in 1997, but in 1998 and 1999 there were 39 and 37 reported cases, respectively. There have been no reported outbreaks of Venezuelan equine encephalitis or yellow fever, and routine vaccination is not used to control the latter disease. By the same token, there have been no reported cases of hantavirus infection, bovine spongiform encephalopathy, or foot-and-mouth disease.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

One of the priorities for the social sector in the National Development Plan 1995–2000 is combating inequity among persons, genders, productive sectors, and geographic regions. The corresponding health policies are oriented toward reorganization of the health system to expand coverage and provide more efficient and effective service. Other policies focus on dealing with prevalent diseases and addressing the new health challenges that have arisen from changes in the epidemiologic and demographic profile.

The National Health Sector Reform Program 1995–2000 responds to the first objective. The provisions of this plan include free choice of family physician within the social security system, family insurance under the Mexican Social Security Institute (IMSS) for those with the capacity to pay, transfer of health care services for the general population to the state governments, increased municipal participation in health, expansion of coverage through a basic health services package, and reorganization of the system under the leadership of the Secretariat of Health, and with separation of financing and service delivery within the IMSS. To meet the second major objective, in 1997 the Secretariat of Health established 11 priority program areas for disease prevention and control: reproductive health, children's health, health of adults, health of older persons, zoonoses, mycobacteria, cholera, epidemiological emergencies and disasters, HIV/AIDS and other sexually transmitted infections, addictions, and oral health. In addition, health promotion and in-service research were established as strategic lines of action for strengthening the foregoing areas, and epidemiological surveillance, statistical information, and comprehensive monitoring were identified as mechanisms to be enlisted in the development of the substantive programs.

Health Sector Reform Strategies and Programs

In fulfillment of the National Health Sector Reform Program 1995–2000, the IMSS opened up membership to the population with capacity to pay, and this change resulted in a rise in insured population coverage from 47.5 to 55.1 million. At the same time, the expansion of coverage under the Basic Health Services Package (PBSS) reduced the population without regular access to health services to 0.5 million. In addition, the Secretariat of Health has offered higher salaries as an incentive for health workers to locate in marginal rural areas. However, there continue to be inequalities among the different health service providers in terms of their per capita expenditures and the benefits that their users receive.

The Secretariat of Health completed the transfer of human, material, and financial resources from the federal level to the state governments, and as a result, the proportion of the state health budgets furnished by the federal government increased from 59.0% in 1996 to 73.7% in 2000. The Secretariat of Health has concentrated more on regulation of the sector and less on direct delivery of services. Extensive managerial training has been provided to more than 4,000 officials in the IMSS and more than 500 in the state health secretariats. The objective of integrating health services for the uninsured population has not yet been attained, and therefore the Secretariat of Health and IMSS-Solidarity remain separate in the states in which the latter operates.

The following measures were introduced with a view to improving quality: creation of the Medical Arbitration Board, a technically autonomous body to mediate complaints of irregularities in the delivery of services; introduction of a performance incentive program, which during 1997–2000 benefited 56,365 nurses, 10,177 physicians, and 1,326 dentists employed by the Secretariat of Health; and a hospital certification program, under which 244 hospitals were qualified (5.9% of the establishments evaluated failed to meet the criteria) and another 706 of the country's more than 4,000 hospitals were enrolled; and certification of medical specialists and general physicians, granted by the respective professional associations, starting in 2000. An objective that was not met was the free choice of family physician by patients under the social security system, although a trial was conducted in one of the IMSS medical areas.

In 2000 the Specialized Health Insurance Institutions were created to provide comprehensive private health insurance (previously, private insurance was only for major medical expenses). The IMSS carried out pilot programs to test new financing systems, such as deconcentrated management, in 7 of its 139 medical areas. It also defined diagnosis-related groups, a step that will help in the separation of the financial and service delivery functions in the social security system.

One of the key social participation strategies has been the promotion of local health committees to help in the management of health centers. More than 18,000 such committees had been established as of 2000. Another important strategy that involves the community is the Healthy Municipalities initiative, to which more than 1,500 municipalities are already committed.

The Health System

The social security system, which covers workers in the formal economy (58 million in 2000), is composed of several institutions, each of which is funded by contributions from employers, employees, and the government. The IMSS is the largest institution in the system and serves about 80% of the covered population. The system also includes the State Workers' Social Security and Services Institute (ISSSTE), Petróleos Mexicanos (PEMEX), the Armed Forces (SEDENA), and the Navy. The IMSS also offers family health insurance to those who are able to pay, and this program enrolled more than 1.5 million participants in 2000. The public system is essentially intended to serve the 43 million persons who are uninsured, although all citizens have access to it. The Secretariat of Health operates in urban and rural areas throughout the country, and IMSS-Solidarity is concentrated in specific rural areas located in 14 states and reaches approximately 11 million persons. The Secretariat of Health budget is funded by the federal and state governments, and it also receives income from cost-recovery fees, while IMSS-Solidarity is financed by the federal government, with administrative support from the regular IMSS system. There is little regulation of the private sector, except for the Specialized Health Insurance Institutions. About 3.0% of the national population has private medical insurance for major medical expenses.

The legal system that governs the sector is based on two general laws, which are periodically updated at the initiative of the State—namely, the General Health Law and the Social Security Law. In addition, several states have their own health legislation. Within the framework of the North American Free Trade Agreement there are intergovernmental groups concerned with harmonizing legislation on health-related products and services (pesticides, drugs, food products, etc.). Starting in 2002, this treaty also has provisions that will apply to the employment of professionals and to international bidding on drug purchases. Mexico's Senate and Chamber of Deputies have health committees that study, adapt, and issue recommendations on proposed legislation and other matters related to the sector.

In the last six years important steps have been taken in health regulation. A total of 140 official Mexican standards were issued, and regulations were implemented to control health-related advertising as well as the work of the National Transplant Council. In 2000 the general law on insurance institutions and mutual societies was amended to authorize the creation of private comprehensive health insurance, and regulations were issued covering their operation. Other new legislation that went into effect included laws that prohibit smoking in public places and restrict the advertising and sale of cigarettes, a law on national health institutions that grants them full autonomy, and a law on domestic violence. In addition, decrees were issued creating national commissions on bioethics and on genome studies.

The Secretariat of Health provides the leadership for the health system. The central level is responsible for reviewing and drafting the official regulations and other instruments that govern the sector, it convenes interinstitutional groups (on health statistics, needs of special population groups, etc.), it compiles national statistics, and it represents the sector internationally. The state health secretariats and local health directorates share responsibility for the organization, operation, and monitoring of public and private health services; environmental control; the production of health services; and the implementation of health promotion activities. The National Health Council works with the federal and state governments on technical and logistic coordination of the health programs.

Each of the public institutions, including those that comprise the social security system, is responsible for directing, financing, guaranteeing, and delivering health services to its target population, and each has its own network of health care units. The personnel receive salaries, and the health facilities operate on the basis of overall annual budgets. Subrogation of services and the reversion of fees paid by beneficiaries are practiced on a small scale, given that the criteria are not well regulated and the parties involved have differing positions on the subject.

The most progress toward decentralization has been made within the Secretariat of Health. The IMSS has deconcentrated certain functions and resources to the regions (groups of states), but it is still far from achieving true decentralization. ISSSTE, SEDENA, and PEMEX operate under more centralized systems of budgetary management and decision-making. The care provided by the private health services is uneven in quality and inconsistent in terms of price. Many of the private providers are set up as corporations. The private sector has users from all income brackets. In 1999 there were 2,950 private medical units that offered hospitalization, 148 of them on a short-term basis (less than 24 hours), and 48% of the 31,241 available beds are in facilities with fewer than 15 beds. Nongovernmental organizations have a strong presence in reproductive health, domestic violence, and AIDS, and they coordinate their action through networks.

Organization of Regulatory Actions

The Secretariat of Health is responsible for overseeing the quality, safety, and efficacy of drugs, reagents, immunobiologicals, and medical equipment. It maintains national registries for all health supplies, regulates marketing by issuing licenses and health product registrations, and oversees advertising that appears in the mass media. The verification, analytical control, and

evaluation of drugs and supplies is performed by Secretariat of Health laboratories or authorized third-party institutes. A separate registry for generic drugs was set up in 1999, and strict quality standards are applied, which include the demonstration of bioequivalence. Pharmacies must provide the consumer with a generic alternative or a proprietary product, depending on what the physician has prescribed. As of October 2000 there were 207 generic drugs listed on the registry, compared with a total of 1,172 products, and 318 generic formulations were being marketed in the country at an average price reduction of 30%.

Potable water supply and sanitation services are the responsibility of the municipalities. Each state has its own law or code on drinking water, as well as a water commission that provides the municipalities with technical and financial support. The water commissions interact with federal institutions such as the Secretariat of the Environment and Natural Resources, the National Water Commission, and the Secretariat of Health, which have regulatory authority. Financing consists of allocations from the federal, state, and municipal budgets, and an effort is made to ensure that the rates cover the cost of operating the systems, except in rural areas, where they are subsidized. In the year 2000, 95% of the drinking water was disinfected, and there were 914 municipal systems for the purification of wastewater, which processed 22% of the volume produced by urban areas and met 60% of the required standard. The use of chemical substances is authorized by the General Directorate of Environmental Health under the Secretariat of Health, and the Intersecretariat Commission on Pesticide, Fertilizer, and Toxic Substance Control is responsible for their regulation and marketing as well as for controlling their effects on health and the environment.

Air quality is monitored in 14 cities of the country by stations that measure the most critical atmospheric contaminants. As of 1999 the Valley of Mexico metropolitan area and the cities of Guadalajara, Monterrey, Toluca, Tijuana, Mexicali, and Ciudad Juárez had air quality improvement programs that call for the use of clean technologies and that provide more complete information on both local and general resource investment plans and better coordination of them. The Center for Studies on Ecology and Health, financed by PAHO and the government of Mexico, closed down in 2000, and its functions and activities were integrated into other national institutions, in particular the National Environmental Health Center under the National Institute of Public Health.

The General Directorate for the Sanitary Quality of Goods and Services, in collaboration with the National Public Health Laboratory, is responsible for monitoring health-related products and services. A deregulation process was undertaken in 1997, with the result that 48 administrative steps were eliminated (a reduction of 42%), 90 types of services were exempted from sanitary monitoring (a reduction of 30%), and the requirement for sanitary licensing was lifted for another 94 services (a reduction of 89%). In addition, health surveillance was simplified both under the new regulations on health supplies and in the listing of services.

Food analysis studies in 2000 showed that 87% of the dairy products sampled had no microbiological anomalies. Seafood products had an acceptable level of aerobic mesophilic bacteria, *Salmonella* spp., and *Vibrio* spp., and *Vibrio cholerae* 01 has not been reported in seafood since 1996. Tests of laying hens at 956 chicken farms throughout Mexico in 1999 found *Salmonella enteritidis* in 7 samples, and in meat products the levels of *Salmonella* spp. and *Staphylococcus aureus* were lower than 10% in 1998 and 2000. In 1998–2000, 24% of the drinking water samples tested had microbiological problems, and 7.5% of ice samples were positive for fecal coliforms.

Organization of Public Health Care Services

Public health services are provided by the Secretariat of Health with support from the social security institutions, especially the IMSS. Every year national health days are held in February, May, and October, focusing on vaccination, antiparasitic treatments, and vitamin A supplementation. There are also community health programs that include health promotion and disease prevention activities in homes, schools, and the workplace.

Health promotion campaigns are coordinated by the Secretariat of Health. The Healthy Municipalities movement is one of the most important pillars, with 1,565 municipalities participating as of 2000. The Secretariat of Health and the Secretariat of Public Education offer a health program for schoolchildren and adolescents in 30,000 schools, and they are also implementing the Healthy Schools initiative. The health services have ongoing campaigns to combat smoking and sedentary lifestyles, as well as to promote healthy living habits and self-care. They also engage in social communication using triptychs, posters, and radio and television spots. The National Addiction Council, through a network of 32 corresponding state-level councils and 242 municipal committees, coordinates multisectoral actions to combat addiction and prepares prevention kits, educational materials, and social communication tools. In the fight against tobacco, the number of hospital-based smoking cessation clinics increased to 32, and in the year 2000 the Mexican Official Standard for the Prevention, Treatment, and Control of Addictions came into effect, establishing minimum quality criteria in these areas.

In the area of epidemiological surveillance, information from all health services is brought together in a single automated system that monitors the main diseases and captures, compiles, and analyzes data on new cases. The system also produces status reports on programs that require weekly reporting, catalogs, graphs, and maps that trace disease patterns by age group and institution. In addition, there are specific reporting systems such as the ones for tuberculosis and cervical cancer, tumor registries, and registries of AIDS patients. Information on mortality is de-

veloped on the basis of the death certificate, which is the compulsory legal instrument for declaring citizen deaths. Since 1998 all health institutions have been using the tenth revision of the International Classification of Diseases. The National Institute for Diagnosis and Epidemiological Referral and the National Public Health Laboratory, together with the National Institute of Public Health and the laboratories in the states, have been performing diagnoses, providing advisory services, and conducting research on communicable disease control.

In 2000 the potable water infrastructure reached 88% of the national population; 23 states had coverage of over 85%, while Guerrero, Oaxaca, Veracruz, Chiapas, and Tabasco had levels below 70%. In 2000 sewerage and excreta disposal services were available to 76% of the population (90% in urban areas and 37% in rural areas); in five states the proportion was higher than 85%, another 17 states had levels between 70% and 85%, and the remaining 10 states were lower than 70%. In 1998, 70% of the country's urban population had the benefit of refuse collection services, 17% of which were considered adequate. In the seven largest metropolitan areas, overall coverage was 95% and coverage with adequate disposal was 85%. In the 100 most populous cities, coverage with adequate disposal ranged between 42% and 80%, with the lowest rates in rural and semirural areas (average: 60%).

The Secretariat of Social Development, in coordination with the Secretariat of the Environment and Natural Resources, is responsible for the regulation and standardization of waste management, and both institutions support municipal programs for expanded collection and improvement of refuse disposal through the use of sanitary landfills. There is an official Mexican standard on the management of hospital waste. Most of that waste is treated by incineration or other means, and the available treatment capacity is greater than the demand. In 1999 there were 27,280 businesses or establishments that generated hazardous waste, amounting to an annual volume of 3.7 million tons. It is estimated that about 40% of this waste is treated and recycled within the infrastructure intended for that purpose. A sizable proportion of the country's water bodies have been exposed to some degree of pollution, and it is estimated that slightly more than 500,000 inhabitants have access to water containing high levels of arsenic.

It has been reported that 28 million inhabitants, living in seven cities or metropolitan areas of the country, are exposed to atmospheric concentrations in excess of the standard limits for air quality and that 32 urban and industrial centers are responsible for most of the pollution in the country. The National Ecology Institute has stated that the increase in air pollution between 1995 and 2000 was caused by population growth, concentration of industries, growth in the number of motor vehicles, high levels of fuel consumption, and detrimental patterns of urban transit. It has been estimated that the standard air-quality limits are exceeded by more than 85% in the large metropolitan areas of the country, especially in Mexico City and Guadalajara, and less so in Toluca, Monterrey, and Ciudad Juárez. In 1996 most of the pollution in the Valley of Mexico metropolitan area was from motor vehicles (75%), followed by industry and services (13%).

Organization of Individual Health Care Services

In the public health system the services for individuals are structured according to levels of care. The primary level consists of health promotion and disease prevention and outpatient care provided by general or family physicians and nursing personnel, with the assistance of community-based health promoters. In 1996 the Secretariat of Health defined the Basic Health Services Package, which consists of 13 low-cost, high-impact interventions: basic sanitation; family planning; prenatal, puerperal, and newborn care; child nutrition and growth monitoring; immunizations; diarrhea management; antiparasitic treatment; management of acute respiratory infections; prevention and control of pulmonary tuberculosis; prevention and control of arterial hypertension and diabetes mellitus; accident prevention and initial management of injuries; social participation; and prevention and control of cervical cancer.

At the secondary level, care is provided in the basic specialties at general or specialized hospitals. Outpatient care and hospitalization are available, as are generally also diagnostic imaging and laboratory support services.

Tertiary level care represents a higher level of complexity and is provided by specialized physicians, with the support of specialized nurses and other professionals. It is provided at national, regional, and state reference hospitals devoted to specific medical specialties. These institutions receive patients referred from the secondary level, and patients may also be admitted directly from emergency rooms. The Secretariat of Health has national institutes of health that specialize in the areas of cardiology, pediatrics, perinatology, nutrition, psychiatry, cancer, respiratory diseases, neurology and neurosurgery, and public health. All except the last are located in the Federal District; that one is in the state of Morelos.

Each of the institutions that provide individual health care services has its own network of health establishments at the three levels of care. There is no national mechanism for involving the services of another of the institutions; when this happens, it is the result of agreements reached at the local or state level.

Services and other essential resources for outpatient and hospital care have grown steadily in all the public institutions. In 2000 the country had 18,841 public medical units, 62.0% of them under the Secretariat of Health, which also had the largest percentage of hospital beds (42.8%), followed by the IMSS (38.9%). The Secretariat of Health additionally had the largest installed capacity in terms of operating rooms, clinical analysis laboratories, and consultation areas.

The insured population receives the largest volume of medical services. Of the public institutions, the IMSS delivered the largest

number of services, followed by the Secretariat of Health, ISSSTE, IMSS-Solidarity, PEMEX, and SEDENA.

Specialized mental health services are provided at the secondary and tertiary levels. Forty-one percent of the psychiatrists and psychologists who are paid to care for the uninsured population are located in the Federal District, while four states (Campeche, Chihuahua, Quintana Roo, and Zacatecas) have practically none of these professionals at all. There are 1.03 psychiatric beds per 10,000 population, but seven states do not offer this service (Campeche, Morelos, Nayarit, Quintana Roo, Querétaro, Tlaxcala, and Zacatecas).

Rehabilitation services and care for the disabled were strengthened in 2000 with the opening of the Secretariat of Health's National Rehabilitation Center, which increased capacity and improved the technical quality of available resources. The National Committee on Aging, created in 1999, has developed a national program for the care of older adults and is responsible for interinstitutional coordination in this area. The National System for Comprehensive Family Development provides care for older persons who are indigent, with a network of 4 homes at the national level, 24 at the state level, and 12 at the municipal level. The National Institute on Aging is responsible for the social welfare of this population group and secures discounts and free goods and services for them.

The network of blood banks, headed by the National Blood Transfusion Center, consists of 31 state-level centers that provide direct services and also give technical assistance to 588 blood banks, 3,313 transfusion services, and 150 blood collection units. There is an official Mexican standard on the disposal of human blood and components used for therapeutic purposes, and 3,000 workers have been trained in this area under an Internet-based distance education program. No compensation is given for blood donations, and most donors are family members of hospitalized patients.

The Program on Education, Health, and Food (PROGRESA) was launched in 1997 to help families in extreme poverty, and in 2000 some 2.6 million households in 31 states benefited from this initiative. The program provides the Basic Health Services Package, monetary support, and school scholarships as well as food aid for children under 5 years of age and for pregnant and nursing women.

Health Supplies

National and international pharmaceutical operations located in Mexico experienced a boom in recent years. The sector now consists of 150 companies, which produce 95% of all medicinal drugs consumed domestically as well as an additional amount for export. Mexico is a signatory of international agreements to protect intellectual property rights, thus respecting the patents on drugs. The national registry of allopathic medications was automated in 2000, with the technical cooperation of PAHO. An essential basic list has been defined, consisting of 70 drugs and 12 vaccines that are available at all primary care public health services. In addition, there is a catalog of recommended drugs for the second and third levels of care, a basic list and catalog of treatment supplies and prostheses used in the health sector, and a basic list and catalog of biologicals and reagents standardized by the General Health Council. The sixth edition of the official Mexican pharmacopoeia was published in 1994, followed by supplements in 1995, 1997, and 2000 updating the specifications for the manufacturing of drugs to be marketed in the country.

A parastatal enterprise, Laboratorios de Biológicos y Reactivos de México, has the capacity to produce certain vaccines, heterologous sera (scorpion antivenin, snake antivenin, equine rabies antiserum, diphtheria antitoxin, equine tetanus antitoxin), and biological reagents, and it also stores and distributes all the vaccines used by the Secretariat of Health.

Human Resources

The Secretariat of Health is the institution with the largest number of physicians (54,293), followed by IMSS (53,475), ISSSTE (17,886), and IMSS-Solidarity (5,541). Nursing personnel number at least 152,157, and they work primarily for the IMSS (79,232), the Secretariat of Health (73,502), ISSSTE (20,052), and IMSS-Solidarity (6,847). During 1998–2000 all public health institutions increased their human resources, but the ratio of health professionals per 100,000 population has not changed in recent years: in 1999 there were 131 physicians per 100,000 population, 182 nurses per 100,000, and 8.9 dentists per 100,000. That same year 62,951 physicians and 29,365 nurses were working in private hospital units.

In Mexico there are 1,033 academic programs in the health sciences. In terms of largest numbers, 545 of them are at the specialized level and 297 are at the bachelor's degree (*licenciatura*) level. By area of knowledge, the largest numbers are in medicine (509) and in dentistry (167). The country's 78 schools of medicine had 79,524 students enrolled in 1999, 77% of them in public schools and 23% in private schools. Between 1997 and 1999 total enrollment rose 13%, and the increase was slightly higher in the public institutions. The law requires all students to devote the final year of their academic studies to social service.

All the public health institutions have continuing education plans for technical, professional, and community-based personnel. A total of 876,470 health promoters throughout the country have received training in the Basic Health Services Package through more than 14,000 activities carried out by the Secretariat of Health and the state health secretariats.

Health Sector Expenditure and Financing

Data from the national health accounts system show that between 1995 and 1999 per capita spending on health increased

from US$ 381 to US$ 461, while the total expenditure on health as a percentage of GDP was 5.6% in 1999. That was the same as in 1995 and less than it was in 1994 (6.7%). Private spending as a percentage of total expenditure on health was 59% in 1995 and declined to 53% in 1999. Out-of-pocket spending on health (fees paid by patients for services received) decreased from 55% of total health expenditure in 1995 to 48% in 1998, and in this last year it represented 92% of all private spending on health. Monies spent on private medical insurance in the country as a whole came to 4.0% of private spending on health in 1998.

The percentage of the total public expenditure on health allocated for social security decreased slightly, from 71.6% in 1997 to 71.2% in 1999; at the same time, the amount allocated for the uninsured population increased from 28.4% to 28.8%. Expenditure on public health services declined between 1998 and 1999, while spending on medical care increased. There is no information available regarding funds spent on health by nongovernmental organizations, but the government estimates that it is a small fraction compared with total expenditure on health.

External Technical Cooperation and Financing

As of 1998 the Secretariat of Health had signed technical and scientific cooperation agreements with 56 countries and was carrying out joint activities with more than 20 multilateral agencies. During 1997–2000, 20 specific agreements were signed in the health area. These included one with the health working group of the United States-Mexico Binational Commission to coordinate health care for Mexican migrant workers, an agreement with the United States/Mexico Border Health Commission to assess the health situation and carry out actions to benefit the people who live in this area, a memorandum of understanding between the Secretariat of Health and Health Canada, bilateral agreements with the countries of Central America for a total of 113 projects in the area of health, and participation in five regional projects in connection with the Tuxtla Dialogue and Coordination Mechanism between Mexico and the Central American countries.

Financial and technical cooperation resources came to a total of US$ 6,655,000 in 2000, of which the World Bank contributed US$ 6,141,000. Investment resources granted by the International Finance Corporation came to US$ 318 million, and technical cooperation funds from agencies and programs within the United Nations system amounted to slightly more than US$ 82.5 million.

There is wide-ranging technical cooperation between PAHO and the government of Mexico. Notable examples were collaboration on the Fifth World Conference on Health Promotion, held in June 2000; external evaluation of specific sectoral programs and strategies, such as the national programs on tuberculosis, leprosy, comprehensive child care, endemic goiter, rabies, and vector-borne diseases; and confirmation of universal coverage with the Basic Health Services Package, carried out in 28 states.

Two major undertakings were executed with funds from the World Bank during 1997–2000: one on expansion of universal coverage with the Basic Health Services Package, coordinated by the Secretariat of Health and scheduled to end in December 2001, and the other a series of priority programs within the IMSS, including the modernization of equipment, the creation of deconcentrated medical areas, the strengthening of leadership in the medical units, and the development of diagnosis-related groups.

FIGURE 1. Gross domestic product, annual growth (%), Mexico, 1990–2000.

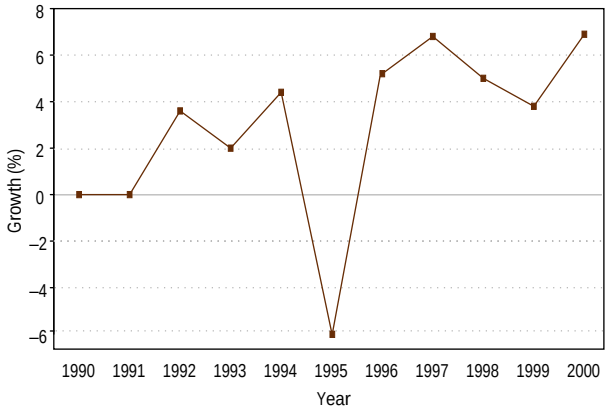


FIGURE 2. Population structure, by age and sex, Mexico, 2000.

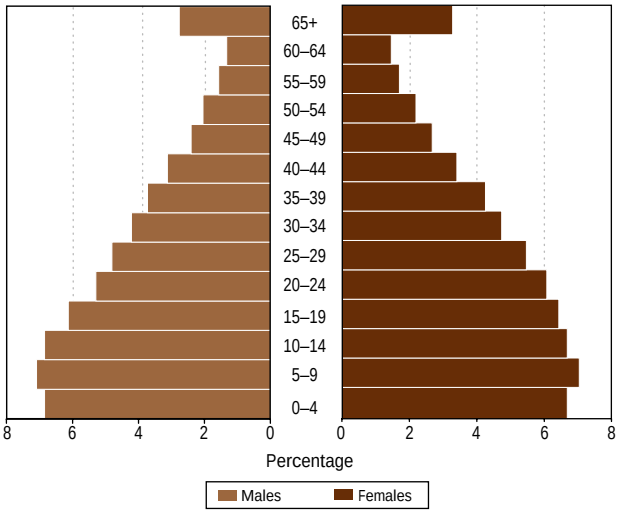


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Mexico, 1995–2000.

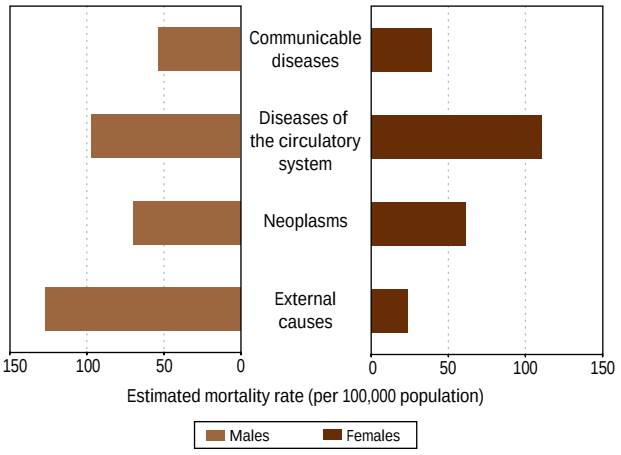


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, Mexico, 1999.

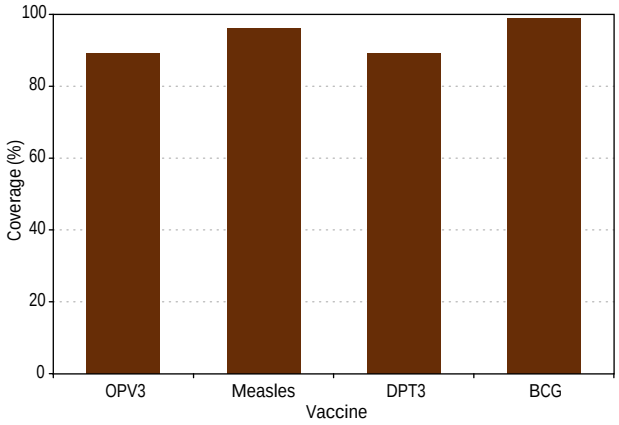
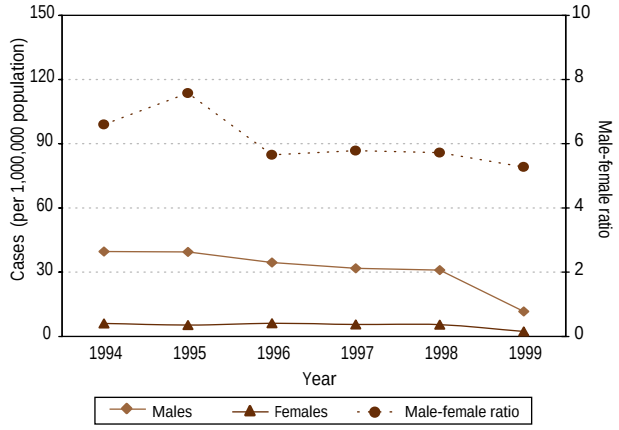


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Mexico, 1994–1999.



MONTSERRAT

OVERVIEW

Montserrat covers an area of approximately 102 km^2, and is situated in the volcanic island chain that stretches from Saint Kitts in the north to Grenada in the south. In 1989, Hurricane Hugo virtually destroyed Montserrat and the island was still recovering from its effects. Then, after lying dormant for nearly 400 years, the Soufriere Hills volcano erupted in July 1995 and devastated Montserrat, altering the lives of its residents forever.

Most of the population fled the island as soon as the volcano erupted. Men who opted or had to remain because of their work sent their wives, children, and other family members to live with family and friends overseas. Those who remained either made a conscious decision to do so or felt their country needed them, or were alone, elderly, or mentally ill.

As the volcanic eruptions continued, the southern two-thirds of the island was declared unsafe and the population moved to the north, a sparsely populated and poorly developed part of the island. This evacuation took place in phases, because more and more districts in the south became at risk as the lava flows engulfed different valleys. Much work had to be done in the north to make it inhabitable.

The volcanic activities have had a major impact on air and soil quality, which clearly has affected respiratory diseases, eye and skin disorders, and agricultural productivity. The availability of fresh fruit and vegetables fluctuates according to these staples' arrival from overseas, as local production has been drastically reduced because of the rocky soil in the north and the lack of available land. The effect of the disruption of people's lives, their eating habits, and availability of foods will only be measurable over time.

Some areas in the south were only off-limits at night and thus daytime activities were allowed. Many people returned to their homes during the day to wash, cook, tend their animals and gardens, and to have some quiet and privacy. Roads were blocked and policed to ensure that people did not venture into unsafe areas.

Nineteen people died due to burns in 1997 when they visited the daytime-only zone in the south and a pyroclastic flow came down unexpectedly. These flows can move at speeds of up to 161 km per hour. Some people with burns were saved and successfully treated in Guadeloupe.

Fortunately, over a relatively short period of time, two-thirds of the population left Montserrat and settled either in the U.K., the U.S., or other neighboring Eastern Caribbean islands. Emigration was voluntary and the choice of destination was often made based on the presence of relatives, job opportunities, or relocation packages that were offered.

The volcano remains active and is expected to continue to erupt either continuously or intermittently. Further, the dome is now at its largest size since it first erupted and further collapses and pyroclastic flows are anticipated, although these are unlikely to affect areas in the north, except for ash falls. Although the risk to the populated areas is considered low, if dome-growth occurs towards the north or west, Belham Valley, which borders the exclusion zone and has villages nearby, will become a high-risk area.

The volcanic activity has affected every aspect of life on Montserrat, including the economy, politics, development, the population, and overall living conditions. The volcano completely destroyed the former capital, Plymouth, as well as its industrial, commercial, and other essential services. A new center in the north, at Brades, has since been developed and functions as the Government headquarters. Politically, Montserrat is a British dependency that has its own system of government, with a Chief Minister and three other elected ministers, as well as a Governor who represents the British Government. Elections were held in 1996 but no party won a clear majority and a coalition government was formed.

Prior to the volcanic eruption in 1995, Montserrat's tourism-based economy was relatively stable, with a GDP in 1995 of US$ 51.5 million. Since the disaster has decimated the economy and it is no longer self-sustaining, the country is overwhelmingly dependent on foreign assistance (US$ 35 million in 1999), especially from the British Government and its Department for International Development (DFID). Budgetary aid to meet a recurrent budget deficit and substantial assistance for the essential infrastructure in the north of the island have been provided.

Montserrat's fiscal policy is determined in consultation with DFID, and its monetary policy in consultation with the Eastern Caribbean Central Bank. The Government employs 48% of the labor force. Domestic work, sales, and construction also provide opportunity for employment.

Before 1995, there were three administrative districts that collected information on births and deaths, but with the relocation of the population, there is now only one administrative district, covering the area from Belham Valley to Lookout. The Statistical Department at Brades compiles all the information that is used for official purposes.

Prior to the eruption, most of the population lived in the south, especially around Plymouth and, as a consequence, almost everyone lost their homes. Those who stayed on the island were initially housed in shelters or in existing houses in the north until a rapid rebuilding process could take place. DFID invested more than UK£ 19 million in a variety of housing schemes in at least three different areas to house approximately 1,000 people. As new housing became available, the number of people housed in shelters decreased and the shelters were modified. At present, approximately 160 persons are still living in shelters, mainly elderly and mentally ill persons. Every effort is being made to find alternative accommodation for them, but many have become resolved to being there, have made new friends, and are reluctant to be relocated again. A DFID-financed mortgage and housing assistance project has been approved and will provide grant subsidies for up to 111 new households and other initiatives to help people to have their own homes.

Prior to the collapse caused by the volcanic eruption, Montserrat was relatively prosperous and was emerging from dependence on the U.K. Since then, it has progressively attempted to regularize the functioning of its infrastructure despite the drastic reduction in its scarce financial and human resources.

A Country Policy Plan was finalized in 2000 and a sustainable development plan to rebuild the country was completed. This was done using a participatory approach involving consultations with the public, the private sector, government officials, nongovernmental organizations (NGOs), and regional organizations. Partnerships with the private sector and the people of Montserrat were formed and projects were designed, and economic and social activity began to be relocated to areas considered at least risk of volcanic activity. This includes the health sector, for which five key considerations were identified:

1. The nature and level of health care services to be provided on and off island.
2. The availability of health professionals to deliver services that are responsive to people's needs.
3. The capacity to respond to medical emergencies/mass casualties.
4. The specification and maintenance of sanitation and public health arrangements and standards.
5. The care of vulnerable groups (e.g., the elderly and the mentally ill) and a response to their specific housing requirements.

Because of the disruption of daily life and the relocation for varying periods overseas, accurate population figures are difficult to ascertain. However, mid-year population estimates show a drop from 10,608 in 1995, to 6,094 in 1997, and to 3,595 in 1998. In 1999, as the situation stabilized and predictions were made that the volcano would not have another massive eruption, people began to return to the island, including many migrant laborers. These migrants are mainly employed in the construction industry and as domestic workers, and they live in small communities, especially in the Salem area. This caused the mid-year population estimate to begin to increase, to 4,771 in 1999 and 4,938 in 2000. Figure 1 shows the population structure by age and sex in 1999. Migrants continue to enter Montserrat because of the building boom and the availability of certain jobs. They come mainly from Dominica, but also as far away as Guyana and Jamaica.

In 1999, there were 2,536 males and 2,235 females in Montserrat. There were 67 live births in 1997, 35 in 1998, 45 in 1999, and 48 in 2000. The male-female ratio was 1.2:1 in 1998 and 1.1:1 in 1999. The dependency ratio was 0.83:1 in 1997, 0.85:1 in 1998, and 0.70:1 in 1999. The general fertility rate, considered low, ranged from 43.0 per 1,000 women of childbearing age in 1997, to 45.5 in 1998, and 43.1 in 1999.

A survey conducted in 1998 revealed that 22% of women looking for work had previously been employed in manufacturing, 19% in private households, and 8% in public administration. This reveals a skill mismatch for women who have been affected by the reduction in tourism and manufacturing.

In the Participatory Poverty and Hardship Assessment conducted in July 2000, single mothers in vulnerable households indicated that relocation had taken away their ability to earn some money by selling produce that grew in the hills near their former homes. They were also unable to maximize their craftwork skills due to lack of materials, workshop facilities, or the fact that they could not run a business from their home because of landlord restrictions or covenants.

Mortality

The crude death rate was 12.3 per 1,000 in 1997, 15.9 per 1,000 in 1998, 12.4 per 1,000 in 1999, and 9.1 per 1,000 in 2000. There were 75 deaths in 1997, 57 in 1998, 59 in 1999, and 52 in 2000. The leading causes of death in 1997 were cardiovascular disease, diseases of the respiratory system, malignant neoplasms, and external causes. Although 19 people died in 1997 as a result of burns from the volcano, burns were not recorded as the primary cause of death.

In 1998, important causes of death were diseases of the circulatory system, diseases of the respiratory system, diseases of the nervous system, and malignant neoplasms. There were no deaths

from communicable diseases over the review period, except for one in 1999 from AIDS, and no deaths occurred due to conditions originating in the perinatal period. Figure 2 shows estimated mortality rates by broad groups of causes for 1990–1995.

HEALTH PROBLEMS

Most of the official data are currently only available up to 1999, but some hospital statistics have been released for 2000.

By Population Group

Children (0–4 and 5–9 years)

There were no infant deaths during the review period. There were three babies born weighing less than 2,500 g in 1998, five in 1999, and three in 2000.

There were 251 cases of acute respiratory infection among children under 5 years in 1998, 300 in 1999, and 240 in 2000. There were 27 cases of gastroenteritis in this age group in 1998, 8 in 1999, and 16 in 2000. There were 56 cases of gastroenteritis among children ages 5–9 in 1998, 28 in 1999, and 33 in 2000.

In 1999 and 2000, irritable bowel syndrome, ventral septal defect, hearing impairment, and sickle-cell anemia cases were referred abroad for specialized care. Over the review period, there were 60 pediatric hospitalizations—15 were for respiratory diseases and 15 were for surgery. Routine examinations are carried out to detect congenital conditions, especially heart conditions and dislocation of the hips. If a serious problem is found, the child is referred overseas for specialist care. All children have a health check before being admitted to school.

Adolescents (10–14 and 15–19 years)

Adolescents in Montserrat are particularly vulnerable, as they are old enough to understand and feel the effects of the upheaval caused by the volcano, and at the same time, have to deal with the usual teenage growing pains. Given this, mental health is an area of concern, especially violent behavior and the use of illegal substances, mainly marijuana.

There was one birth in the 10–14 years age group in 1998, and none in 1999 or 2000. There were 17 births in the 15–19 years age group from 1998 to 2000.

Adults (20–59 years)

There were 109 births among 20–59-year-olds from 1998 to 2000. All births took place at Glendon Hospital and were attended by nurse-midwives, except for one in 2000 that was delivered at home. Prenatal care is provided at the four primary health clinics and by two doctors in private practice. All low-risk cases are delivered in Montserrat and high-risk cases are sent to Antigua for prenatal care and delivery. Postnatal care is provided at the primary health clinics, private doctors' offices, or in the patient's home during the six weeks after delivery.

During 1999, 42% of pregnant women were seen at a health center or by their private doctor during the first trimester; 7% were reported to be anemic and 7% delivered at less than 36 weeks. During 2000, only 2% of births occurred before the thirty-sixth week of gestation.

In 1999, a total of 72 admissions and 45 deliveries were recorded in the obstetrics ward of Glendon Hospital; in 2000, there were 77 admissions and 49 deliveries. There was one maternal death in 2000 and one stillbirth.

Persons in the age group 25–44 years make up a high percentage of those seeking care at Glendon Hospital's casualty department. In 1999 and 2000, diseases of the respiratory system, injuries, abnormal clinical findings, and diseases of the musculoskeletal system were the main reasons for attendance.

The Elderly (60 years and older)

The natural disaster especially affected the elderly, many of whom had previously lived independently. Left homeless and separated from family members who had emigrated, they were affected financially, socially, and emotionally. Many had to live in shelters with little or no privacy for up to three years, mostly among strangers. This situation has left them completely dependent and has had a serious negative impact on their mental health.

This age group accounted for 21% of the total population in 1999, with a male-female ratio of 1.1:1 and 1.2:1 in 1998. Most people over 60 years of age do not receive a pension; those who qualify receive a monthly allowance of approximately US$ 150 from the Government.

Three homes provide 140 beds for long-term geriatric care; two of these are run by the Government and one by an NGO with a subsidy from the Government.

Family Health

After the volcano erupted, 74% of all households were relocated. A social survey conducted in 1997 noted that, of the 1,762 households identified, 37% were single-person households, with the occupant under 60 years of age; 25% were childless; and 14% had occupants that were exclusively 60 years or over. The average number of persons in each household was 1.9, revealing the extent of the separation of families that has occurred since the crisis.

The Disabled

There are no special services for the physically disabled. Wheelchairs and other devices to assist the physically disabled are generally provided by the Montserrat Red Cross. Any patient who requires a more complex device (e.g., an artificial limb) has to obtain it abroad.

There are no formal health care facilities for people with learning disabilities. A number of families with dependent disabled relatives have gone overseas where facilities are better.

Two people with Down syndrome are in homes for the elderly.

By Type of Health Problem

Vector-borne Diseases

Though the vector for dengue (*Aedes aegypti*) is present on the island, there were no cases between 1994 and 1999. In 2000, there appeared to be an outbreak, but only two cases were confirmed.

There were no cases of malaria, yellow fever, Chagas' disease, schistosomiasis, or plague during the review period.

Diseases Preventable by Immunization

Despite the disruption in the health services, immunization continues, with high coverage for all antigens administered being recorded for children under 1 year old since 1996. Figure 3 shows coverage with selected vaccines among children under 1 year of age for 2000. An adult MMR campaign was completed in 1999. No cases of tetanus, mumps, measles, whooping cough, polio, or diphtheria were recorded. An outbreak of chicken pox occurred in 1999, with 16 cases being recorded. There were 14 cases of hepatitis B from 1998 to 2000. Reported cases of influenza (unconfirmed) increased from 28 in 1998, to 109 in 1999, and to 117 in 2000, possibly facilitated by crowded living conditions.

Active surveillance for vaccine-preventable diseases in the expanded program on immunization is carried out weekly in accordance with CAREC guidelines.

Intestinal Infectious Diseases

No cases of cholera have been recorded for many years. There were 83 cases of gastroenteritis in children under 10 years of age in 1998, 36 cases in 1999, and 49 cases in 2000. There were 93 cases of food poisoning from 1998 to 2000, though none were identified as salmonella or shigella.

Chronic Communicable Diseases

Tuberculosis is rare in Montserrat, and during 1997–2000, only three cases were reported. No cases of leprosy have been recorded in recent times.

Acute Respiratory Infections

During the periods of heavy volcanic ash fall between 1995 and 1999, many people experienced respiratory tract infections and irritation of the nose and throat. Some experienced an exacerbation of asthma and a 1998 survey found that children who lived closer to the volcano experienced more asthmatic attacks than those who lived farther away. A three-pronged approach is being taken to assess the possible impacts of volcanic ash inhalation—monitoring of airborne ash levels on the island and studies of the respiratory health of Montserratians both on the island and in the U.K.

During 1999, 828 persons attended Glendon Hospital's casualty department with acute respiratory infections; in 2000, 770 persons attended for that reason. These visits accounted for 18% of casualty attendances in 1999 and 17% in 2000.

Zoonoses

There were no cases of rabies during 1997–2000.

HIV/AIDS

The cumulative total of HIV cases in Montserrat is seven; there are two cases of AIDS. No routine testing of pregnant women for HIV is done. Figure 4 shows AIDS incidence by sex from 1990 to 1999.

Sexually Transmitted Infections

There were 34 cases of syphilis in 1998, 47 in 1999, and 5 in 2000. Two cases of genital ulcer syndrome were recorded in 1999.

Nutritional and Metabolic Diseases

There were 10 deaths due to diabetes from 1998 to 2000. In 1999, 187 persons attended the emergency department for diabetes; 289 people attended in 2000.

Diseases of the Circulatory System

Cardiovascular disease accounted for 32% of deaths in 1998, 30% in 1999, and 35% in 2000. There were nine deaths due to cerebrovascular disease in 1999 and two in 2000.

Malignant Neoplasms

The number of deaths due to malignant neoplasms was relatively stable, with eight in 1998 and seven each in 1999 and 2000. In 1998, all deaths were among males 60 years of age and older, with 50% due to prostate cancer. In 2000, 5 deaths were among females over 65 years of age.

Communicable Diseases

An outbreak of acute viral conjunctivitis occurred in Montserrat in 1998, with 188 cases. There were 17 cases in 1999 and 11 in 2000.

Oral Health

The Community Dental Service, run by a dental auxiliary, operates from a small unit on the hospital compound. It offers basic diagnostic and emergency treatment for children, pregnant women, the elderly, and special benefit patients. The sole dentist on the island provides service through the private sector.

Mental Health

At the end of 1999, there were 93 persons registered at the Mental Health Clinic: 48 suffered from schizophrenia, 23 from alcoholism, 10 from organic psychoses, 6 from neuroses, and 6 from other conditions.

When most of the population was evacuated overseas in 1996–1997, many of the mentally ill were left behind; this meant

that many of them lost caring friends and relatives, and some became homeless. The mental health services have suffered from the effects of depleted human resources. The Community Mental Health Services included home visits, counseling, and visits to the prison, shelters, and hospital clinics.

There is no specialized facility for the care of acutely mentally ill patients; however, the Community Care Services have been giving added attention to the problem of homelessness, especially for the mentally ill. The Community Services Department, through the Community Care Coordinator, has helped provide daily care. In an effort to address their needs, two psychologists were appointed in 2000 and are providing counseling and support.

The Government is working on a project for the care of the mentally ill with DFID and the Pan American Health Organization.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

Given the devastation caused by the volcano, the Government of Montserrat had to formulate a plan for the recovery and rebuilding of the country. Using a participatory approach, a strategic plan was prepared with input from the community, the private sector, NGOs, government officials, and regional organizations.

Following this strategy, the health sector developed a health action plan with 10 main objectives:

1. To develop appropriate health strategies and plans to deliver a high standard of care to the population of Montserrat.
2. To review regulations and policies governing the operation of the health sector.
3. To develop adequate health care facilities in the safe zone.
4. To strengthen the institutional management of the Health Department, including performance standards and the overall planning framework.
5. To ensure adequate provision of basic and more advanced medical and nursing training.
6. To improve disaster preparedness planning within the health sector.
7. To develop HIV/AIDS prevention policies.
8. To strengthen health promotion programs.
9. To review and improve the care of the mentally ill.
10. To improve clinical standards within the context of a primary and secondary health care program.

The Health System

Institutional Organization

The Ministry of Education, Health, and Community Services is responsible for providing accessible, adequate, and affordable health services to the population. The Minister is responsible for the Ministry, and the Permanent Secretary is its administrative head. The Chief Medical Officer coordinates the health services, particularly primary care services. The Secondary Care Manager is responsible for the functioning of the hospital. The Principal Environmental Health Officer reports to the Permanent Secretary on environmental matters.

The eruption totally destroyed Glendon Hospital and most of the community primary health care clinics in the south. Glendon Hospital has since been relocated to the north and four clinics are open and provide primary care services.

Organization of Regulatory Actions

The Ministry of Education, Health, and Community Services is responsible for overseeing and regulating the health system and services, including water supply and waste disposal.

Organization of Public Health Care Services

Health promotion services are provided by a community health nurse.

Potable Water, Excreta Disposal, and Sewerage Services

In the north, where the population is now settled, water is obtained from springs that were not affected by the volcano. However, additional service was needed and approximately UK£ 1 million was spent to improve the water system. Water quality is constantly monitored by the Environmental Health Department. A 1997 survey confirmed that the water supply system had not been contaminated by volcanic products.

Sewage in most households drains directly into septic tanks.

Solid Waste Services

Domestic solid waste was initially a problem when the influx of persons came to the north of the island because the original landfill was in the south and had to be abandoned. A dump site chosen in the Little Bay area proved to be illegal and was rejected. A landfill was later opened on the western edge of the prohibited zone, at New Windward. Garbage is compacted and covered on a regular basis, but disposal of industrial waste, oils, and abandoned cars is problematic. Garbage is collected by two government-paid contractors.

Pollution Prevention and Control

The Montserrat Volcano Observatory carries out regular dust monitoring at selected sites.

Food Safety

The Environmental Health Department is responsible for the protection and control of food supplies but, owing to the small number of staff and emphasis having to be placed on other is-

sues, they are unable to carry out these duties effectively. Fortunately, there has been no major outbreak of food poisoning and the limited inspection program is continuing.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

The health services are divided into Community Services and Institutional Services. The primary health care services include maternal and child health, immunization, school health, dental health, mental health, health promotion, and environmental health; all are categorized as community services and are free.

The Institutional Services provide inpatient facilities, outpatient facilities, long-term geriatric services, and laboratory, X-ray, and pharmacy services. Users are expected to pay a fee when they access services at the hospital, though pregnant women, people over the age of 65, and certain indigent persons are exempt; long-term geriatric care is free. The exemption policy needs to be reviewed, as the regulations governing it have not been amended since the crises and several persons now need free or reduced fees in light of their shrinking income.

During 1999, 493 patients were admitted to Glendon Hospital, and 526 were admitted in 2000; most patients were over 65 years of age. In 1999, 232 (47%) were medical cases, 153 (31%) were surgical cases, 72 (15%) were obstetric cases, and 36 (7%) were pediatric cases. In 2000, 225 (43%) were medical cases, 155 (29%) were surgical cases, 77 (15%) were obstetric cases, and 60 (11%) were pediatric cases.

There were a total of 3,601 patient days in Glendon Hospital in 1999, with an average length of stay of 6 days. In 2000, there were 3,860 patient days, with an average length of stay of 6 days. The total bed turnover rate for the 30-bed hospital was 16 in 1999 and 17 in 2000, with an occupancy rate of 33% in 1999 and 35% in 2000. There were 27 deaths among the 493 persons admitted to the hospital, yielding a hospital death rate of 5% in 2000.

In 1999, 121 surgical operations were performed (63 males and 58 females), while in 2000, there were 133 surgeries (55 males and 78 females). From 1998 to 2000, there were 64 emergency surgeries, 85 major surgeries, and 247 minor surgeries.

The leading causes of the 200 hospitalizations for males in 2000 were injuries (18%), hypertension/heart-related diseases (15%), diseases of the digestive system (14%), and diabetes/hypercholesterolemia (12%). The leading causes of the 189 female hospitalizations were diabetes mellitus (15%), hypertension/heart-related disease (13%), diseases of the genitourinary system (12%), and diseases of the digestive system (9%).

In 1999, a total of 22 patients were transferred overseas for management and specialized care—36% were surgical cases, 31% were medical cases, 13% were obstetric cases, and 18% were children age 1–9 years. All transferred cases are accompanied by a full-time nurse from the hospital, whose expenses are paid by the Government.

Auxiliary Diagnostic Services and Blood Banks

The hospital laboratory conducts hematological and biochemical testing as well as blood banking. Only basic microbiological investigations can be performed. There is no sale of blood or blood products and the blood bank relies on voluntary donors.

Specialized Services

There are no specialized vision or hearing testing services on the island other than the basic tests carried out in the clinics. Eye specialists have recently begun to visit Montserrat to examine and treat patients in a private capacity. An ophthalmologist from Canada has visited and seen patients in the public sector at one of the clinics.

Health Supplies

Drugs, Immunobiologicals, and Reagents

No drugs, reagents, or biologicals are produced locally for use in the health sector in Montserrat. All items are imported through the Organization of Eastern Caribbean States/Pharmaceutical Procurement Service, which performs annual audits.

Equipment

In 1999, the X-ray department was operating from a temporary facility with only a mobile unit to perform examinations. The department is now functioning in its refurbished quarters on the hospital compound, with a trained radiographer and a new unit that was purchased in October 1999.

Human Resources

Availability by Type of Resource

During the period 1997–2000, there were four physicians, three laboratory technicians, one dentist, and one radiographer in Montserrat; the number of pharmacists ranged from one to three. The number of nurses decreased from 57 in 1997 to 38 in 2000. There are four environmental health officer posts, but only three are filled with trained personnel.

Training

The challenge of retaining staff is one that Montserrat has been facing since 1995. Nursing services both at the hospital and in the primary health care clinics rely heavily on trained nurses.

In-service training is carried out for several categories of staff as the need arises, depending on the availability of tutors to conduct trainings.

Montserrat had a nursing school that trained nurses but this has been closed since the volcanic eruption, thus all training is conducted abroad. Arrangements have been made with Antigua and Dominica to assist in trainings.

Health Research and Technology

Several studies have been conducted as part of DFID's assistance, largely on social welfare or on the effects of volcanic ash on respiratory function.

Health Sector Expenditure and Financing

During 2000, the Ministry of Education, Health, and Community Services allocated US$ 4,568,488 for the management and provision of health services, which includes the Ministry's headquarters and primary and secondary health care. Approximately 35% (US$ 1,612,848) of the health budget was allocated to the hospital.

External Technical Cooperation and Financing

A Regional Relocation Scheme and an Assisted Passage Scheme were introduced in late 1997 to help Montserratian evacuees. The outward passage scheme, to help persons who wanted to leave the island, ended in May 1999. DFID then introduced a Return Air Fare Scheme in 1999 to help those who wanted to return to Montserrat from England or the Caribbean region, once they had a place to stay on their return.

DFID is also supporting a program to enable NGOs to assist elderly, disabled, and other evacuees to become financially independent and socially integrated. This program is managed by the Caribbean Conference of Churches. It also supports training awards for evacuees in Antigua.

Other donors, such as the European Union, have allocated € 16 million for housing, education, and a new airstrip.

By conducting a vulnerability analysis and providing technical advice, the United Nations Development Program is helping the Government of Montserrat to strengthen its disaster prevention capacity. The organization is also providing five UN volunteers, including one psychologist and one occupational therapist for the health sector.

The Pan American Health Organization has increased its regular technical cooperation since the volcanic eruption, especially in the areas of disaster preparedness and environmental health. In addition, as part of a DFID/PAHO/Government project, which began in August 2000, it aims to improve the capacity of the health sector in mental health, treatment of chronic diseases, health promotion, care of the elderly, and the development of a hospital information system. It also aims to train persons in areas where retirement will deplete the expertise currently in place.

Measures have been taken by the Government, DFID, and other partners to provide good primary and secondary health care and to refer those who need tertiary or more specialized care not available on Montserrat.

FIGURE 1. Population structure, by age and sex, Montserrat, 1999.

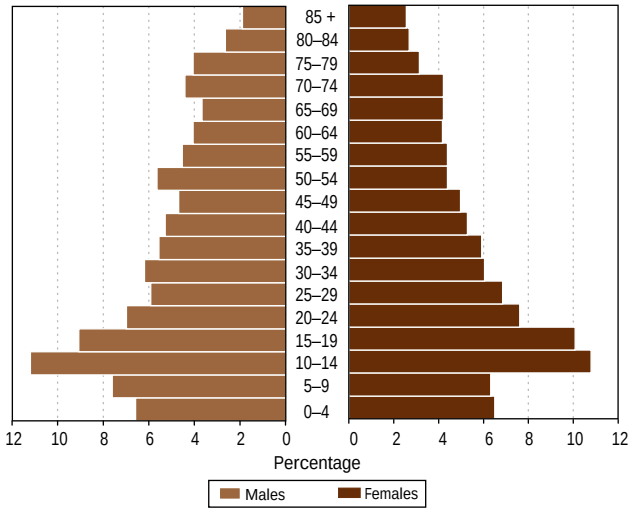


FIGURE 2. Estimated mortality, by broad groups of causes and sex, Montserrat, 1990–1995.

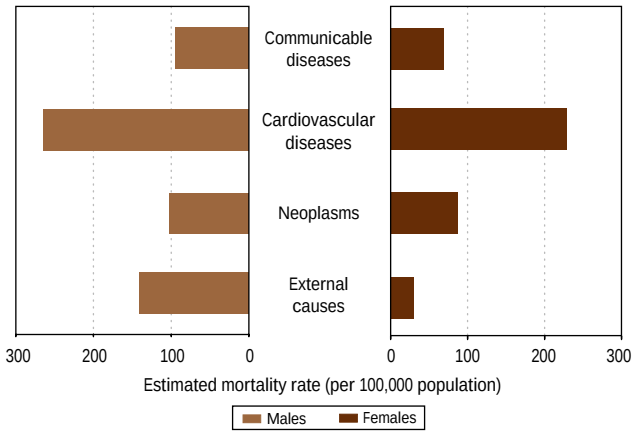


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage for women of childbearing age, Montserrat, 2000.

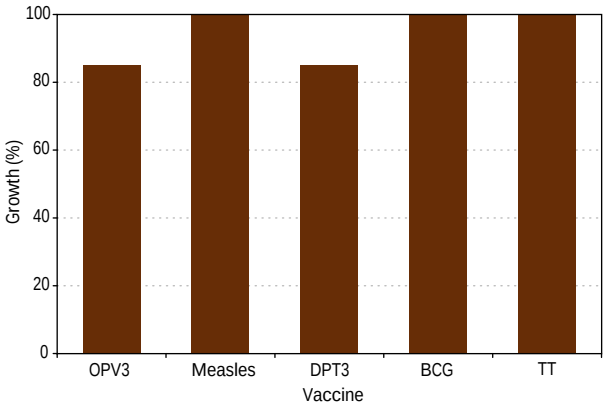
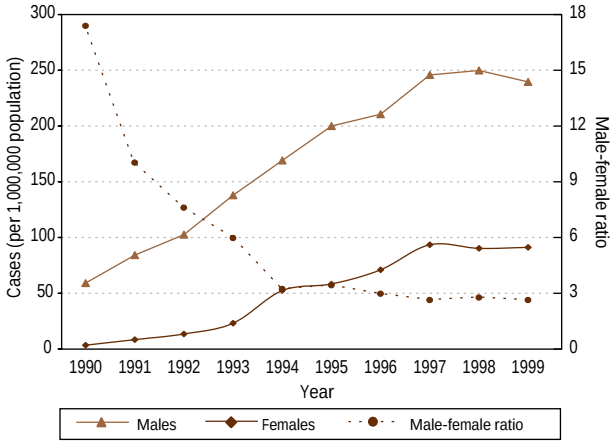


FIGURE 4. AIDS incidence, by sex, with male-female ratio, Montserrat, 1990–1999.



NETHERLANDS ANTILLES

OVERVIEW

The Netherlands Antilles consists of five islands: Curaçao, Bonaire, Saba, Saint Eustatius, and Saint Martin. Their total area is 800 km^2, and their population, 203,278 persons, for a population density of 254.1 inhabitants per km^2. The official language is Dutch, although Papiamento is commonly spoken on Curaçao and Bonaire, and English is widely spoken on Saint Martin, Saba, and Saint Eustatius. Curaçao is the largest of the Dutch islands in the Caribbean, and its capital, Willemstad, is the seat of the central government.

The Netherlands Antilles are an autonomous territory within the Kingdom of the Netherlands; they are responsible for their own administration and political affairs, with the exception of defense, foreign affairs, the legal system, and financial and administrative oversight. The system of government is a parliamentary democracy, with elections every four years. The Parliament chooses the Cabinet of Ministers. There are two levels of government: the central government, with a Parliament made up of representatives of all the islands; and the local government of each island, which consists of an Island Council and a Legislative Assembly. The Governor of the Netherlands Antilles is the representative of the Kingdom of the Netherlands; the representative of the central government on each island is the Lieutenant Governor, who has executive powers.

Data from the Central Statistics Office (CSO) of the Netherlands Antilles indicate that in 1997 the country's main economic activity was wholesale and retail trade, which accounted for 19.4% of GDP. This was followed by real estate activities (purchases and rentals), which accounted for 13.3% of GDP, and by financial intermediation (11.3%) and transportation, storage, and communications (10.5%). Between 1994 and 1997, real estate activities and financial intermediation posted growths of 2.5% and 2.4%, respectively. Commerce remained stable, and transportation, storage, and communications shrank by 3.8%.

GDP increased from US$ 1,664,553 in 1994 to US$ 1,844,350 in 1997, with mild growth in 1995 and 1996. GNP increased 9% during the 1994–1997 period, reaching US$ 1,898,089 in 1997. Nevertheless, GNP (in 1990 prices) declined 2.1% in 1997. Estimated GDP per capita fell 5.9% from US$ 8,052 in 1994 to US$ 7,575 in 1997. Private-sector employees have health insurance, and their contributions are proportional to their income. Everyone has accident insurance.

No studies on poverty have been conducted. However, during the 1990–1996 period, there was an upward trend in the minimum wage set on each island after 1990 in the manufacturing industry, with the highest wage on Saint Martin (US$ 447), followed by Bonaire (US$ 423), Curaçao and Saba (US$ 407), and the lowest on Saint Eustatius (US$ 386). Saint Martin also shows the highest minimum wages in other sectors of the economy under study, except domestic service, in which it is in third place (US$ 203) behind Saba (US$ 224) and Saint Eustatius (US$ 213). The lowest minimum wage in this sector was seen on Curaçao (US$ 171). Since 1990, the island governments have been empowered to set the minimum wage.

On Curaçao, the import-export sector of the economy employs the most people, followed by the public sector, manufacturing, construction, transportation, communications, and the hotel industry. The figures published by the CSO indicate that on Curaçao the unemployment rate increased steadily from 12.8% in 1994 to 16.6% in 1998, dropping to 14% in 2000. On Bonaire, there was a slight decrease (0.3%) in unemployment from 1996 to 2000 (5.7% in the latter year); emigration among the economically active age group was a factor in this decline. Saint Martin recorded the largest decline (4.4%) in unemployment between 1997 and 2000, with a 12.9% rate in the latter year. According to the CSO, in 2000 the highest unemployment rates were recorded among the population 15–24 years of age (28.9% on Saint Martin, 27.2% on Curaçao, and 14.7% on Bonaire). On all the islands, the unemployment rate is higher among women: 16.6% on Saint Martin and 16.2% on Curaçao.

The most recent national census was conducted in 1992; other censuses by island were conducted on Saba and Saint Eustatius in 1997. The most recent figures from the CSO (1999) indicate that in 1998 the country had 206,981 inhabitants, of whom 48.2% were males, 25.8% were under 15 years of age, and 10.9% were 60

or older (Figure 1). Applying a model of high emigration, the CSO estimated a population of 202,782 in the year 2000. The percentage of population living on each island is 6.7% on Bonaire, 70.5% on Curaçao, 0.8% on Saba, 1.1% on Saint Eustatius, and 20.5% on Saint Martin. The population density per square kilometer is 50 on Bonaire, 332 on Curaçao, 123 on Saba, 106 on Saint Eustatius, and 1,199 on Saint Martin. The population growth rate was 1.1% in 1998, –1.1% in 1999, and –1.8% in 2000. Estimated net migration went from 1,189 in 1996 to –5,440 in 1999, mainly on Curaçao, Bonaire, and Saint Eustatius.

During the 1996–1999 period, the birth rate declined from 18.1 per 1,000 population in 1996 to 13.7 per 1,000 in 1999, a drop of 24.3%. The specific fertility rate for women 15–44 years of age declined 14.6% to 59.3 children per 1,000 women in 1999. The gross mortality rate in the 1996–1999 period was 6.4 per 1,000 population, with an annual range between 5.9 and 6.4. Life expectancy at birth in 1998 was 71.8 years for men and 77.7 years for women.

According to data from the 1992 Population and Housing Census, 34.1% of households were headed by women; 69.2% of households consisted of a nuclear family, 7.9% of two or more nuclear families, and 22.9% did not consist of nuclear families. Sixty percent of households had between one and three members.

Mortality

Mortality was codified under the International Classification of Diseases, Ninth Revision (ICD-9), until 1995, when codification under the tenth revision (ICD-10) began. The available mortality data are for 1994, however. Of the six major groups of causes of death, the leading one is diseases of the circulatory system, with 34.4%, followed by malignant neoplasms (22.9%), other diseases (19.8%), infectious and parasitic diseases (10.2%), and external causes (7.9%); 2.4% of deaths correspond to signs, symptoms, and ill-defined conditions (Figure 2).

With regard to years of potential life lost (YPLL) due to specific causes, AIDS ranked first with a rate of 7 per 1,000 population, followed by transport accidents and homicides with 5.5. Among males, homicides accounted for the highest rate of YPLL with 10.6 per 1,000 population, followed by AIDS with 9.8, and transport accidents with 8.7. Among females, the major causes were hypoxia, asphyxia, and other perinatal respiratory conditions, with a rate of 6.7 per 1,000 population; birth defects with 5.6 per 1,000; and AIDS with 5 per 1,000.

Cardiovascular and cerebrovascular diseases were among the leading causes of death for both sexes. The third leading cause was malignant neoplasms among males and diabetes mellitus among females. AIDS was the fourth leading cause of death for males. Acute respiratory infections were the fifth leading cause of deaths for both males and females, although the risk was greater among the latter.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

The infant mortality rate in 1994 was 11.6 per 1,000 live births and was higher among females (12.3 per 1,000). The infant and neonatal mortality rates on Curaçao were 11.6 and 7.1 per 1,000, respectively, in 1994. The United Nations estimated infant mortality rates of 14 per 1,000 live births in 1997 and 13.3 per 1,000 live births in 2000.

The main causes of infant mortality in 1994 were certain conditions originating in the perinatal period, with a rate of 6.1 per 1,000 live births, as well as birth defects with 1.9 per 1,000. The leading specific causes of mortality during the perinatal period included hypoxia, asphyxia, and other respiratory conditions (2.2 per 1,000 live births); slow fetal growth and prematurity (1.9); and other conditions of the perinatal period (1.9). There were 2 deaths among children 1–4 years of age in 1994. Morbidity data are not available.

Infants on Curaçao must be registered at that island's Civil Registry Office within five days of birth. According to the data supplied, since 1974, there has been a steady decline in the number of annual births, most notably from 1997 to 2000, when the declines were 14.8% and 26.3%, respectively, compared with 1973. The main reason for this decline is growing emigration among the population of reproductive age.

According to a study conducted by the Foundation for Breastfeeding on Curaçao in 2000, 55.9% of newborn children had already been registered with perinatal care services within the first two weeks of life. The study also found that the rate of exclusive breast-feeding was 30%, the rate of breast-feeding combined with bottle-feeding was 45%, and exclusive bottle-feeding was 25%; these findings contrast with studies in 1994 and 1995, which found a 16.7% rate of exclusive or combined breast-feeding at 6 months of age.

Schoolchildren (5–14 years)

The school-age population accounts for 16.8% of the country's inhabitants. In 1994, there were four deaths in this age group, due to AIDS, malignant neoplasms, accidental drowning, and mental disorders. The specific mortality rates by gender were 0.24 deaths per 1,000 males and 0.08 per 1,000 females.

Adolescents (15–24 years)

Some 12.5% of the country's population is between 15 and 24 years of age. In 2000, there were 2,371 births, 9.6% of them to teenage girls 13–19 years of age and 0.2% to girls under age 15. Births to these age groups have been declining slightly over the past eight years. In 1994, this age group accounted for nine deaths due to transport accidents, six homicides, two deaths due to other accidents, and two deaths due to diseases of the nervous system,

excluding meningitis. Until that year, the trend in mortality among adolescents and young people was upward, with males faring the worst.

Adults (25–59 years)

Fifty-one percent of the population of the Netherlands Antilles is between 25 and 59 years of age. In 1994, the leading causes of death among adults were AIDS (16.5% of all deaths), homicides (10.3%), diseases of the cardiopulmonary system (7.2%), transport accidents (7.2%), and suicides (7.2%). The main causes of death among persons 45–59 years of age were malignant neoplasms (27% of the total), ischemic heart disease (11.1%), and cerebrovascular disease (9.7%). In 1994, the death rate among those 25–44 years of age was 1.7 per 1,000 population.

According to the health survey conducted in Curaçao in 1995, among the 25–44 years age group, migraine headaches and psychological problems were the most common chronic disorders, accounting for 10.5% and 10.4% of the total, respectively. The prevalence of hypertension was 7.7%, while that of diabetes mellitus was 1.7%. In the 45–59 years age group, the most prevalent chronic health problem was hypertension (23%), followed by arthrosis and arthritis (15.4%). The prevalence of diabetes mellitus was 9.4%.

According to the data from the national system for monitoring of HIV infection, up to the year 2000, the highest percentage of HIV-positive persons in the country (67.4%) was recorded among those 25–44 years of age; 40.2% of the cases were in Curaçao, and 25.5% were in Saint Martin. Of the total number of known infected persons in this age group, 55.8% were males.

Data from the Foundation for the Promotion of Responsible Pregnancy indicate that in 1998 the most commonly used birth control method was the condom, followed by oral contraceptives. Estimates are that the coverage of prenatal care and institutional births is high, but accurate data are not available.

The trend in maternal mortality in Curaçao has fluctuated due to the small number of maternal deaths—one per year, except during 1991–1992, when there were three per year.

The Elderly (60 years and older)

Some 10.9% of the country's population is 60 years of age and older. In 1994, the mortality rate in this group was higher among males (61.3 deaths per 1,000 population) than among females (4.6 per 1,000 population); the rates by sex were similar in the period 1986–1994. The main causes of death among older persons were diseases of the cardiopulmonary system, followed by cerebrovascular diseases, malignant neoplasms, ischemic heart disease, and acute respiratory infections.

According to data from the 1995 Curaçao Health Survey, the most common chronic disorders were arthritis and arthrosis (32%), hypertension (28.2%), and diabetes mellitus (15.1%). The most common disability among people in this age group was blindness, which is related to the high prevalence of glaucoma and diabetes mellitus, which often occur together. As for oral health, the survey indicated that only 4.1% of the people in this age group still have all of their teeth.

The Disabled

Little information is available about the health of the disabled. There is a school in Curaçao for deaf children, which is run by a foundation. According to the Care for the Disabled Section of the Department of Public Health and Environmental Hygiene, deafness has been reduced over the past six years, a development that is attributed to the decline in the incidence of rubella. The most common disability in the adult population over age 40 is blindness, whereas among adults under age 40 the most common physical disabilities have been caused by accidents. The prevalence of mental retardation is estimated at 3%. Care for the mentally ill is provided in private establishments, and thus there are no data regarding this type of disability. A nongovernmental organization ("Hear Me") provides care for beggars and for individuals who are abandoned or lost. There is also a private psychiatric clinic (the Capriles Clinic) on Curaçao that attends to cases from the other islands.

By Type of Health Problem

Natural Disasters

The Netherlands Antilles suffered hurricane damage during the period 1995–2000. In 1995, Hurricane Luis did particular damage to Saint Martin, causing two deaths, as well as property damage and severe harm to tourism. In 1998, Hurricane Georges affected mainly the island of Saba; in 1999, Hurricane Lenny damaged Curaçao, Bonaire, Saba, and Saint Eustatius, damaging the fishing fleet and causing environmental harm, particularly to the coral reefs, with consequences for fishing and tourism on Curaçao and Bonaire.

Vector-borne Diseases

In 1996, there were 162 suspected cases of dengue fever, with 3 cases of hemorrhagic dengue fever, but no deaths. Twenty-five of the cases were laboratory confirmed (20 on Curaçao, 3 on Bonaire, and 2 on Saint Martin); serotypes 2 and 4 were isolated from these cases. In 1997, only 3 cases were reported, whereas in 1998, 43 suspected cases in Curaçao were examined (6 positive), and 1 was classified as hemorrhagic dengue fever; there were no viral isolations. In 1999, 147 suspected cases were reported; 24 of these were positive—21 on Curaçao (2 of them classified as hemorrhagic dengue fever), 1 on Bonaire, and 2 on Saint Martin. In 2000, 110 suspected cases were reported (89 on Curaçao); 31 of the cases were confirmed serologically, and 5 of them were classified as hemorrhagic dengue fever. The dengue-3 serotype was isolated.

Intestinal Infectious Diseases

No cases of cholera were reported. The country does not have a system for reporting clinical cases of intestinal infectious diseases. The laboratory reports on the causal agents of these diseases in the period 1995–2000, which include the findings of studies conducted on patients and on food handlers, indicate that in 1995 the most common agent was *Salmonella* (48.5%), followed by *Shigella* (35.4%). *Salmonella typhi* was diagnosed in one patient from India. In 1996, salmonellosis predominated (55.4%), followed by shigellosis (30%); the situation was similar in 1997 and 1998. In 1999 and 2000, there was an increase in diagnoses of *Campylobacter*, which in 1999 was the second leading cause of intestinal infectious disease (36.1%) after salmonellosis (40.7%), and in 2000, the leading cause with 53.4%.

Acute Respiratory Infections

The 1995 Curaçao Health Survey found that among diseases with a course of under 14 days, the rate of acute respiratory infections in those over 18 years of age was 3.5 per 100,000 population on Curaçao, 3.4 on Bonaire, 3.9 on Saint Martin, 4.6 on Saba, and 2.8 on Saint Eustatius. In 1994, acute respiratory infections were the fifth leading cause of death on Curaçao overall, and were the seventh leading cause among men and fifth among women. It was the fourth leading cause of death among people 65 years of age and older.

Zoonoses

There has been no reported case of canine rabies or rabies in any other animal species in 10 years.

HIV/AIDS

The HIV-positive population has access to medication. Blood banks do screening with the enzyme-linked immunosorbent assay. Reporting on Saba and Saint Eustatius is still inadequate, however. Family physicians track HIV-positive cases; HIV and other sexually transmitted infections must be reported. The Epidemiology and Research Unit of the Medical and Public Health Service of Curaçao coordinates the monitoring of HIV-positive cases on all the islands. The number of people infected with HIV increased from 55 in 1986 to 1,069 in 1999, and between 79 and 88 cases were diagnosed annually in the period 1995–1999. The islands most affected were Curaçao, with 62.7% of the country's HIV-positive cases, and Saint Martin with 35.1%. The rate of HIV infection is higher among men, with a male-female ratio of 1.3:1. Heterosexual transmission predominates, and the highest risk of HIV infection can be seen in the 15–24 years age group. In 1994, AIDS was the ninth leading cause of death in the Netherlands Antilles. It was the fifth leading cause among males and the number one cause in the 25–44 years age group.

Sexually Transmitted Infections

Tracking of these infections has begun in sentinel centers, and clinical reporting has been called for under a classification of cases depending on whether there are ulcerous symptoms or secretions or both; for the time being, laboratory data are not available. A foundation provides care to illegal sex workers, also conducting periodic exams and providing sex education.

Nutritional and Metabolic Diseases

Obesity is a serious health problem on the islands. A 1997 study found the prevalence of obesity on Curaçao to be 19% among males and 36% among females. A study conducted by the Epidemiology and Research Unit of Curaçao in 2000 concerning obesity on the other islands found a prevalence of 19% among males and 31% among females on Bonaire, 31% among males and 40% among females on Saint Martin, 30% among males and 47% among females on Saint Eustatius, and 20% among males and 29% among females on Saba. On the whole, the female-male ratio is 1.5:1.

Diabetes mellitus is also a serious public health problem on the islands. According to the 1995 Curaçao Health Study, the prevalence on that island was 5.6%. Preliminary data for 2000 from the Epidemiology and Research Unit of Curaçao indicate a prevalence of 6.7% on Bonaire, 4% on Saint Martin, 12.1% on Saint Eustatius, and 7.1% on Saba, with no significant differences between sexes.

Diseases of the Circulatory System

In 1994, diseases of the cardiopulmonary system were the leading cause of death in the country, and ischemic cardiopathy was the third leading cause among both males and females. The highest risk of death from these causes was seen in persons 65 years of age and older. The trend in the death rate from diseases of the circulatory system was relatively stable until 1994, when it was 168 per 100,000 population.

According to the 1995 Curaçao Health Study, the rate of hypertension was 14.5%. The health study conducted in 2000 on the rest of the islands offers preliminary data about the prevalence of this disease: 14.4% on Bonaire, 12.6% on Saint Martin, 11.1% on Saint Eustatius, and 24.4% on Saba.

Malignant Neoplasms

Malignant neoplasms are the second leading cause of death among the broad groups of causes, with a rate of 120 per 100,000 population. According to data from the Pathology Service of Saint Elizabeth Hospital, the incidence of malignant tumors is highest among those 60–69 years of age. Up to age 14, the most common malignant neoplasms are leukemia (with 45.8% of the total incidence) and neuroblastomas (with 37.5%). Among males, the most common sites were the prostate, colon and rectum, and lung, whereas among females they were the breast, uterine cervix, and colon and rectum.

Accidents and Violence

Among external causes, accidents account for the most deaths, with transport accidents in first place, followed by drowning and

accidental falls. The second leading external cause of death is homicide, followed by suicide; until 1994, homicide (which is more common among males) showed a rising trend, which later leveled off.

Oral Health

In 2000, the Curaçao Public Health Service conducted an epidemiological study on oral health among 12-year-old children and adults aged 35–44 to ascertain the risk factors mainly associated with cavities and fluorosis. In accordance with the WHO protocol for the study of cavities and fluorosis in a population, the survey included a sample of 600 adults and 559 children (93% of the total on the island), stratified by geographic zone and rural-urban residence, in the five geographic units of Curaçao. The study determined the prevalence of oral health problems in accordance with the DMFT index; in the group of 12-year-olds, the index was 1 per 100, and among adults it was 8 per 100. The rate of teeth filled is higher among the population of children studied, whereas the rate of teeth lost is higher among adults. Dental fluorosis was observed in 37% of the children and in fewer than 5% of the adults. In both groups, the prevalence of periodontal disease, in accordance with the community periodontal index, exceeds 85%, which represents a major problem in the population.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The major political parties that make up the coalition government of the five islands signed the "Governing Accord on the Program for Economic and Financial Recovery," which was in effect from 1998 to 2000. It called for the drafting of an urgent plan of action to revive the economy, create jobs, reduce poverty, improve the country's social situation and public finances, and develop a comprehensive program for young people to reduce unemployment, drug use, and crime through both preventive and law-enforcement measures.

With a view toward the application of this Accord, consultations were held among the coalition parties to renew financial support from the Netherlands, in accordance with international experiences and clear consensus of criteria. Pursuant to these principles, agreements were reached on the financial, economic, fiscal, and monetary adjustment, and consideration was given to levying alternative taxes, adapting the Social Security law (so that the general fund for special medical expenses would not be provided exclusively by the Government), refinancing the debt owed to the Netherlands, creating solidarity funds for the smaller islands (Saba, Saint Eustatius, and Bonaire), and promoting the certification of educational and professional activities. Consideration was also given to decentralizing the operations of the Department of Labor and Social and Economic Affairs, in order to spur development on all islands, and to creating island councils to support the implementation of economic and social activities.

Enhancing public administration at the central level and on the islands is a priority of the plan. The public sector, particularly health care, is being revamped, including cuts in expenditures and in administrative personnel. Work is being done on legislation to adapt it to a different kind of health care, so that patients can defend their rights and demand quality care. In addition, the law on medical expenditures protects individuals with chronic illnesses and disabilities and establishes a central fund that consists of revenues from the taxes that workers pay. As for the medical insurance law, the creation of general insurance for medical expenses is being proposed, and the existing studies and experiences are being reviewed.

The plan also emphasizes the urgent need to restructure the Department of Public Health and Environmental Hygiene. One of the suggestions in this regard is to separate public health management from health inspection. In addition, legislation must be updated to lend support to surveillance, including legislation for the reporting and control of reportable diseases. Emphasis is being placed on special care for risk groups such as the disabled, young people, and older persons.

Prevention programs are being updated, and the importance of monitoring and assessment activities is being emphasized. Restructuring the National Immunization Program is included. Emphasis is being placed on improving central government support for the islands, which means greater utilization of technical and financial cooperation from international organizations. An official agency called the Health Council will be created; it will be made up of experts who will offer technical advice for the application of the measures in question.

The law on food imports (fish, dairy products, etc.) to the islands, which includes quality control and inspection, went into effect in 1996. As for the environment and nature, sustainable development is being promoted, with the participation of the health, education, and economic affairs sectors. Work has been going on since October 2000 on a proposal to reorganize the Department of Public Health and Environmental Hygiene, to which end international advisory services are available. One aim is to strengthen the Environment Section of this department, which in the future will become the Directorate of Health and Social Welfare.

The Health System

The national plan for the recovery of the health system went into effect in 1998. Among its priorities were to implement systems to investigate the effectiveness of health services, to deepen the processes of decentralization and institutional mergers, to enhance the decision-making ability of personnel in the health system through training, and to privatize several health services, among them the mental health clinic, the office for the prevention of drug use, and the public health laboratory.

A basic care package for general social insurance is under study; it will also offer optional complementary services, such as medical specialists, drugs, and prostheses, and it is intended to

cover the entire population. Moreover, the optimization of inspection and administrative control functions and of transparency in health management is envisaged. There is a proposal to introduce general insurance for illness-related expenditures, which will enable the Government to save around US$ 20,326,000 a year.

In 1999, 27,784 persons (19.3% of the population) received free medical care on Curaçao, down 17.2% from 1998 and 20.7% from 1994. The figures for the rest of the islands were 11.6% (270 persons) on Bonaire, 8.7% (46 persons) on Saba, 11.4% (26 persons) on Saint Eustatius, and 0.7% (805 persons) on Saint Martin.

Data published by the CSO indicate that the social security system guarantees a minimum of resources for each family to meet its basic needs. Government agencies provide social support for vulnerable groups, among them older persons, widows, and orphans. At age 60, residents of the Netherlands Antilles are entitled to general old age insurance in the form of a pension. Major changes in the social security system were introduced in 1996; for example, family members of employees were also insured for health expenditures. Women are entitled to an old age pension, and men receive one if they become widowed. Economic benefits and free medical care are offered to the unemployed.

The Department of Adolescent and Youth Care in the Department of Public Health and Environmental Hygiene is working on a health care plan that prioritizes health promotion with a comprehensive approach and the prevention of leading health problems, among them accidents, obesity, and poor dietary habits. One of the goals of the department is to protect and promote breast-feeding. The efforts to achieve this goal are undertaken jointly with the Foundation for Breast-feeding on Curaçao and are based on the findings of the investigations conducted. In addition, the Department of Public Health and Environmental Hygiene has a Perinatal Care Department, which has implemented the Perinatal Information System of the Latin American Perinatology Center. There are problems with the recording of data, as only midwives fill out the forms.

Organization of Public Health Care Services

Health Promotion

Health promotion activities focus on the prevention of noncommunicable diseases associated with the high prevalence of risk factors, among them obesity, poor diet, and a sedentary lifestyle. However, the above aspects, combined with the prevalence of drug addiction and HIV infection, have led to the call for a more comprehensive approach to health promotion that attaches priority to children, adolescents, and young adults.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Epidemiological surveillance has improved. On Curaçao and Saint Martin, there are sentinel clinics that monitor signs, symptoms, and well-defined syndromes. Surveillance of suspected cases of dengue has spread to all the islands. The Curaçao Epidemiology and Investigations Unit conducts studies on Curaçao and the rest of the islands in coordination with the health authorities on each of them; these studies complement the health profile of the country and the islands that make it up.

Potable Water, Excreta Disposal, and Sewerage Services

Curaçao, Bonaire, and Saint Martin have appropriate potable water and sewerage services. Desalinization plants produce high quality water, but at high cost. On Bonaire, 95.2% of homes have access to potable water through the water distribution network; on Curaçao and Saint Martin, the percentages are 96.7% and 63.5%, respectively. On Saint Eustatius and Saba, access to water is predominantly by way of cisterns. Only Curaçao and Saint Martin have wastewater treatment plants; the use of septic tanks is common on the other islands.

Solid Waste Services

The islands have solid waste collection services operated by private companies under the supervision of the local authorities. Certain problems arising from the inappropriate sites for final disposal persist, and projects have been proposed for the construction of sanitary landfills, but sufficient funding is not yet available. Air pollution is a problem on Curaçao due to the presence of oil refineries, and controls have been applied to reduce their impact.

Organization of Individual Health Care Services

Secondary health care is provided in hospitals. There are 7 on Curaçao, with a total of 1,187 beds, 46% of them in Saint Elizabeth Hospital and 16.9% in the specialized institutes for the disabled and drug addicts. Bonaire has Saint Francis Hospital, with 60 beds; Saint Martin, the Saint Martin Medical Center, with 74 beds; Saint Eustatius, the Queen Beatrice Medical Center, with 20 beds, and an auxiliary home with 12 beds. There is a Medical Center with 14 beds on Saba.

The Government was in charge of mental health care until May 2000, when it was privatized; it is currently the responsibility of a foundation hired by the Government. This foundation is in charge of outpatient care. Patients who require hospitalization are treated in the Capriles Clinic, which has also been privatized and is currently run by a private foundation. Access for low-income individuals is guaranteed under medical insurance for chronic illnesses. Saint Elizabeth Hospital has a 20-bed psychiatric unit to care for patients in crisis.

The mentally disabled can be admitted to institutions run by foundations. There are four such institutions on Curaçao, and two provide treatment to both inpatients and outpatients; the latter mode of treatment is being promoted to reduce the number of inpatients. There is a psychogeriatric unit for patients diagnosed with chronic dementia; it too is run by a foundation.

There are 12 elder-care homes, which together have 739 beds: 55 on Bonaire (1 elder-care home), 585 on Curaçao (8 elder-care homes), 65 on Saint Martin (1 elder-care home), 25 on Saba (1 elder-care home), and 9 on Saint Eustatius (1 elder-care home).

There is one blood bank on Curaçao, run by the Red Cross, which in turn is under Saint Elizabeth Hospital, with branches on Bonaire and Saint Martin. Donations are not remunerated, and the blood bank offers coverage to public and private health care services. Blood donations are subject to strict diagnostic safety tests, including for HIV-1 and HIV-2, hepatitis B and C, and syphilis; around 6,000 donations per year are tested.

Human Resources

In 1998, the economically active population numbered 54,182 persons, of whom 4,207 (7.8%) worked in the health sector. Of the total number of workers in this sector, 43.2% were involved in medical care. According to information compiled by the Department of Public Health and Environmental Hygiene and the CSO, in 2000, the main categories of human resources in health care were: medical professionals, 1,143 (27.2%); upper-level technicians, 208 (4.9%); and auxiliaries, 467 (11.1%). The ratios of health care personnel per 10,000 population in the main categories are: 16.5 physicians, 32.7 nurses, 3.1 dentists, 1.4 nutritionists, 1.2 psychologists, and 0.5 midwife.

The University of the Netherlands Antilles has three departments: law, social and economic sciences, and technology. In 1998, 190 students were registered, and 61 professionals graduated. The Technology Department trains nursing specialists. No information is available on the regulation of practice, accreditation, certification, and recertification of health care professionals.

Health Research and Technology

There is no operating budget for research projects. Projects are carried out with financing from the Netherlands and international agencies. Health care technology is provided and incorporated in accordance with parameters and standards set by the Netherlands.

FIGURE 1. Population structure, by age and sex, Netherlands Antilles, 2000.

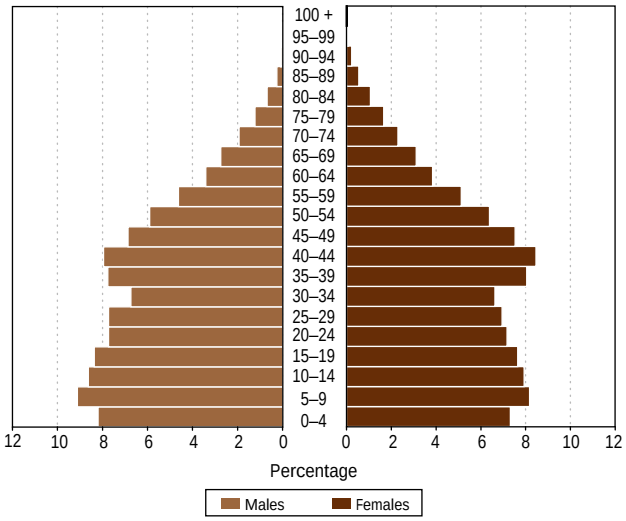
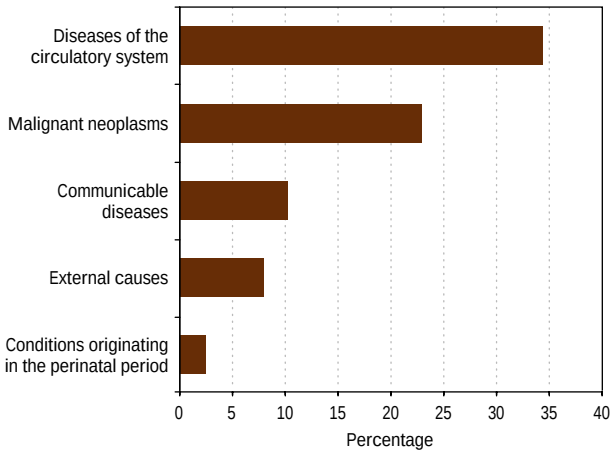


FIGURE 2. Proportional mortality, by broad groups of causes, Netherlands Antilles, 1994.



NICARAGUA

OVERVIEW

Nicaragua has a surface area of 130,244 km^2. The country's topography divides it into three regions: the Pacific region, the Atlantic region, and the Central region. For politico-administrative purposes, it is divided into 15 departments and two autonomous regions. The Pacific region, which covers 15.2% of its land area, has 58.2% of the population, with a density index of 130.1 persons per km^2. The Central region covers 29.6% of its land area and has 30.5% of the population, with a population density of 35.1 persons per km^2. The Atlantic region occupies 55.2% of the country's land area and has 11.3% of the population, with a density index of 7 persons per km^2.

The population was estimated at 5,710,670 inhabitants as of the year 2000, with women making up 51% of that number. The annual rate of population growth slowed from 3% in 1985 to 2.7% over the period between 1995 and 2000 in the wake of a decline in the fertility rate. As of 1998, 56.4% of the population lived in urban areas. The mean age of the population in the year 2000 was 17. The age structure of the population puts 65% at under 25 years of age and 42.6% at under 15 years of age (Figure 1).

The findings from the Nicaraguan Population and Health Survey of 1998 (ENDESA-98) for the period of 1995–2000 put life expectancy at birth at 68.4 years (70.3 years for females and 66.6 years for males), the birth rate at 35.3 per 1,000 population, and the infant mortality rate at 40 deaths per 1,000 live births. The fertility rate was 4.4 children per woman, with large disparities between rates for urban and rural areas (3.1 children per woman in urban areas, 5.4 children in rural areas, and 6 children per woman in Jinotega and on the Atlantic Coast) and for different departments and social groups.

Emigration and internal migration are demographic phenomena with a strong impact on the country's economy. An estimated 4% to 6% of the total population lives outside the country. Managua is the destination of choice for 40% of all internal migrants. Two-thirds of all migrants live in cities. The other third lives in the countryside. Most migrants in urban population centers are women between 15 and 29 years of age, the majority of whom are working in business and the personal services industry, while most male migrants are agricultural workers.

According to the National Quality of Life Survey conducted in 1998 by the National Statistics and Census Bureau (INEC), as of 1998, 47.9% of the population was living in poverty and 17.3% was living in conditions of extreme poverty. These rates were down by 2.4% and 2.1%, respectively, from 1993. The survey showed a reduction in rural and urban poverty in the department of Managua and an increase in the number of urban poor throughout the rest of the Pacific region and on the Atlantic Coast. The survey also showed an average annual rise of 0.4% in illiteracy rates during the 1993–1998 period, reaching 23.4% in 1998. There were also high fertility rates among adolescents, with 50% of all women reporting having been pregnant at least once by the age of 19. The survey also found that extremely poor children were sick 50 times more often than were children who were not poor, and that 30% of poor children and 40% of extremely poor children were malnourished.

The size of the economically active population (EAP) as of 1998 was estimated at 1,728,900 individuals, of whom 184,700 (11%) were unemployed. Of the gainfully employed population, 1,354,263 individuals had full-time jobs (87.7%) and 189,937 (12.3%) considered themselves underemployed. Since 1992, with the creation of foreign trade zones, some 20,000 workers, mostly women, have been employed in *maquiladoras* (in-bond assembly industries). The unemployment rate has been inching steadily downward since 1994, standing at 10.7% in 1999. Unemployment more heavily affects women (in 1999, 14% of the EAP in urban areas and 30% of the EAP in rural areas).

The nationwide real average wage rose by 9.9% in 1999, which was the largest wage increase since 1991. The real wage jumped by 13% with the entry into effect of a new minimum wage schedule in August of 1999 and wage adjustments by a number of cabinet departments such as the Ministry of Education, Culture and Sports, the Ministry of Health, and the Ministry of Finance and Public Credit.

In July 1999 the Ministry of Labor reported that 56% of the urban gainfully employed EAP earned less than US$ 9.20 per

month, while the cost of the basic basket of goods was US$ 13.30. Another 27% of the urban working population earned between US$ 9.20 and US$ 19.40, and only 17% earned more than US$ 19.40 a month. A mere 12% of female workers had monthly incomes of over US$ 19.40.

Efforts to downsize the national government are a pivotal part of the structural adjustment process. The Government has endeavored to reverse the economic downturn through a series of structural reforms designed to promote private investment, strengthen growth, and control inflation. The assistance furnished by the international community through the Supplementary Social Fund was crucial to efforts to bolster coverage levels for top-priority social services in the wake of Hurricane Mitch.

Per capita GDP stood at US$ 455.80 for the period from 1991 to 1998. It grew at an average rate of 3.2%, speeding up to 7% in late 1999, reflecting investment efforts associated with the economic infrastructure rebuilding process. The country's foreign debt reached US$ 6,358.5 million as of the end of May of 1999, equivalent to three times its GDP and eight times the annual value of its exports.

The fiscal deficit was brought down to 96.9% of GDP by the year 2000 (Figure 2 shows trends in GDP). Hurricane Mitch destroyed nearly 35% of the operating capacity of the nationwide primary health care network (108 health care units) at a cost of US$ 8,865,000, representing 6.5% of the total countrywide damage estimate released by ECLAC in 1999.

The three cornerstones of the Government's social development strategy are the furtherance of economic growth, particularly in rural areas; the promotion of spending on social programs for the poor that are designed to reduce their vulnerability to economic, social, and environmental risks; and the building of a stronger social safety net for vulnerable groups in order to break the vicious cycle of intergenerational poverty.

Mortality and Morbidity

Population and epidemiological studies are limited by the coverage and quality of the National Vital Statistics System (SINEVI), which undercounted births by 35% and deaths by 46% over the period from 1995 to 1999. The general mortality rate fell from 33.3 per 100,000 population to 26.5 per 100,000 over the period between 1996 and 2000. Infectious diseases fell from fourth to fifth place among the leading causes of death in the last two years of this period, with the number of deaths attributable to this cause down by nearly 50% from 1996 (Table 1).

The leading causes of death include: for infectious diseases, diarrheal diseases in children under 1 year of age and tuberculosis in adults over 35 years of age; for nutritional and metabolic diseases, diabetes and malnutrition; for conditions originating in the perinatal period, respiratory diseases and sepsis; and for external causes, transport accidents, drowning and submersion, pesticide poisoning (accidental or self-inflicted), and gunshot and stab wounds. Transport accidents, in particular, are among the leading causes of death for all age groups. The number of deaths attributable to external causes rose in 1998 in the wake of Hurricane Mitch, as reflected in the data presented in Table 1. Figure 3 shows male and female mortality rates per 100,000 population by broad groups of causes.

There was very little change in figures on hospital discharges between 1999 and 2000 (284,893 in 1999 and 291,266 in 2000). Among communicable diseases, the leading causes of hospital stays in both years were diarrheal diseases and gastroenteritis, pneumonia, malaria, pulmonary tuberculosis, and classical dengue and dengue hemorrhagic fever, while the number of hospitalizations due to vector-borne diseases was down sharply in the year 2000. Other major causes of hospitalization were tumors (primarily cervical tumors), diabetes mellitus, anemia, behavioral disorders attributable to alcohol or other types of substance abuse, and diseases of the circulatory system (including hyper-

Table 1. Leading causes of death, Nicaragua, 1996–2000.

	1996		1997		1998		1999		2000[a]	
Group of causes[b]	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Diseases of the circulatory system	3,185	76.9	3,232	73.1	3,074	63.7	3,225	64.8	3,343	65.9
External causes	1,966	47.5	1,971	44.6	2,699	55.9	2,078	41.7	1,865	36.8
Malignant neoplasms	1,340	32.4	1,366	30.9	1,458	30.2	1,449	29.1	1,565	30.6
Infectious and parasitic diseases	1,277	30.8	1,239	28.0	1,255	26.0	975	19.6	762	15.0
Conditions originating in the perinatal period	1,067	25.8	1,101	24.9	1,141	23.6	1,066	21.4	1,124	22.2
All causes[c]	13,801	33.3	13,916	31.4	14,756	30.5	13,771	27.6	13,441	26.5

[a]Preliminary data.
[b]Rate per 100,000 population.
[c]Rate per 10,000 population.

tension, ischemic heart disease, and cerebrovascular disease). A large percentage of hospital stays were for deliveries, with complications of pregnancy, childbirth, and the puerperium also accounting for a large share of in-hospital care. Data on visits to outpatient facilities, by medical specialty, indicate that more than half such visits were for emergency care, mainly for complications of pregnancy and injuries from accidents and violence.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Children between 0 and 4 years of age account for 16% of the total population. The infant mortality rate for the period from 1997 to 2000 was 45.2 per 1,000 live births (50 per 1,000 live births for males and 40 per 1,000 for females). The leading causes of death among children under 1 year of age during this period were respiratory and cardiac problems originating in the perinatal period, pneumonia, diarrhea and gastroenteritis, bacterial sepsis of the newborn, and congenital malformations. The leading causes of death among children between 1 and 4 years of age were pneumonia, diarrhea and gastroenteritis, and transport accidents. The neonatal mortality rate was 17 per 1,000 live births. The postneonatal mortality rate for the same period was 28 per 1,000 live births for males and 22 per 1,000 live births for females.

Schoolchildren (5–9 years)

This group makes up 14% of the total population. The leading reasons for seeking medical treatment were pneumonia, injuries, appendicitis, and asthma. The leading causes of reported deaths in 1999 and 2000 were transport accidents, pneumonia, accidental drowning and submersion, and accidental exposure to other unknown factors.

Adolescents (10–14 years and 15–19 years)

This group makes up 25.6% of the total population. The fertility rate for adolescents in 1999 was 152 births per 1,000 teenage girls of childbearing age (15–19 years of age). Thus, 3 out of every 10 births involved teenage mothers in this age group. Adolescents in this age group also accounted for 26.5% of all abortions. Data on the 10–14 age group are extremely limited. The leading reported causes of deaths among adolescents in 1998 were, in order, natural disasters, pesticide poisoning, and accidents. Suicide is also among the leading causes of adolescent deaths. Adolescents between 10 and 14 years of age accounted for 5% of all cases of acute pesticide poisoning, with another 30% of the cases involving youths between 15 and 19 years of age, who, in Nicaragua, are considered part of the EAP. According to the Ministry of Health health information system (SIMINSA), 33% of reported hospitalizations of female patients in 1999 were for complications of pregnancy, childbirth, and the puerperium, and 11% were for diseases of the musculoskeletal system. The leading causes of hospitalization for males were injuries and poisoning.

Adults (20–59 years)

Family planning service coverage levels nationwide improved from 18.1% in 1998 to 21% in 1999. According to ENDESA-98, the rate of contraceptive use in Nicaragua is comparatively high: 68% of all women of childbearing age reported having used some form of birth control at some point in their lives, 59% used modern birth control methods, and 9% used traditional methods at some time. The modern method of birth control used most extensively by women of all ages at some time was the contraceptive pill (43%), followed by the intrauterine device (21%), female sterilization (19%), injections and condoms (14%), and the rhythm method (6%). In terms of maternal mortality, the nationwide Maternal Mortality Surveillance System showed fluctuations, with rates of 106 per 100,000 live births in 1995, 128 per 100,000 in 1996, 139 per 100,000 in 1997, 102 per 100,000 in 1998, and 133 per 100,000 in 1999. The Comprehensive Local Health System (SILAIS) divisions in Matagalpa, Jinotega, Río San Juan, Chontales, and the North and South Atlantic regions reported the largest number of maternal deaths nationwide.

In 1999, 44% of reported maternal deaths involved women at both ends of the age spectrum: 24% involved women under 20 years of age, and 20% involved women over 35. Maternal deaths stemmed from obstetrical problems, with the leading causes being hemorrhages caused by placenta retention, pregnancy-induced hypertension, sepsis, rupture of the uterus, and abortions.

The Elderly (60 years and older)

The number of elderly was estimated at 231,566, making up 4.7% of the population for the year 2000, with males accounting for 45.4% of this figure. The share of women was 59.1% in urban areas and 48% in rural areas. The age group 75 and over made up 1% of the total population. Women between 60 and 74 years of age made up 77.1% of this group, with women aged 75 and over accounting for 22%.

Family Health

The Ministry of the Family, established in 1998, is mandated by law to protect elderly adults over the age of 60 with or without social security coverage under policies specially designed to address the specific social problems affecting this population group and improve their quality of life.

Workers' Health

The three institutions dealing with workers' health issues are the Ministry of Labor, the Ministry of Health, and the Nicaraguan Social Security Institute (INSS). Officially, the Ministry of Labor is responsible for ensuring workers' rights to working conditions

that protect their physical well-being, health, and safety and reduce their occupational risks. However, its coverage is limited to a mere 80,092 workers out of an economically active population of nearly 2 million. Among covered workers, the general accident rate for 1999 was 83 per 1,000 workers, with a mortality rate of 6.4 per 1,000. The main types of risks associated with occupational accidents are mechanical and chemical in origin. Occupational health care services are furnished mainly in Ministry of Health facilities. Only 18% of the EAP is covered by social security. An estimated 24,000 children between 10 and 14 years of age are working at jobs in the informal sector, with another 6,000 employed in the formal sector.

Between 90% and 100% of farmers and farmhands are exposed to some type of pesticide every year. Official statistics for 1999 put the work-related pesticide poisoning rate at 5 cases per 10,000 population. However, studies conducted in various parts of the country put the true annual incidence rate for pesticide poisoning at from 3% to 9% of exposed farm workers.

The Disabled

The National Rehabilitation Program operated by the Ministry of Health estimated the percentage of the population with some type of disability at 12.1% (615,195 individuals) for the year 2000. The leading causes of disabilities were problems at birth (10%), disease (29%), war (2.6%), and accidents (11.85%). The most common types of reported disabilities were hearing impairments (9.23%), speech impairments (3.4%), hearing and speech impairments (0.5%), visual impairments (63.9%), locomotor disabilities (5%), mental disabilities (4.4%), seizures (4.21%), and others (6.2%).

The number of victims of antipersonnel mines has tended to decline over the last few years. In absolute terms, there were 23 reported victims in 1997, 33 victims in 1998, 24 in 1999, and 16 in 2000.

Indigenous Groups

The indigenous population made up approximately 5% of Nicaragua's total population in the 1996–2000 period. Most indigenous groups live on the Caribbean coast. The main problems faced by indigenous communities are poverty related, and their health situation is impaired by the inaccessibility of health care services, shortages of drugs, little or no access to a safe water supply, and illiteracy, among other factors.

By Type of Health Problem

Natural Disasters

Nicaragua is extremely vulnerable to natural disasters. During the last reporting period, the country was hit by a series of natural disasters such as hurricanes, volcanic eruptions, earthquakes, tidal waves, droughts, torrential rains, floods, and landslides. The worst disaster during this period was Hurricane Mitch, which struck the country in October of 1998. It caused 2,823 fatalities, with another 885 persons reported missing, and damaged 49 municipalities. The most recent disaster was the earthquake that struck the city of Masaya in July of 2000, with a death toll of nine. On both occasions, the disaster victims were treated at various health care facilities (hospitals, health centers, health posts, and disaster shelters) and rescue and recovery operations were mounted in conjunction with the Red Cross, the Civil Defense Agency, and the Fire Fighting Service.

The Ministry of Health has undertaken a series of actions designed to protect the public health in the event of a disaster, including programs for monitoring the quantity and quality of drinking water, food monitoring and safety programs, sanitation programs, wastewater and solid waste management programs, vector control programs, and psychosocial services. Aside from injuries, the main health problem caused by natural disasters is a surge in certain pre-existing diseases such as acute respiratory infections, acute diarrheal diseases, and vector-borne diseases such as *Plasmodium vivax* malaria and, occasionally, *P. falciparum* malaria. Flooding has triggered outbreaks of leptospirosis, skin diseases, and eye diseases.

Vector-borne Diseases

Patterns in the incidence of malaria over the past 20 years have been erratic. The largest number of cases (76,269) was reported in 1996, with an annual parasite index of 18.4 per 1,000 population, a positive slide rate of 16.31%, and an annual blood test rate of 11.3%. The downward trend in malaria cases over the 1997–2000 period was interrupted by a small jump in malaria cases in 1999 in the wake of Hurricane Mitch, particularly in cases of *P. vivax* malaria. The hardest-hit age group was 15–49 years, followed by those 5–14 years old, heavily impacting on rates of absenteeism from work and from school, respectively.

The departments with annual parasite indices for the year 2000 above the national average of 4.7 per 1,000 population were the Autonomous North Atlantic Region (14.8 per 1,000), Nueva Segovia (12.2), Chinandega (11.5), and Río San Juan (9.7). The number of deaths dropped from 17 (0.4 per 100,000 population) to 4 (0.08 per 100,000) over the period from 1997 to 2000. Of a total of 43 reported fatalities during the 1997–2000 period, 21 were in the Autonomous North Atlantic Region (49%), followed by Matagalpa and Chontales departments, with 6 fatalities each (14%). These three departments have the highest prevalence of *P. falciparum* malaria. The number of cases of *P. falciparum* malaria nationwide plummeted 67.2% over the period between 1997 and 2000, with the North and South Atlantic regions accounting for the largest share.

There was no clearly defined trend in the incidence of dengue over the 1997–2000 period. The nationwide incidence rate for 1997 was 7.3 per 100,000 population. The most heavily affected departments were Managua, Estelí, and León. The risk of con-

tracting the disease quadrupled in 1998, triggering a full-fledged epidemic, with an incidence rate of 28.1 per 100,000 population. Circulation of serotypes 3 and 2, which was confirmed, heightened the risk of contracting dengue hemorrhagic fever. The number of reported cases jumped from 3,215 in 1997 to 13,592 in 1998, while the number of laboratory-confirmed cases of dengue hemorrhagic fever shot up from 73 to 432. In contrast, the number of registered cases in 1999 (11,812) was down from the previous year. The most heavily hit departments were Managua, Matagalpa, León, and Rivas. The opposite occurred in the case of hemorrhagic dengue, with the number of cases shooting up by 69%. One possible explanation is the underregistration of cases of the classical form, or their erroneous reporting as dengue hemorrhagic fever. The number of laboratory-confirmed cases of dengue in the year 2000 was down by 42% from the previous year. The most seriously affected departments were Managua, Matagalpa, the Autonomous North Atlantic Region, the Autonomous South Atlantic Region, León, and Rivas. The reported mortality rate for the years 1998 and 1999 was 0.24 per 100,000 population, dropping to 0.08 per 100,000 in 2000. The total number of suspected cases in 2000 was 7,444, down 37% from the previous year.

The cumulative incidence rate for Chagas' disease was 2.7 per 100,000 population for the 1992–2000 period, with three departments (Madriz, Nueva Segovia, and Matagalpa) reporting 74% of all the cases. A total of 135 cases of Chagas' disease were reported during that period.

A nationwide entomological survey was conducted over the 1998–1999 period to establish the prevalence of triatomine infestations in 14 departments (125 municipalities, 31,466 dwelling units). The major vector species identified by the survey were *Rhodnius prolixus*, *Triatoma dimidiata*, *Triatoma nitida*, *Triatoma rickmani*, and *Panstrongylus geniculatus*. Madriz, Nueva Segovia, Masaya, Chontales, and Jinotega had the highest infestation rates for *Rhodnius prolixus*. The departments were infested with *Triatoma dimidiata* with rates of 1%–3% in Chontales, Chinandega, León, Managua, and Rivas; 3%–6% in Nueva Segovia, Matagalpa, Jinotega, and Granada; and 6%–10% in Boaco, Estelí, Masaya, and Madriz.

Chagas' disease is not a notifiable disease. Most cases of the disease are detected in its acute phase by the thick drop examination technique that health care units in endemic areas use to diagnose malaria or through quality control procedures for these units conducted at regional laboratories. The screening of 74% of blood samples collected from potential blood donors by the Ministry of Health in the year 2000 and of all blood donations to the Nicaraguan Red Cross provided valuable data for establishing the prevalence of this disease. The testing of a total of 37,515 blood samples collected from donors yielded 122 seropositive cases of Chagas' disease (0.33%). The few studies conducted to date found active transmission of *Trypanosoma cruzi*. However, available data do not allow for an accurate assessment of the actual magnitude and geographical distribution of this health problem.

A seroprevalence study of 11,375 blood samples collected from schoolchildren between 7 and 14 years of age in 14 departments that was conducted by the Ministry of Health in conjunction with PAHO in the year 2000 yielded 387 cases of Chagas' disease (3.4%). The most seriously affected departments were Matagalpa (9.4%), Managua (8.8%), Chontales (7.4%), Chinandega (3.5%), and León (2.1%).

Diseases Preventable by Immunization

Nicaragua has successfully controlled the spread of diseases preventable through immunization by achieving and maintaining high vaccination coverage levels over the past few years (Figure 4) and introducing new vaccines (the MMR vaccine in 1998 and the pentavalent vaccine in 1999). Vaccination coverage for different biologicals ranged from 90% to 100% in 1999 and 2000, with somewhat lower coverage levels for residents of more remote areas of the country. The high vaccination coverage levels in a number of municipalities, some 40% of which have coverage rates of over 100% for one or more biologicals, are a source of contention. Accordingly, immunization efforts over the next few years will focus on more remote areas of the country.

Nicaragua has had no cases of poliomyelitis since 1982. Since 1990, all cases of acute flaccid paralysis have been reviewed by the Committee on Immunization Practices. Current surveillance indicators are at acceptable levels. As with polio, diphtheria is no longer a public health problem in Nicaragua. The last reported case dates back to 1987.

The last outbreak of measles in 1990 persisted until 1993. Only a single case was diagnosed in 1994, and no new cases have been reported as of the year 2000. The success of efforts to control measles lies, among other things, in the timely implementation of appropriate eradication strategies, along with follow-up activities such as the vaccination campaign of 1999 for high-risk adults, in which 177,294 persons were immunized against measles. Epidemiological surveillance indicators for measles have been holding at acceptable levels.

Pertussis is the only EPI disease that has not been successfully brought under control. There were a total of 132 clinically diagnosed cases of this disease over the 1997–2000 period: 84 in 1997, 10 in 1998, 27 in 1999, and 11 in 2000. The availability of laboratory tests to confirm clinical diagnoses is crucial to surveillance efforts with this disease, so that case detection is not based exclusively on clinical criteria.

The last registered case of neonatal tetanus dates back to 1997. Vaccination coverage for women of childbearing age is over 95% in most municipalities around the country. There were 37 cases of nonneonatal tetanus reported over the period from 1997 to 2000, including 5 cases in 1999 and 9 cases in 2000, the majority of which involved persons over 15 years of age whose occupations put them at a higher risk of exposure to the spores of this bacteria.

As for meningitis and pneumonia caused by *Haemophilus influenzae* type b, less than a year after incorporating the pentavalent vaccine into the country's immunization program, vaccination coverage among children under 1 year of age was already better than 90%, which should significantly reduce the prevalence of invasive infections caused by this agent. According to data furnished by the Ministry of Health, 56% of all cases of bacterial meningitis are caused by *H. influenzae* type b, which means that nearly 200 cases a year could be prevented through immunization.

Intestinal Infectious Diseases

The number of reported cases of cholera continued to inch downward in 1996 and 1997, to 2,813 and 1,336 cases, respectively. New outbreaks were reported in Managua, Nueva Segovia, Estelí, Carazo, Matagalpa, Granada, Masaya, and Chinandega in 1998 in the wake of Hurricane Mitch. A total of 1,451 cases of the disease were reported (28.2 per 100,000 population), resulting in 36 deaths (0.7 per 100,000 population), for a fatality rate of 2.4%. Records for 1999 show 548 cases of the disease and 9 deaths, with a case fatality rate of 1.6%. Only 12 cases and 1 death were reported in 2000.

Acute diarrheal diseases are one of the main types of notifiable diseases. The age group hit hardest by these diseases is that of children under 5 years of age, who account for 73% of all cases of these diseases. The 483.5 cases per 100,000 population reported in 1997 were down to 415.1 cases per 100,000 by 1998, with mortality rates of 7.48 per 100,000 population and 7.13 per 100,000, respectively. Most cases were in the Autonomous South Atlantic Region and Matagalpa, Granada, Nueva Segovia, and Río San Juan departments. The mortality rate for 1999 was down 52% from the previous year. There were 188,713 reported cases of acute diarrheal diseases in 2000, or 372.09 cases per 100,000 population (16% less than in 1999), with a mortality rate of 3.02 per 100,000 population. The departments with the highest incidence of these diseases were the Autonomous North Atlantic Region, the Autonomous South Atlantic Region, Nueva Segovia, Madriz, Matagalpa, Río San Juan, Jinotega, and Boaco.

Chronic Communicable Diseases

There has been a downward trend in all forms of tuberculosis over the past ten years, with a reduction of close to 40% in the incidence of this disease. It is an endemic disease, with cases reported in all parts of the country. There are Comprehensive Local Health System (SILAIS) divisions with low incidence rates (13–30 per 100,000 population) in Estelí, Granada, Carazo, Rivas, Boaco, and the Autonomous South Atlantic Region; with medium incidence rates (31–45 per 100,000) in Madriz, Nueva Segovia, Masaya, León, and Río San Juan; and with high incidence rates (46–111 per 100,000) in Managua, Matagalpa, Jinotega, the Autonomous North Atlantic Region, Chontales, and Chinandega.

The number of reported cases of all forms of tuberculosis in the year 2000 was down 6.3% from the previous year to 2,396, with 1,467 positive by microscopic examination. The hardest-hit age group were those 15–24 years old, accounting for 26% of all cases of infection with tuberculosis bacilli, followed by those 25–34, with a 23.5% share. The incidence rate among males, 31.5 per 100,000 population, was higher than among females. Age-specific incidence rates were also higher for males than for females. Those 65 and over showed the highest incidence rates, 131.1 per 100,000 population for males and 71 per 100,000 for females.

Acute Respiratory Infections

Acute respiratory infections are the most common notifiable disease. The incidence rate for the 1997–2000 period was 2,658.4 per 10,000 population. The hardest-hit age group was that of children under 5 years of age, who accounted for 57% of all treated cases of the disease. The departments most heavily affected were Madriz, Nueva Segovia, the Autonomous South Atlantic Region, Matagalpa, León, Chinandega, Granada, Río San Juan, and Rivas. The mortality rate was 6.47 per 100,000 population, with the hardest-hit group that of children under 1 year of age, who accounted for 55% of all fatalities. The most seriously affected departments, in this case, were Matagalpa (20.9% of the total), Managua (13.5%), Chinandega (12.3%), Jinotega and Nueva Segovia (11.6%), and Chontales (9%). Mortality rates were above the national average for the SILAIS divisions in Matagalpa, Jinotega, Granada, Nueva Segovia, Carazo, the Autonomous North Atlantic Region, Río San Juan, the Autonomous South Atlantic Region, and Chinandega.

Zoonoses

The number of urban rabies cases averaged one per year over the period from 1990 to 1996. Two cases of human rabies were reported in the 1997–1999 period, in the departments of Masaya and Estelí, both caused by wounds inflicted by wild animals. No cases were reported in 2000. Vaccination coverage for canine rabies improved to over 85% countrywide, topping 92% in high-risk departments.

A leptospirosis epidemic was reported in mid-October of 1995 in several municipalities in León, Chinandega, and Matagalpa departments. Only seven new cases were reported in 1996, for a nationwide rate of 0.02 per 10,000 population. There was another outbreak of leptospirosis in 1998 in the wake of the flooding caused by Hurricane Mitch, with 705 suspected cases reported between the first week of November and the end of December of that year. Of 576 laboratory-tested samples, 106 (17.5%) came up positive. There were seven deaths (0.15 per 100,000 population), for a case fatality rate of 1.4%. In 1999, there were 603 reports of suspected cases of leptospirosis (12.2 per 100,000 population), 30 laboratory-confirmed cases, and two reported fatalities. Of a total of 246 suspected cases in 2000, 17 were confirmed by laboratory tests. There were no reported fatalities from this disease.

HIV/AIDS

The total cumulative number of cases of infection by HIV/AIDS over the period from 1987 to the year 2000 was 643 (349 HIV-positive individuals and 294 AIDS patients), of whom 164 have died. The hardest-hit age group were those 20–44 years old, who accounted for 81% of all cases. Broken down by gender, 74% of all cases involved males and 26% involved females, for a male-female ratio of 3:1 (Figure 5).

The leading mode of transmission was by sexual contact, which accounted for 88% of all cases (64% by heterosexual contact and 36% by homosexual contact), with 9% attributable to intravenous drug use, 2% to mother-to-child transmission, and 1% to blood transfusions. The nationwide incidence rate of 1.38 per 100,000 population reported in 1997 had climbed to 2.52 per 100,000 in 2000. The departments with the highest notification rates per 100,000 population were Chinandega (22.7), Managua (22.3), Carazo (11.9), Madriz (11.6), León (10.9), Nueva Segovia (10.9), and Granada (10).

Sexually Transmitted Infections

In the 1997–2000 period the total cumulative number of reported cases of congenital syphilis was 52, and for acquired syphilis it was 3,013. The average annual incidence rate for congenital syphilis was 0.098 per 1,000 registered live births, with 856 cases in 1999. The average annual incidence rate for acquired syphilis was 15.5 per 100,000 population, with 22 cases reported in 2000. In addition to syphilis, the other two leading notifiable sexually transmitted infections during the 1997–2000 period were gonorrhea and condylomata acuminata. Their geographical distribution in Managua and Chinandega departments follows the same pattern as that of HIV infection. However, there is a high incidence of sexually transmitted infections in the Autonomous South Atlantic Region and the Autonomous North Atlantic Region, but available data on HIV infection in these same regions suggest a low incidence rate.

Nutritional and Metabolic Diseases

ENDESA-98 found one out of every three children malnourished and 9% of all children severely malnourished. Children under 5 years of age and pregnant women and breast-feeding mothers showed the highest incidence of malnutrition. The percentage of children in rural areas suffering from some degree of malnutrition was 32%, compared with 19% in urban areas. The most heavily impacted departments were Madriz, Nueva Segovia, and Jinotega. The mortality rate for all forms of malnutrition jumped from 8 per 100,000 population in 1991 to 11 per 100,000 in 1998.

Though iodine deficiency is not a public health problem in Nicaragua, thanks to the fortification of salt with iodine, there are high-risk groups in the South Pacific region and, more specifically, in Rivas Department, where the prevalence of goiter in certain communities is over 20%. According to Nutrition Program data, one out of every three children has a vitamin A and iron deficiency, which is especially acute among pre-school-age children. The nationwide prevalence rate for anemia in children between the ages of 12 and 59 months is 28.4%. The average hemoglobin level was 10.6 mg/dL, with no major differences from one area of the country to another. Prevalence rates are slightly higher among males (29.9%) and in rural areas (33.4%).

Diseases of the Circulatory System

Cerebrovascular disease accounted for 31.7% of deaths attributable to this group of diseases in the 1992–1993 period. This figure dropped to 19.3% in 1994–1995, only to go back up to 28.8% for the 1996–1998 period. Hypertension was responsible for 12.6% of deaths attributable to this group of diseases in 1998.

Accidents and Violence

The leading causes of death in the year 2000 were transport accidents (9.5 per 100,000 population), suicides (7.3 per 100,000), and homicides (6.6 per 100,000). Intentional or accidental injuries were responsible for over 20% of deaths from external causes.

According to ENDESA-98, 29% of the married or in-union women surveyed had suffered sexual or physical abuse at some time. Of this figure, 12% had endured some form of spousal abuse, mostly physical abuse. One out of every three women had been the victim of at least one episode of violence at some time in their life and 36% had been beaten while pregnant. Six out of every 10 women had suffered trauma and 1 out of every 5 women had been injured on more than five occasions. In more than half of all violent episodes, the violence perpetrated against the mother was witnessed by her children. There is a high rate of violence against children and youths in general and females in particular. Data furnished by the National Police Force for 1998 and 1999 show 10% of crime victims are under 18 years of age, of whom 42.7% are girls under the age of 14.

There were 2,473 reported cases of attempted suicide by pesticide poisoning over the period between 1997 and 2000, with a case fatality rate of 25.5%. Women accounted for 44% of these cases. The gender-specific case fatality rate was 24% for females and 27% for males. Most cases of pesticide poisoning were suicides in the case of women, industrial accidents in the case of adult males, and household accidents in the case of minors. Of all cases of acute pesticide poisoning, 57% involved adults of working age. The leading causes of pesticide poisoning are work related (accounting for roughly half of all cases) and intentional (attempted suicide, suicide, and homicide).

Of all the reported cases of acute pesticide poisoning nationwide, around 3% of them involved children between 1 and 4 years of age and were due to accidents involving household chemicals, 2% of them involved children between 5 and 9 years of age and were caused by work-related accidents and accidents in the home, and another 2% of them involved the elderly and were attributable to industrial causes and suicide.

Oral Health

A follow-up study of the fluoride content of drinking water conducted by the Ministry of Health in 1997 in 233 communities found concentrations of over 0.7 mg/kg in 11% of the targeted communities. Of the 233 communities covered by the study, 82% had concentrations of under 2.5 mg/kg, and only 12% had water supplies with optimal fluoride levels (0.5–1.0 mg/kg). The total prevalence rate for dental caries in children between 6 and 15 years of age was 85%. Fluorosis is not a public health problem: 3.5% of the school-age population was diagnosed with extremely mild fluorosis, 2.6% with mild fluorosis, and only 0.8% of the children studied had moderate to severe fluorosis. In Managua, 31% of the children studied were diagnosed with extremely mild to mild fluorosis. The study found no cases of severe fluorosis.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The National Health Policy 1997–2002 is an extension of the commitment of social policy to alleviate poverty and to improve service coverage, particularly for the poorest and most vulnerable segments of society. There are five separate health policies in place but, thus far, no evaluation mechanisms for them.

The first policy, aimed at modernizing the health sector, is designed to complete and update the existing legal framework and establish and separate the regulatory, financing, insurance, and service delivery functions and roles of each agency and institution operating in the health sector. The second policy, designed to strengthen the Ministry of Health, seeks to build up its steering functions by revamping its planning and information and organization and management auditing systems and strengthening health standard-setting efforts at the country level. It also seeks to increase the decentralization of the health delivery units. The third policy, aimed at improving hospital care, advocates spending on the reconditioning and maintenance of hospital infrastructure and equipment and the implementation of effective cost-cutting measures for reducing the cost of health care. The fourth policy, for the formulation of new public health strategies, seeks to revamp the health care model based on a comprehensive approach to health care, strengthen health centers and health posts, and establish a basic health services package for the entire population, including health education, clinic-based preventive health services, and control measures for epidemic diseases. The fifth policy, aimed at modernizing the social security system, seeks to strengthen the health insurance system and the prevention of occupational risks.

Health Sector Reform Strategies and Programs

In line with the National Health Policy, the Ministry of Health organized a nationwide consultation meeting in July of 1998 on its program for modernizing the health sector, with the aim of adapting health services to changing social conditions, boosting demand, and resolving operating problems.

The emphasis of the reform process over the period from 1997 to 2000 was three-pronged, namely: (1) institutional, focusing on sector coordination, organization, supervision, and monitoring to ensure effective health care and environmental protection; (2) financial, including the marshalling and optimal use of limited resources to gradually expand coverage to the poorest segments of the population and improve service; and (3) sectoral, with efforts to gradually phase in basic principles of universal free health care, solidarity, comprehensive care, social participation, efficiency, quality, equity, sustainability, and public accountability insofar as permitted by the circumstances. A number of initiatives designed to strengthen the steering functions of the Health Ministry were mounted over the course of this period as part of the reform process, based on technical instruments such as the health system profile, health analysis, and the Ministry of Health's investment plan for 2000–2002.

One of the challenges facing the Nicaraguan government is to ensure the sustainability of health spending, given its relative importance as a percentage of GDP. The 1998 budget assigned to the Ministry of Health was equivalent to 3.2% of GDP, or 9.5% of the general budget for that year. Health financing is drawn from the public and private sectors and external cooperation. Together, the first two sources supply 82% of all health financing.

Required structural adjustment measures for the granting of debt forgiveness included the creation of a Supplementary Social Fund supported by grants and soft loans. To sustain this Fund, the resources freed up by the Heavily Indebted Poor Countries Initiative were to be earmarked for social spending. This offers an opportunity to reduce the country's foreign debt by over 90% in the next few years, which, in turn, would bring annual debt service payments down to more sustainable levels.

The main requirement for accessing the benefits afforded by this initiative was the formulation of a poverty reduction strategy by the Technical Secretariat attached to the Office of the President, under which corresponding social programs were to be funded with resources freed up by the reduction in foreign debt service payments. Proposed targets for the year 2005 under this strategy are a 25% reduction in extreme poverty, a boost in the net school enrollment rate to 85%, a reduction in the illiteracy rate to 17%, a reduction in the maternal mortality rate to 129 per 100,000 live births, a reduction in the infant mortality rate to 32 per 1,000 live births, a reduction in the mortality rate for children under 5 years of age to 37 per 1,000 live births, a reduction in unmet demand for family planning services to 25% for women between 15 and 19 years of age and to 18% for women between the ages of 20 and 24, a reduction in the rate of chronic malnutrition among children under 5 years of age to 13%, an expansion in nationwide water service coverage to 75%, an expansion in access to a safe water supply and sanitation services in sparsely populated rural areas to 54%, an expansion in access to sanita-

tion services to 50%, an expansion in access to sewerage service in urban areas to 47%, and the implementation of a sustainable development strategy for the year 2005.

The Health System

Institutional Organization

The health sector encompasses both the public and private sectors. The public health sector consists of the Ministry of Health, as the steering agency, whose activities include formulating proposals for health plans and programs coordinating efforts by other health-related agencies and institutions and coordinating and overseeing the implementation of government health policy in the areas of health promotion, protection, restoration, and rehabilitation; the Nicaraguan Social Security Institute; and the health services operated by the Ministry of Government and by the Ministry of Defense. The private sector includes hospitals, clinics run by health insurance management companies, and nongovernmental organizations.

Law 337, which was passed by the Nicaraguan Congress a few months after the country was hit by Hurricane Mitch, established a National Disaster Prevention, Mitigation, and Response System. This was the first piece of legislation to spell out the duties and functions of municipal, departmental, and national agencies and institutions. The coordinator for the Ministry of Health's Emergency and Disaster Program presides over the Health Commission and coordinates health services provided by public and private institutions.

Education and training activities are governed by the universities, while the Ministry of Labor governs matters related to occupational health. Efforts to shore up the management of the Ministry of Health included the merging of its General External Cooperation and Investment Projects Division with its Planning Division to form a new General Planning and Development Division. This new structure incorporates the technical unit in charge of the Integrated Information System (SIMINSA), which has been institutionalized as the Division of Information Systems.

The divisions of the Comprehensive Local Health System (SILAIS) represent the Ministry of Health in technical and administrative matters at the departmental level. By law, the SILAIS divisions and the municipalities must tailor their policies, regulations, organizational structures, and resource management procedures to local health conditions. However, due to weaknesses in current legislation and regulations, there is little if any coordination at this level, resulting in overlapping efforts and duplications of investments in identical initiatives without assessing local health outcomes.

Developments in Health Legislation

The National Health Policy 1997–2002 calls for the revamping and updating of the existing legal framework through the passage of a number of laws and regulations, including the General Health Act, the Unified Health System Act, the Social Security Act, the Drug and Pharmacy Act, food monitoring regulations, regulations for the control of pesticides and toxic and hazardous substances, regulations governing ionizing radiation, regulations for professional health practice, and regulations under the Health Administrators Law. While some progress has been made in the enactment of certain laws and regulations, other legislation whose amendment, drafting, or passage is crucial to the smooth operation of the health sector and to efforts to strengthen the role of the Ministry of Health as the steering agency for the health sector is still pending, such as the General Health Act, regulations for professional health practice, and the Social Security Act.

Segmentation of the Patient Population

At the primary care level for the 1997–2000 period, coverage was provided by the different health delivery networks as follows: public networks, 60%; INSS networks, 10%; private networks, 20%; and other networks, 10%.

Decentralization of Health Services

Administrative responsibilities were delegated to the SILAIS divisions as part of the decentralization efforts mounted by the Ministry of Health over the 1998–2000 period. However, decision-making powers over the major system resources—recruitment of personnel and procurement of drugs and other medical supplies—were reserved for the Health Ministry and the Finance Ministry.

Private Participation in the Health System

Health resources are drawn from the public sector (41.5%), the private sector (44.8%), and external cooperation (13.7%). The private sector provides curative care to the insured population (15% of the EAP) through health insurance management companies. As part of the private sector, nongovernmental organizations provide miscellaneous services such as emergency care, sexual and reproductive health care, and community organization services.

Health Insurance

The current health insurance model provides health care services through 47 health insurance management companies that cover 15% of the economically active population.

Organization of Regulatory Actions

Health Care Delivery

The Ministry of Health is the leading health service provider at both the primary and the secondary care levels. At the primary care level, it operates health centers (some with beds and some not) and health posts providing health promotion, disease and risk prevention and general curative services, preventive and

restorative dental care, certain types of specialized medical care, and community-based health rehabilitation services. The secondary care level offers general and specialized medical care and outpatient and inpatient care in basic areas, with national centers for radiation therapy, ophthalmology, cardiology, dermatology, and psychiatry, and a National Diagnosis and Referral Center (CNDR) with a large response capacity for the investigation and diagnosis of diseases subject to surveillance. In carrying out its responsibilities, the CNDR coordinates its operations with other government ministries and agencies such as the National Police Service's Central Crime Laboratory, the Supreme Court, and the Institute of Forensic Medicine.

There are other government health services, such as those operated by the Army and by the Ministry of Government, which primarily provide curative health care to members, their dependents, and insured workers, as well as private health services. Nongovernmental organizations are part of the not-for-profit private sector. The private health sector consists of eight hospitals, private medical and dental practices and clinics providing outpatient care, clinical laboratories, and diagnostic imaging centers with services rendered on a fee-paying basis. This network also includes the health insurance management companies (EMPs), with close to 50 private health care units employing 232 general practitioners, 655 specialists, 127 nurses, and 259 nursing assistants. Insurance management companies provide insurance plan members with prescribed curative services outsourced by the INSS. Insurance plan members select their insurance provider on a year-to-year basis. Insurance management companies have begun offering prepaid plans to expand their service offerings. They also provide care on a fee-paying basis to anyone with the ability to pay. The service menu for insurance plan members is curative in nature and does not include high-priced care such as cancer treatment and care for chronic diseases, nor does it include health promotion and preventive health services.

The Ministry of Health began putting into place its Comprehensive Adolescent Health Care Program in the country's 17 SILAIS divisions in 1996, with the focus on health care, participation and advocacy for adolescents and youth, and a multisectoral approach. One of the largest hurdles involved the organization of program-related services and the recording of corresponding data. There are health records for adolescents aged 10–14 and 15–19 going back to 1999.

Certification and Professional Health Practice

In order to practice, health professionals must register their university degrees with the Regulations and Accreditation Office attached to the Ministry of Health. An estimated 90% of the nation's physicians are registered with the Ministry of Health (5,656 general practitioners). The law establishes the following requirements for practicing health professionals: a university education, the performance of community service, and the registration of corresponding degrees. The Regulations Office also investigates and responds to complaints with respect to the handling or treatment of patients in public health care facilities and conducts audits to control the quality of health care.

Basic Health Markets

According to pharmaceutical market data, a reported US$ 55 million was spent on drugs in 1998: US$ 43 million by the private sector and US$ 12 million by the public sector. Efforts to develop Nicaragua's pharmaceutical industry are based on the country's National Medicinal Drug Policy, whose strategies for the 1997–2001 period focus on institution-building, promoting access to essential drugs, quality assurance, and rational drug use.

The new Drug and Pharmacy Law and its implementing regulations, published in 1999, represent an important breakthrough in regulating the health industry. Moreover, Nicaragua is a member of the working group supporting the harmonization of Central American regulations governing the pharmaceutical industry and overseeing standard health registration procedures, interchangeable generic drug policy procedures, procedures ensuring the financial independence of regulatory agencies, customs-union procedures, standard vaccine registration procedures, and compliance with internationally recognized standards of quality at the country level.

The essential drugs list for 2001 consists of 345 active ingredients, with their generic names, and 509 drugs in their various pharmaceutical forms. The list is used as a yardstick for the procurement, distribution, and use of drugs in the public sector and the for-profit and not-for-profit private sector. Derived from that essential drugs list, the Ministry of Health's core list of drugs prescribes the pharmaceutical products to be supplied to health care units operated by the nation's public sector, based on the diseases with the highest incidence rates and on the available funding.

Environmental Quality

The Office of Environmental Health monitors water quality through sampling procedures conducted at specific points of the water supply network using the services of the SILAIS divisions, which forward all collected samples to the National Diagnosis and Referral Center attached to the Ministry of Health. The Ministry of Environment and Natural Resources is also involved in regulatory activities, exercising its powers under Law 290. However, the regulatory framework for environmental protection is lacking, and the country has no systems in place for the assessment of environmental risks. Moreover, current practices in regard to the use of land and natural resources are not conservation oriented. In conjunction with the Ministry of Environment and Natural Resources, the Ministry of Agriculture and Forestry is putting into place programs designed to protect natural ecosystems, with the emphasis on soil and water conservation.

Pollution from motor vehicle emissions is a major environmental problem in urban areas. In 1998 the National Engineering University monitored ambient air quality at seven points in Managua, reporting high concentrations of air pollutants. Noise

and visual pollution and unregulated urban growth are eroding the quality of city life, particularly in departmental capitals. In rural areas, the burning of large tracts of land for farming purposes or as a result of forest fires is filling the atmosphere with pollutants such as carbon monoxide, suspended particulate matter, and nitrogen oxides. In general, the quantity and quality of natural resources in rural areas of the country are being rapidly eroded by the random deforestation of 100,000 hectares of land a year, the contamination of soil and water resources by pesticides and industrial chemicals, and the creation of new farming settlements that reduce the size of protected forest areas.

Food Quality

The quality of food products is controlled through health inspection and monitoring procedures and surveillance for foodborne disease. Current Ministry of Health regulations forming the basis for corresponding monitoring procedures date back to 1988. Health technicians in the SILAIS divisions use hazard analysis and critical control point methods for monitoring food products throughout the food supply chain, from growers and manufacturers to consumers.

The Ministry of Labor is in charge of formulating and coordinating occupational safety and health regulations with relevant agencies and overseeing their enforcement in the workplace.

Evaluation of Health Technology

Equipment is in short supply, and the use of existing equipment is hampered by shortages of necessary funding for its effective operation and maintenance. In 1999, 73% of all available equipment was used for diagnostic and treatment purposes and in direct support of health care services. Hospitals had 82% of all reported equipment, but only 73% of that hospital equipment was in proper working order. The remaining 18% of the equipment was mostly in health centers and health posts, but only 75% of it was in working condition.

Organization of Public Health Care Services

Health Promotion

Nicaragua's Healthy Municipalities Initiative, which was begun in 1998 as part of the State reform process fostering decentralization and local government development, promotes multisectoral and community participation at the local level in the solution of major health problems. Municipalities in León, La Libertad, Corinto, Managua, San Marcos, San Juan del Sur, Cárdenas, Boaco, Santa Lucía, and Camoapa have pledged to support and implement this initiative.

Disease Prevention and Control Programs

The focus over the 1997–2000 period was on programs on the prevention of HIV/AIDS and other sexually transmitted infections as well as on vector-borne diseases, chronic illnesses (hypertension, diabetes), immunization, maternal and child health, and adolescent health. These programs are conducted, for the most part, by Ministry of Health personnel, but also by community-based and nongovernmental organizations. The programs were mounted in all primary health care units as well as in selected facilities at the secondary care level. Efforts to recruit personnel and purchase needed materials and inputs were hampered by budget constraints. The women's health program included a cervical and breast cancer treatment and surveillance component. Early detection was emphasized in all women's programs, as part of family planning services, prenatal check-ups, postpartum care, etc.

The incidence rate for diseases preventable by immunization has fallen over the past 10 years, thanks to the Expanded Program on Immunization (EPI). Oral polio vaccine (OPV) coverage in the year 2000 among children under 1 year of age was 93.5%. Coverage rates for the vaccines for diphtheria, pertussis, and tetanus (DPT/pentavalent), the measles vaccine, and the BCG vaccine were 92.8%, 104.1%, and 103.9%, respectively. The rates of over 100% for the measles vaccine and the BCG vaccine are indicative of the underreporting of population statistics (Figure 4).

Coverage levels for prenatal care have steadily improved over the past few years (62% of pregnant women were getting four or more check-ups). However, 38% of pregnant women had only one to three check-ups. The rate for deliveries in medical facilities was 45%.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

There are several sources of information for the administration of health facilities: (1) the national register maintained by the National Vital Statistics System (SINEVI), in which the recording of official morbidity (mainly hospital-supplied data) and mortality statistics is delayed until 12 months after the end of the year in question, releasing preliminary data in the interim; (2) national and local epidemiological surveillance systems covering 25 specific health problems subject to immediate notification requirements, such as outbreaks of disease and disasters, which provide rapid, timely, reliable data, and with weekly reporting on 21 health events broken down by age group and municipality; and (3) various health care programs operating specific surveillance systems for diseases preventable by immunization, pesticides, maternal and child health, etc. Both SINEVI and epidemiological surveillance system data are used for strategic planning and health service management purposes at the local and nationwide levels.

Potable Water and Sewerage Services

The country has sufficient surface water resources to meet the needs of its population. However, there are still certain population groups without access to a safe water supply, particularly in rural areas. While coverage levels have improved slightly over the

past few years (from 62% in 1993 to 64% in 1998), there are large disparities in service coverage. Thus, the urban coverage rate rose from 87.7% in 1993 to 89.4% in 1998, while the rural coverage rate climbed from 26.6% in 1993 to 33.7% in 1998. As of 1999, 2,290,150 inhabitants were serviced by the National Water Supply and Sewerage Company (ENACAL) through a total of 413,265 house connections. Over 2.5 million inhabitants (40% of the total population) without access to public water service got their water supplies from other sources such as artesian and excavated wells and surface water sources. In certain rural areas of the country, only 8.9% of the local population had access to a safe water supply. Even those with access to water service were beleaguered by sporadic service in 14% of the water supply systems. The water quality monitoring system for public water supplies operated by ENACAL and the Ministry of Health is limited to regular microbiological analyses and critical point analyses for the establishment of residual chorine levels. Of the samples collected in 1999, 4% contained over 50 fecal coliform bacteria per 100 mL.

The percentage of the population without access to adequate excreta disposal service dropped from 28.8% to 21.1% between 1993 and 1998, with large disparities between urban and rural areas. By 1998, only 4.7% of the urban population was still without service, compared with 31.7% of the rural population. As of 1999, a total of 878,829 persons were serviced by ENACAL through 155,349 house connections. Over 4 million persons not connected to a public sanitary sewer system used other disposal methods such as latrines, septic tanks, or open air disposal. In only 56% of the cases were these alternative methods considered adequate. Only 34% of collected wastewater received any type of treatment. The ongoing practice of discharging untreated domestic and industrial wastewater into Lake Managua is the source of one of Managua's most serious health and environmental problems.

As part of the modernization process in the water supply and sanitation sector, the country separated the operational and business functions carried out by ENACAL from the policy-making, regulatory, and inspection functions performed by the Nicaraguan Water Supply and Sewerage Authority (INAA).

Solid Waste Management Services

The urban population generated an estimated 1,396 metric tons of solid waste in 1999, 907 tons of which were not subject to proper disposal methods. Most of these wastes are produced by residents of the country's capital city and are creating a serious health problem. Only 35% of the country's 151 municipalities have regular refuse collection service. Only the capital and another five municipalities have any type of solid waste management and final disposal system. In the rest of the country, garbage is disposed of in open dumps on the outskirts of cities and along secondary roads. There are no systems for treatment, sorting, or recycling. Hospital wastes pose serious problems, and the country's incineration and management capacity for these types of wastes is extremely limited.

Pollution Prevention and Control

Air pollution is becoming an increasingly serious problem for Nicaragua. Required information for making regular evaluations and for assessing trends is extremely limited, though the country is setting up an air quality monitoring system in the capital. There are still no surveys of sources of air pollutants or national air quality standards in place.

A great deal of progress has been made in the area of environmental protection legislation, with the passage of the General Environment and Natural Resources Act, environmental impact assessment regulations, the Law Governing Pesticides and Toxic and Other Hazardous Substances, regulations governing effluents, and the act creating the Environmental Protection Agency.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

The primary health care network offers virtually all types of health promotion and risk and disease prevention services as well as general curative care and preventive and restorative dental care. It also provides community-based rehabilitation services. The hospital network provides general and specialized medical care, outpatient and inpatient care, and emergency services.

Auxiliary Diagnostic Services and Blood Banks

All departmental capitals have basic auxiliary diagnostic services. The hospital network offers auxiliary diagnostic services, and the nine national referral hospitals offer specialized diagnostic services such as ultrasound, pathology, microbiology, and radiation therapy services. The national blood bank program for 1997–2000 was based at four blood banks in four different departments, with blood drives in seven departments. A total of 34,233 units of blood were collected and processed in the year 2000, supplying blood derivatives to hospitals around the country.

Specialized Services

The hospital network offers specialized care in the fields of radiation therapy, ophthalmology, cardiology, dermatology, neurology, psychiatry, and maxillofacial surgery. National referral centers offer radiation therapy, ophthalmology, and cardiology services. The physical infrastructure administered by the Ministry of Health consists of 996 health care facilities, 48.3% of which are concentrated in the Pacific coast area. Managua has 11 hospitals, or more than a third of all hospital facilities. The INSS has no health delivery infrastructure of its own, outsourcing health care services to public and private service providers. The Ministry of Government and the Ministry of Defense have first-level or acute care hospital facilities with limited coverage.

Health Supplies

Drugs

The pharmaceuticals market is feeling the effects of the rapid growth of the pharmaceutical industry. According to the Drug Regulations Office attached to the Ministry of Health, as of the year 2000, there were 12,000 registered products, 255 drug importers/distributors, 12 domestically owned pharmaceutical laboratories whose output covered an estimated 20% of nationwide needs, 983 private pharmacies allowed to operate despite failing to comply with recognized technical criteria for the organization of basic pharmaceutical services, and 172 publicly operated pharmacies. The National Quality Control Laboratory attached to the Ministry of Health monitors the quality of domestic and imported drugs. Only approximately 45.3% of the population has access to medicinal drugs. Despite the priority placed by the Ministry of Health on supplying essential drugs to children under 5 years of age, pregnant women, and chronically ill patients, such drugs are virtually never available at its own health care facilities. A 1999 World Bank study put drug availability at between 60% and 70%. Only 6% of the population has social security coverage, which provides a limited basket of drugs, forcing a large percentage of the population to turn to the private sector, where drugs are expensive.

Immunobiologicals and Reagents

The country officially established standard vaccine registration procedures, monitoring procedures for lot release processes, and corresponding regulations in the year 2000.

The basic list of consumables includes 417 medical supply items, broken down into seven medical specialties. The basic list of clinical and pathology laboratory supplies includes consumables (subtotal of 103 codes) and reagents (subtotal of 209 codes), broken down into 15 medical specialties, for a total of 312 medical supply items classified in 10 medical specialties and by level of care.

Equipment

As of the year 2000, hospitals had 7,705 or 82% of all 9,386 reported items of equipment. Of this equipment, 73% operated regularly, 9% operated sporadically, and 18% was inoperable. Health centers and health posts reported 1,681 items of equipment, accounting for 18% of the total.

Of all the available equipment, 73% was used for diagnostic and treatment purposes and in direct support of medical care. The remaining 27% included refrigeration and air conditioning systems and industrial equipment used in hospitals. Of the technicians employed by hospitals to perform equipment upkeep and maintenance, 80% had no formal training, 15% had a basic or secondary technical education, and only 5% had advanced technical training or a university education. The Medical Equipment Maintenance Center (CEMED) operated by the Ministry of Health hires subcontractors and services hospitals under contracts awarded by the Ministry through centralized procurement procedures.

Up until 1998, external cooperation played an important role in helping to finance equipment costs. In 1999, all such funding came from budget appropriations, which were 18% below the average for the 1994–1998 period. To meet top-priority maintenance needs, the year 2000 budget was 2.5 times as large as the budget for the 1994–1998 period.

Human Resources

Availability by Type of Resource

The number of physicians hired over the period from 1997 to 2000 rose each year, with the exception of 1999, in which hiring was down 7% from the previous year. The rollback in the hiring of physicians and dentists in 1998 and 1999 was due to the use of a voluntary retirement program, which cut the total number of physicians by 26%. For that reason, a number of new strategies were implemented, such as the hiring of hourly employees and the redeployment of personnel to the country's Atlantic and Central regions using monies from the Supplementary Social Fund. The number of nurses and pharmacists was also cut back, and they sought jobs in the private market. The Pacific region has the highest concentration of human resources. Managua, León, Chinandega, Rivas, Granada, and Masaya have the personnel with the most training. The other regions of the country have higher percentages of auxiliaries and technicians.

As of 1999, there were 23,285 health care workers (making up 32% of the entire government workforce), of whom 47.4% were assigned to the primary care level and 52.6% to the secondary care level. The wages of health care personnel consumed 60% of the budget allocated to the Health Ministry. The number of nursing personnel in 1999 totaled 1,538, of whom 62% were assigned to the secondary care level, with 23% based in Managua. Nursing resources were stratified into three different groups according to their academic profile, namely professional nurses, auxiliaries, and operating room technicians, with 52% of the auxiliaries working at the primary care level and with 56% of the professional nurses employed at the secondary care level.

Regulations Office records for the year 2000 showed 5,656 registered general practitioners, 950 specialists, 323 professional nurses, 974 dentists, 1,042 pharmacists, 56 mid-level laboratory technicians, and 21 radiologists.

There were 7,000 registered technicians in 1999, of whom 35% were employed at the primary care level, mostly in the Pacific region. According to the Ministry of Health, this occupational category includes physical therapists, medical technicians, laboratory technicians, X-ray technicians, occupational therapy technicians, medical records technicians, health and epidemiological technicians, and inspectors.

Training

Medical students receive their undergraduate training in public and private universities, in which they complete a six-year program of study. There are huge disparities among the curricula of different universities, while internships fail to provide adequate training. Universities do no market research, and there is no real coordination with service provider organizations.

Nursing programs at the postsecondary technical education level are three years in length. There are also five-year master's programs in nursing. An average of 192 students graduate from nursing programs each year (high-level technicians), taking jobs in public and private health facilities. Five-year programs of study in pharmacy and dentistry are offered in both public and private universities.

Graduate programs in different medical specialties are offered in public universities. However, master's and doctoral degrees are not recognized for job assignment or salary-setting purposes, health professionals have little opportunity for advancement, salaries are extremely low, resource allocation by professional category is generally inadequate, and graduation requirements are inconsistent. According to figures from 1996, the percentage of health professionals in jobs unrelated to their education and training dropped from 2.9% to 2.3% over the period from 1990 to 1996. However, these figures are only estimates, since membership in a professional medical or nurses association is not mandatory in Nicaragua, even though there are professional scientific associations.

Health Research and Technology

An evaluation of basic public health functions in May of 2001 established that the public health system's greatest weakness is in the area of health research. Academic institutions require some clinical research, and there is some government-funded epidemiological research. In both cases, however, there is very little dissemination of corresponding research data.

Health Sector Expenditure and Financing

During 1997–1999, international cooperation provided approximately 39% of the Ministry of Health's budget for direct expenditure on health. Between 1991 and 1998, this mix of financing was used for current expenditures and capital outlays, which consumed approximately 79% and 21% of these funds, respectively. Among current expenditures, personal services and materials and supplies accounted for the largest share of spending, or 40.8% and 32%, respectively, of expenditures for the year 1998. The largest cost item during this period was curative care (approximately 76%). In contrast, the share of spending on health promotion and disease prevention was 17%, and administration costs accounted for 7%.

Per capita health spending peaked in 1995 (at US$ 51.50), from which point it began moving steadily downward, standing at US$ 45.10 in 1998. This downward trend in health spending is a reflection of the inability of the country's productive apparatus to generate enough fiscal revenue to sustain the cost of the health services required by the general public. The tax burden, which reached a record 49.7% in 1991, began falling around 1995, dropping down to 32% by 1998. Household spending on health as a percentage of GDP ranged from 2.5% to 2.8% and accounted for somewhere between 3.4% and 4.2% of household expenses.

Most health sector financing comes from the nation's general budget, via the Ministry of Finance and Public Credit, which supplied 38.3% of health sector financing for 1998. Appropriations for health spending grew steadily throughout the 1992–1995 period, followed by cuts in these allocations averaging 1.4% a year over the 1996–1998 period.

The government allocation to the Ministry of Health for 1998 as a percentage of GDP was 3.2% in real terms, or the equivalent of 9.5% of the general budget. International assistance to the Ministry of Health over the period from 1991 to 1998 as a percentage of GDP amounted to approximately 1.3%, or the equivalent of 25.6% of its total budget.

Public spending on drugs and other medical supplies has risen over the past few years, climbing from 10.2% in 1997 to 12.7% in 1998 and 12.4% in 1999. Donations of medical supplies have been of considerable help to the public health sector, accounting for as much as 40% of its total budget. As indicated earlier, the private sector share of the pharmaceuticals market (approximately US$ 43 million out of a total of US$ 55 million in 1998) is growing. Direct household spending on private health care services contributed an estimated 28% of health sector financing for 1998.

External Technical Cooperation and Financing

International organizations supplying health financing over the period from 1997 to 1999 included the World Bank and the IDB, with US$ 23,900,000; UNFPA, with US$ 1,845,000; and PAHO, contributing US$ 11,680,499.

Development assistance from the European Commission is allocated to specific budget items according to the objectives, subject matter, and specific features of scheduled interventions. The total budget for ongoing projects is US$ 43 million, in the form of technical cooperation and financing for programs designed to strengthen the health sector, decentralized cooperation channeled through nongovernmental organizations, and humanitarian aid. The Regional Reconstruction Program for Central America (mounted in the wake of Hurricane Mitch) contributed US$ 15,472,193 in health sector financing.

Nongovernmental organizations furnished a total of US$ 27,775,049.

Inflows of external cooperation in 1997 and 1998 added another 19.2% and 21.8%, respectively, to the national budget for medical supplies. According to reports by health care units and the Center for Health Supplies (CIPS), external cooperation provided US$ 600,099.40 in direct donations to health care facilities in 1998 to help cope with the disaster conditions created by Hurricane Mitch, including approximately US$ 1,300,000 over the course of November and December of that year.

External cooperation agencies contributed an additional 43% to the 1999 national budget for medical supplies. The CIPS received another US$ 1,055,120 in assistance to help cope with the aftermath of Hurricane Mitch. To direct the donation of medical supplies, in 1999 official policies and procedures were established to guide donors and to handle the contributions. The Ministry of Health earmarked US$ 10,688,044 in fiscal revenue plus another US$ 7 million in external cooperation funding for the procurement of medical supplies in 2001.

FIGURE 1. Population structure, by age and sex, Nicaragua, 2000.

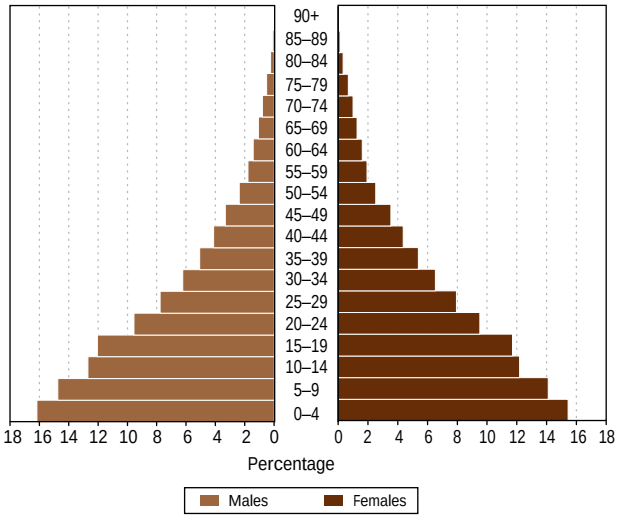


FIGURE 2. Gross domestic product, annual growth, Nicaragua, 1990–1999.

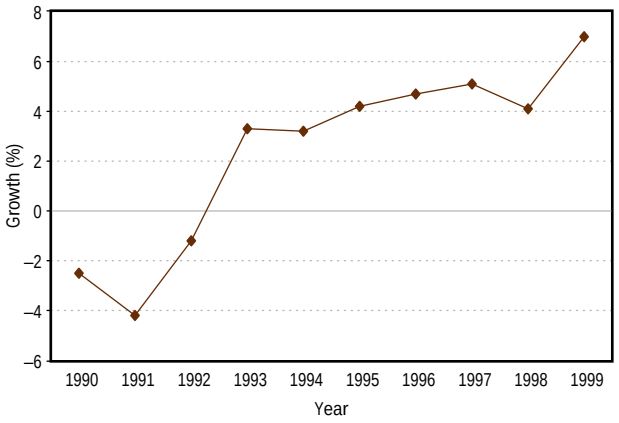


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Nicaragua, 1995–2000.

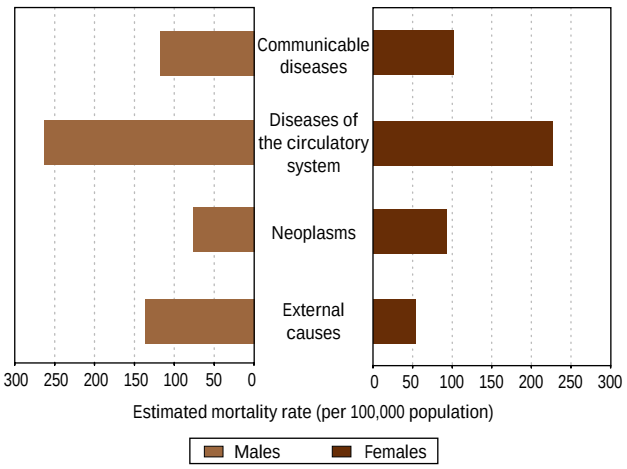


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage among women of childbearing age, Nicaragua, 2000.

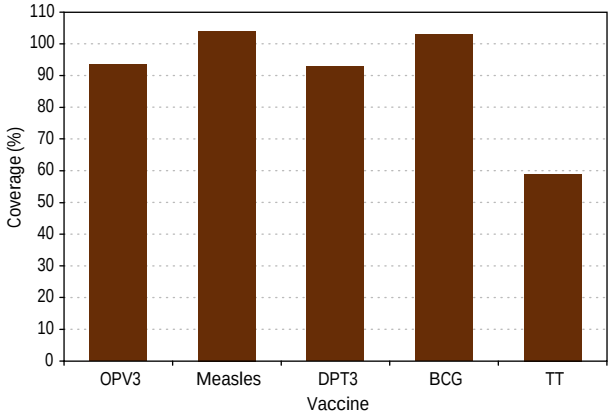
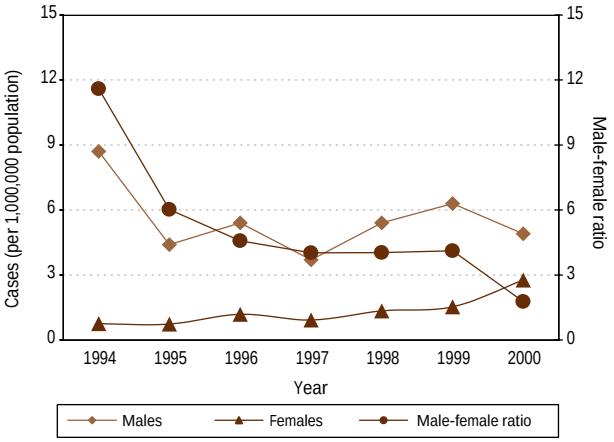


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Nicaragua, 1994–2000.



PANAMA

OVERVIEW

Panama has an area of 75,517 km^2. According to the 2000 census, its population was 2,815,644, for a population density of 37.2 inhabitants per km^2. The average annual population growth rate during 1991–2000 was estimated at 1.91 per 100 inhabitants. There were 101.9 males for every 100 females, so that females represented 49.5% of the national population. The Cordillera Central divides the isthmus lengthwise: on one side, the terrain slopes toward the Atlantic Ocean and the land is sparsely inhabited; the other side slopes toward the Pacific and is occupied by approximately 75% of the Panamanian population. Demographically, the country is characterized by steadily increasing urbanization fueled by internal migration. In 1980, the urban population represented 50.5% of the national total, and by 1999, this proportion had risen to an estimated 55.9%.

The Republic of Panama is organized as a sovereign, independent state with a government that is unitary, republican, democratic, and representative. The Constitution establishes three branches of government—the executive, the legislative, and the judicial. The country is divided politically and administratively into 9 provinces, 74 districts or municipalities, 592 mayoral jurisdictions (*corregimientos*), and 4 indigenous territories (*comarcas*), and the political boundaries of the indigenous territories, districts, and mayoral jurisdictions can be modified by law.

Several important political events occurred during 1998–1999. A referendum to allow immediate reelection of the president was conducted in 1998, and that same year the public telecommunication and electric power services were privatized. Presidential elections were held in May 1999, and the president-elect took office the following September. On 31 December 1999, the United States turned over administration of the Panama Canal, and that country's military presence in the national territory came to an end.

According to the 1999 household survey, Panama's economically active population (EAP) came to 1,086,598, and of this number, 672,973 (62%) were concentrated in Panama City. Women represented 24.5% of the total EAP, and the female employment rate in 2000 was 52.5%. Open unemployment declined from 13.7% in 1995 to 13.5% in 2000 (10.8% for males and 17.9% for females). That same year, the unemployment rate was 15.2% in urban areas, compared with 10.3% in rural areas.

The population covered by social security was estimated at 1,947,882 in 2000 (69% of the total), and 40% of those covered were paying quota contributions. The basic food basket for a typical family of five persons cost US$ 222.70 per month in January 2001 (compared with US$ 220.70 in January 1996), while the minimum wage was US$ 253. Women in the private sector, when performing the same work as men, earned US$ 80 less per month. However, the disadvantage was not as great in the public sector, where they received only US$ 28 less.

The 1997 Living Standards Measurement Survey provided information on inequities in health, verifying that the poor and the very poor did not have the same access to health services as those in higher income brackets. The survey found that 37% of the population (1,005,914 people) were below the poverty line and that more than half that number (516,550, or 19% of the total population) were living in extreme poverty.

According to the Ministry of Economics and Finance, Panama's level of economic activity was reflected in a 4.1% rise in GDP in 1998, followed by an estimated 3.2% increase in 1999 (Figure 1). The balance owed on the national foreign debt was US$ 5,568.1 million as of December 1999 (4.5% more than in December 1998), an amount equivalent to 58% of GDP. In 1996, more than 7% of GDP—15% of public spending that year—went to the health sector.

In 1999, the Government produced the document "Policy and Strategy for Social Development 2000–2004," which included the following objectives for its five-year administration: promotion of human development and gradual elimination of poverty; integration of marginalized groups into the development process and more equitable distribution of wealth; refinement of economic and social policy based on guidelines for the creation of more and better jobs, access to basic social services, social participation, and decentralization; and sustainability of social policies

and programs. The Ministry of Women, Youth, Family, and Childhood, through the National Women's Bureau, is the agency responsible for coordinating, promoting, developing, and overseeing fulfillment of the Government's policy of equal opportunity. So far, progress has been made in the area of policy and legislation: incorporation of legal aspects, creation of opportunities within various entities for the participation of women, institutionalization of the National Women and Development Plan, and enactment of the Equal Opportunity Law.

Although detailed information on age distribution is not yet available from the 2000 census, it may be estimated, on the basis of results from the 1990 census, that in 2000 there were 59,900 infants under 1 year of age (2.1% of the total population), 241,400 preschoolers aged 1–4 years (8.5%), and 592,300 children and adolescents aged 5–14 (20.7%), and in all, an estimated 31.3% of the population is under 18 years of age. It is also estimated that for every 100 pre-adolescents there were 26 persons over the age of 60, compared with 22.2 per 100 in 1994 and only 13 per 100 in 1970. Indigenous peoples represent approximately 9% of the total population and comprise several clearly defined ethnic groups: the Kuna, Emberá and Wounaan, Ngobe-Buglé (previously known as Guaymí), Bokota, and Teribe.

The registration of vital events in Panama is the responsibility of the Bureau of Statistics and Census, under the Office of the Comptroller General of the Republic. Causes of death are classified according to the *International Classification of Diseases*, Tenth Revision, and underregistration is estimated at 15%, with variations for different causes and age groups. Coverage is more complete for the registration of births. The information available on place of birth, the parents' usual place of residence, births attended by qualified personnel, birthweight, and proportion of the mother's surviving children makes it possible to estimate some indicators of inequality in the health of the population.

Between 1980 and 1990, the average annual birth rate was 26 per 1,000 population, and for 1999 the projected rate was 21.9 per 1,000 (19.9 per 1,000 in the cities and 26.8 per 1,000 in the countryside). The province Bocas del Toro had an estimated birth rate that year of 32.4 per 1,000 population, while the lowest rates were in the provinces of Herrera (19.2 per 1,000) and Los Santos (15.1 per 1,000).

Data available on the total fertility rate show an average of 3.4 children per woman during 1990–1995. A rate of 2.6 per 1,000 was projected for 1999, and a progressive decline is expected thereafter, with replacement level being met in approximately 2020. Projected fertility was lowest in Los Santos, at 2.1 children per woman in 1999, and highest in Darién, at 4.3 children per woman.

Life expectancy at birth has been rising steadily, from 59.3 years in 1960 to 74.3 years in 1999. For males, this figure increased from 58.3 years in 1960 to 71.8 years in 1999, and for females it rose from 60.4 to 76.4 years during the same period. In 1999, life expectancy at birth in the cities was 75.1 years, and in the countryside it was 71.5 years. By provinces, the longest lifespans (74–76 years) were found in Panama, Los Santos, and Herrera, while the shortest, ranging from 65 and 70 years, were in Veraguas, Darién, and Bocas del Toro.

Mortality and Morbidity

The general mortality rate remained stabilized in Panama over the period 1995–1999, with 4.2 deaths per 1,000 population in 1995 and 4.3 per 1,000 in the 1999 projections, and few differences between the cities and the countryside that might be attributed to underregistration in rural areas. In 1998, the rate for the country as a whole, adjusted for underregistration, was estimated at 5.1 deaths per 1,000 population. However, there were considerable differences among the provinces: the risk of dying was 1.6 times greater in Los Santos (7.3 per 1,000) than in Panama Province (4.4 per 1,000). Of the registered deaths in 1999, 89.7% were medically certified (99.5% in the cities and 76% in rural areas).

In 1998, the only infectious diseases among the 10 leading causes of death were HIV, which ranked eighth, and pneumonia, in tenth place. Differences between the sexes were observed with some of the causes, such as violence (male-female ratio: 2.7) and diabetes (1.9 females for every male). Among women, the five leading causes of death were malignant neoplasms (16.9%), cerebrovascular disease (12.9%), ischemic heart disease (11.1%), diabetes (6.8%), and accidents and violence (6.8%). For men, the leading causes were accidents and violence (18%), malignant neoplasms (14.6%), ischemic heart disease (10.5%), cerebrovascular disease (9.2%), and AIDS (5.2%). Figure 3 shows estimated mortality by sex and broad groups of causes between 1994 and 1998.

Infant mortality went from 21 deaths per 1,000 live births in 1980 to 18 in 1990, and by 1999 the rate was down to 16.6 per 1,000 live births, but when adjusted for underregistration, it was 21.3 per 1,000. In 1999, the estimated infant mortality rates for Bocas del Toro (39 per 1,000) and Darién (43 per 1,000) were comparable to the national rate at the beginning of the 1970s.

Maternal mortality dropped from 200 deaths per 100,000 live births in 1980 to 80 per 100,000 in 1998, and the rate for 1999 was 70 per 100,000. Maternal deaths represented 5.7% of all deaths in women of reproductive age and 13.9% of all female deaths. In 1998–1999, the maternal mortality rate was 46 per 100,000 live births. The leading cause of maternal death was hemorrhage (38.4%), followed by pregnancy-induced hypertension (17.9%) and abortion (10.3%). Death came during the puerperium in 50% of cases, accounting for 23 out of 46 deaths per 100,000 live births, and during pregnancy in 5.1% of cases. Of the latter deaths, 79.5% occurred during the third trimester. Among all maternal deaths, 64.1% of the mothers had not had prenatal care, and in one in four cases it was the first pregnancy.

In 1999, the health centers made 2,246,160 new diagnoses of general morbidity, 21% of them diseases of the ear, nose, mouth, and throat; 16%, diseases of the respiratory system; 14%, infectious and parasitic diseases; and 6.9%, diseases of the digestive system; the remainder corresponded to 22 other diagnostic categories.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

According to the 2000 census, children under 5 years of age represented 10.6% of the total population. In 1999, the 1,068 registered deaths in this age group (90.7% of them medically certified) corresponded to a mortality rate of 16.6 per 1,000 live births. An analysis of the five leading causes of infant mortality in the past shows that infectious and contagious diseases predominated in the 1960s and 1970s, accounting for 60% of deaths. By 1999, there had been a rise in endogenous causes, with conditions originating in the perinatal period heading the list at 458 deaths (43.7%), followed by congenital anomalies, with 265 deaths (25.3%). By province, the figures for that year showed that the infant mortality rate for Darién (43.3 per 1,000 live births) and Bocas del Toro (39 per 1,000) were 3.3 and 3 times higher, respectively, than the lowest rate, which was reported in Los Santos (13.2 per 1,000). Figure 4 shows the distribution of infant mortality in Panama in 1997.

Of the 41,773 liveborn infants tracked by the Perinatal Clinical History Surveillance System in 1999, 6.7% had low birthweight (<2,500 g), 79.2% had adequate weight, and 4.5% weighed 4,000 g or more. According to the Ministry of Health statistical yearbook for 1999, in the population under 1 year of age there were 2,925 cases of pneumonia (4,868 per 100,000) and 21,827 cases of diarrhea (36.3 per 100,000). The Growth and Development Monitoring Program achieved 58.8% coverage, providing an average of six consultations a year for 39,727 children.

The 1997 Living Standards Measurement Survey, which covered not only urban and rural areas but also indigenous groups and those living in remote areas, made it possible to evaluate 2,339 children under 5 years of age. The results demonstrated a close correlation between poverty and malnutrition: 6.8% of the children living in poverty had low weight-for-age (indicator of global chronic malnutrition), and 2 in 10 suffered from some form of malnutrition.

In 1999, there were 4,597 cases of pneumonia in children 1–4 years of age (1,898.5 per 100,000), and 47,160 cases of diarrhea (19,476.1 per 100,000). The Growth and Development Monitoring Program reached 33% of the estimated population within this age range, and the 79,924 children in question had an average of 2.2 consultations a year.

Schoolchildren (5–9 years)

According to the 2000 census, this age group represented 10.6% of the total population, with even proportions of girls and boys. The mortality rate in 1997 was 0.4 per 1,000 children 5–9 years of age. The leading causes of morbidity are acute respiratory infections and gastrointestinal infections.

Adolescents (10–14 years and 15–19 years)

As of 2000, the population in these age groups totaled 557,474 (19.8% of the total population), and 51% were between 10 and 14 years, with equal proportions of girls and boys.

In 1999, out of 29,452 registered pregnant women, 8,140 (27.6%) had initiated prenatal care, and of these, 550 (6.7%) were between 10 and 14 years old. The age-specific fertility rate in the population 10–14 years old was 4 per 1,000 in 1997 and 3.1 per 1,000 in 1998. For those aged 15–19 years, the fertility rate was 98.1 per 1,000 in 1997 and 91.1 per 1,000 in 1998. A total of 2,119 pregnancies in 1998 and 2,367 in 1999 were reported among girls aged 10–14. In females aged 15–19, there were 39,519 registered pregnancies in 1998 and 40,442 in 1999. According to records for 1999 at Santo Tomás Hospital, 11 liveborn infants were delivered to mothers 10–14 years old who were victims of sexual abuse, and 10 others to mothers 15–19 years old in the same situation.

The rate of registered deaths for the 10–14 years age group in 1999 was 11.1 per 100,000, and for those in the 15–19 years age bracket it was 43.5 per 100,000. The leading cause of death in both age groups was accidents, self-inflicted injuries, assaults, and other forms of violence.

Adults (20–59 years)

In the adult population, the most frequent reasons for seeking primary health care were diseases of the ear, nose, and throat (12%), respiratory diseases (14%), infectious and parasitic diseases (7.6%), and diseases of the musculoskeletal system (7.2%). According to a nutrition survey conducted by the Ministry of Health in 1995, more than half (54.3%) of the 2,451 persons studied (male and female adults 20 years of age and older) were overweight, while 1 in 20 (6.7%) was underweight.

In 1999, the rate of registered deaths in the adult population was 63.7 per 100,000, and the leading cause was accidents, self-inflicted injuries, assaults, and other forms of violence. During 1998–1999, there were 46 maternal deaths in this age group (53.8% occurring in a hospital), and 82% of these deaths were in women from marginalized areas. The largest percentage of deaths was reported in the Kuna Yala region (23.1%), which has consistently had the highest incidence for more than a decade.

The Elderly (60 years and older)

A study of morbidity by broad diagnostic groups indicated that among adults 60 years of age and older the most frequent reasons for consultation at the primary health care level were respiratory diseases (13%); diseases of the ear, nose, and throat

(11%), diseases of the musculoskeletal system (9.8%), diseases of the circulatory system (9.8%), diseases of the digestive system (6%), and infectious and parasitic diseases (5.4%). In 1999, a total of 11,416 older adults had 28,625 check-ups (approximately 2.5 visits per person). The mortality rate for this age group in 1999 was 554.8 per 100,000, and the leading cause of death was malignant neoplasms.

Family Health

In Panama, 27% of the households are headed by women. In rural areas, 71% of female-headed households live in poverty, and in the cities, 48% live in poverty. The marriage rate was 3.6 per 1,000 population in 1995 and 4.0 per 1,000 in 1999, while the divorce rates for those same years were 5.7 per 10,000 and 9.0 per 10,000, respectively. The divorce rate among indigenous groups—55.7 per 10,000 in 1995 and 86.4 per 10,000—is 10 times higher than in the rest of the Panamanian population.

Workers' Health

According to information supplied by the Social Security Fund (CSS), in 1998, a total of 7,968 female workers received maternity benefits amounting to about US$ 1,306 each. In addition, 13,899 benefits were granted for temporary disability (1,160 of them to women), 25% of them to workers in the agroindustrial sector, 25% to those in the manufacturing sector, and 11% to construction workers.

The leading causes of accidents in the workplace were incorrect handling of materials (46%) and improper use of manually operated tools (24%). Compensation for occupational illness increased between 1994 and 1998, when the CSS paid a total of 518 benefits for this cause. In addition, the CSS paid 1,437 benefits for accidents incurred during travel to and from the workplace which affected workers' health, even though they were not directly job-related, and of the recipients, 43% were workers in the service sector.

In 1999, the rate of pesticide poisonings of all kinds was 16 per 100,000 population. There were 448 serious cases, of which 43.5% (195) were work-related. By sex, 19.2% (86) of the serious cases were in females and 80.8% (362) in males, and in terms of age, 15.2% (68) were in the population under 15 years of age. That same year 37 persons died from poisoning; suicide was the leading cause (87%), and the main poisons used were bipyridyl and organophosphate pesticides.

The Disabled

According to the 2000 census, 31,111 Panamanians, or slightly less than 10% of the total population, had some form of disability—17,423 males (56%) and 13,688 females. In August 1999, the Legislative Assembly approved Law 42, which establishes equal opportunities for the disabled. As far as employment is concerned, 26 disabled persons were reported to have jobs in 1995 (17 men and 9 women), 25 (2 of them women) were working in 1997, and the figure was down to 16 (3 women) in 1998.

Indigenous Groups

Indigenous peoples represent 9% of the Panamanian population. Ninety-five percent of them are living in poverty and 86% in extreme poverty. The ethnic group most seriously affected is the Ngobe-Buglé, which is the most numerous and has the highest fertility rate (3.6 children per woman), the largest average number of dependents per household worker (3.8), and the largest families.

The health situation of the indigenous groups stands in marked contrast to that of the rest of the Panamanian population. For example, life expectancy in the country as a whole was 74.3 years in 1999, whereas in the province of Bocas del Toro, which has one of the largest concentrations of indigenous population, it was only 69.9 years. That same year, the infant mortality rate in Bocas del Toro was 39 per 1,000 live births, compared with 16.6 per 1,000 for the entire country. Similarly, the fertility rate and the crude birth rate for all of Panama were 2.6 children per woman and 21.9 per 1,000 population, respectively, whereas in Bocas del Toro these rates were 3.9 children per woman and 32.4 per 1,000.

BY TYPE OF HEALTH PROBLEM

Natural Disasters

During the 1998 and 2000 rainy seasons, rivers overflowed in the provinces of Chiriquí and Darién and produced moderate damage, mainly affecting agricultural production and destroying highways and bridges. In Panama City, a total of 21 sites have been identified where flooding has occurred due to solid waste blocking canals and rivers.

Vector-borne Diseases

Between 1996 and 1999, a total of 880,743 blood samples were examined and 0.3% of them were found to be positive for malaria; in all, 3,993 cases of the disease were detected in Panama. Of these cases, 27.8% occurred in 1998–1999. The annual parasite index (API) was 0.2 in 1996–1997, 0.4 in 1998, 0.3 in 1999; and 0.4 in 2000. *Plasmodium vivax* has been responsible for the majority of cases since 1957, but cases due to *P. falciparum* increased from 20 (4%) in 1993 to 179 (17.9%) in 1999. *P. malariae* has not been detected since 1972. In 1999, most of the malaria cases were concentrated in the following health regions: Darién (555), Bocas del Toro (191), Eastern Panama Province (104), Colón (82), and Kuna Yala (56)—a pattern that correlated with indigenous migration and movements across the country's land borders.

In support of the "Roll Back Malaria" initiative, an interinstitutional commission was created and given official status under an executive order. The commission includes representatives of

the ministries of Health, Education, and Agricultural Development, the Panamanian Tourism Institute, the Bureau of Indigenous Policy, the University of Panama, the National Nature Conservation Association, and the National Environment Authority.

In 1993, there was an dengue epidemic in Panama, and between that year and 2000, a total of 13,245 cases were reported. All four serotypes of the dengue virus have been found in circulation. In 2000, there were a total of 317 cases of classic dengue, 88% fewer than the year before. The annual incidence in 1999 was 99.1 per 100,000 population, but by 2000, the rate had dropped to one-ninth of this figure—11.1 per 100,000. One case of hemorrhagic dengue was reported in 1999, and there were three in 2000, with no fatalities. In 2000, most cases occurred in females, with a rate of 12.7 per 100,000, which was 1.3 times greater than the rate in males.

The percentage of dwellings infested with larvae of the *Aedes aegypti* mosquito ranged from 1.2% to 2.4% between 1996 and 1999, and in 2000 the infestation index was 1.5%. The highest indexes were in the Metropolitan Region (3.2%), San Blas (3.1%), San Miguelito (3%), and Western Panama Province (3%). No insecticide resistance has been observed in the vector.

Between 1987 and 1996, a total of 24 cases of Chagas' disease were reported. In 1990–1998, the highest cumulative rates were seen in the districts of La Chorrera and Arraiján, where they ranged between 7 and 19 cases per 100,000 population. The blood banks screen only 22% of their donations for Chagas' disease.

The main vectors of *Trypanosoma* are *Rhodnius prolixus*, *Triatoma dimidiata*, *Triatoma dispar*, and *Panstrongylus geniculatus*, all of which circulate throughout the country. In insects captured in the peridomestic area of La Chorrera (province of Panama) in 1999, *Trypanosoma cruzi* and *Trypanosoma rangeli* were detected in the digestive tract of 30% to 60% of the specimens, and in 10% of those that were positive, metacyclic *T. rangeli* trypomastigotes were found in the salivary glands. Surveys of dwellings conducted that same year in Gualaca (province of Chiriquí) revealed that 16.4% were infested with *Triatoma dimidiata*, while *Rhodnius pallescens* was detected in 3.2% of the dwellings in La Chorrera.

There have been no cases of yellow fever in Panama since 1974. According to statistics from the Expanded Program on Immunization, between 1996 and 2000, a total of 66,075 doses of yellow fever vaccine (annual average: 13,215 doses) were administered in the three health regions bordering on Colombia, where this vaccine is applied on a regular basis (Kuna Yala, Darién, and Eastern Panama Province).

In 1999, there were 1,873 cases of leishmaniasis (66.7 per 100,000 population). The provinces most affected were Bocas del Toro (712.3 per 100,000), Coclé (149.5), and Darién (110.4), which together accounted for 71% of all the cases. According to information provided by the health services, the population under 15 years of age is most affected, with 1,322 cases in 1999 (70%). In 2000, there were 2,435 cases, and Western Panama Province headed the list with 37% of the cases, followed by Bocas del Toro, with 24%.

A total of 613 cases of toxoplasmosis were reported in 2000; Chiriquí was the province most affected, with 47% of the cases, followed by Western Panama Province, with 13%.

Diseases Preventable by Immunization

Panama has not had a single recorded case of polio since 1972. The last case of jungle yellow fever was reported in 1974. There have been no cases of diphtheria since 1981, and since December 1994, there have been no cases of measles. One case of neonatal tetanus was reported in 1999, but in 2000, there were none. The last case of congenital rubella syndrome occurred in 1999. Outbreaks of pertussis continue to occur in the province of Bocas del Toro (66 cases in 2000). Also in 2000, there were 308 cases of mumps and 941 of rubella.

Epidemiological surveillance of diseases preventable by immunization consists of regular weekly reporting, including the submission of negative reports, through the nationwide health services network. This surveillance identified 49 possible cases of acute flaccid paralysis during the period 1996–2000, and all of them were ruled out through laboratory testing and by monitoring their clinical evolution. In that same period, 432 suspected cases of measles were reported, and these too were all ruled out in the laboratory.

Intestinal Infectious Diseases

During 1996–1999, the National Epidemiological Surveillance System received reports of 414,714 cases of diarrhea, 99 of salmonellosis, 1,349 of hepatitis A, 11,006 of amebiasis, 18 of brucellosis, and 2 of typhoid fever. There were no cases of cholera from 1994 until 2001.

In 1999, the province of Chiriquí reported 15 outbreaks of food poisoning, with 226 persons affected (48% of all the cases in the country). In 2000, the province of Panama had the most cases, with 24 outbreaks and 221 persons sickened (59% of the national total). The most frequent etiologic agents were enterobacteria, which accounted for 57% of the outbreaks investigated (*Escherichia coli*, 62%; *Salmonella* sp., 32%; and *Shigella* sp., 6%), followed by *Staphylococcus aureus* toxins in 28% of the cases and hepatitis A in 13%.

Chronic Communicable Diseases

The incidence of pulmonary tuberculosis was relatively stable during 1996–2000: the rate was 50.2 per 100,000 population in 1996, 54.2 per 100,000 in 1997, 51 per 100,000 in 1998, 48.6 per 100,000 in 1999, and 40.2 per 100,000 in 2000, with consistently higher morbidity rates in men (52.7%). The mortality rate in 1999 was 8.2 per 100,000 population. In 2000, there were a total of 1,149 reported cases, and the provinces with the highest rates

were Kuna Yala (296.8 per 100,000), the territory of Ngobe-Buglé (161.8), and Bocas del Toro (87.9). AIDS was associated with tuberculosis in 3% of the cases. A total of 880 sputum smears were examined in 1998 and 1,036 were examined in 2000.

The directly observed treatment, short course (DOTS) strategy is used in three health regions (San Miguelito, the Metropolitan Region, and Chiriquí), and coverage reaches 51% of the total population, including those who are insured. Social Security Fund health centers participate actively in these regions.

Four new cases of leprosy were registered in 1996 and 1997; there was one new case in 1998, seven in 1999, and none in 2000. At the end of 2000, there were 37 cases on record, two of them (5.5%) in persons under 15 years of age. There are leprosy cases in five of the country's nine provinces, and the province of Panama is most affected, with 14 cases (37.8%). Of the 37 patients registered as of December 2000, 14 had completed their treatment and the remaining 23 were receiving multidrug therapy at the end of 2001.

Acute Respiratory Infections

The morbidity rate from acute respiratory infections in children under 5 years of age was 1,050.9 per 100,000 population in 1999, which represented an improvement over 1997 (1,406.6 per 100,000). The highest rates were in children under 1 year old, and this age group saw an increase of 22.8% during 1996–1999, from 2,568.8 to 3,155.7 per 100,000.

Zoonoses

Panama has been free of canine rabies since 1972 and from human rabies since 1973. However, bat-transmitted rabies continues to occur, mainly affecting cattle. There were 36 reported foci in 1996, 43 in 1997, 78 in 1998, 87 in 1999, and 37 in 2000. The regions most affected were Eastern Panama Province, which had 70% of the foci, and the province of Colón, with 20%. During 1997–1999, 53.5% of the cases were laboratory confirmed, and in 2000, this proportion increased to 92%.

Until April 1997, Panama had been free of bovine tuberculosis, but that year the disease was detected in 8.7% of the country's herds (35 of 402), with 3.3% of the positive animals in the province of Bocas del Toro. In 1998, a positive herd was detected in Chiriquí. The proportion of reactive herds has been declining: it was 6.9% in 1998, 2% in 1999; and 2.6% in 2000.

The number of brucellosis-infected herds has declined: whereas in 1996, 101 out of 2,662 herds were infected (38 per 1,000), by 2000, the figure was down to 13 out of 6,514 (2 per 1,000). That same year, 11 cases of human brucellosis were reported (55%) in the Metropolitan Region.

In 1998, there were 36 reported foci of equine encephalitis, but by 1999, the number had declined to 15. Ninety-five percent of the cases were serologically diagnosed and the remaining 5% were identified clinically. All the cases were Eastern equine encephalitis.

HIV/AIDS

The country's first two cases of AIDS were registered in September 1984, and by 2000, a total of 3,241 had been reported, 60% of them in the last four years. Panama Province was the most affected, with 2,504 cases (77.3%), followed by the provinces of Colón, with 403 cases (12.4%), and Chiriquí with 140 (4.3%). Darién has had the fewest reported cases—namely, 5 since 1984.

For both sexes, the largest proportion of cases (36.6%) is concentrated in the 25–34 age group. However, the greatest risk of developing the disease occurs between the ages of 35–44 for both men and women. The population under 15 years of age accounts for 4.4% of the reported cases. The male-female ratio has been narrowing: in 1984–1986 the ratio was 17:1, but by 1999 it was 3:1 (Figure 5). There have been 2,670 deaths since the onset of the epidemic, equivalent to a cumulative case-fatality rate of 81%.

Data for the year 2000 show that sexual transmission accounted for the majority of cases (63.5%), with a predominance of heterosexual transmission (38.8%) as opposed to homosexual and bisexual transmission (24.6%). Intravenous drug use was responsible for transmission in 3.1% of the cases and was the principal manner in which blood transmission occurred. Perinatal transmission accounted for 3.9% of the cases.

During 1996–1999, seroprevalence of HIV in blood donors (100% screened) ranged from 0.1% to 0.2%, while in the non-donor population the rate was between 1.2% and 2.3%, and in sex workers seen at social hygiene clinics it was 0.2%–0.9%.

There has been sentinel surveillance of pregnant women in the country since 1993. Studies conducted in 1996 in several of the health regions showed that the prevalence of HIV in pregnant women ranged from 0% in Herrera and Bocas del Toro to 0.9% in Chiriquí.

Sexually Transmitted Infections

Pelvic inflammatory disease has been on the rise. In 1999, a total of 4,375 women were affected, for a rate of 314.4 cases per 100,000 women, with prevalence exceeding the national level in the Eastern Panama Province and Los Santos regions (rates of 1,326.6 and 1,048.8 per 100,000 women, respectively).

Congenital syphilis has remained stable, with an incidence of 0.3 cases per 100,000 population in 1996 and 0.4 in 2000, when 25 cases were reported. Early latent syphilis has the highest incidence, which has nearly doubled, from 4.4 cases per 100,000 population in 1996 to 8.2 per 100,000 in 1999. Since 1993 there have been no reported cases of neurosyphilis.

According to the Perinatal Clinical History database, which brings together information on 41,682 pregnancies, 157 pregnant women (1 in 265) had a positive VDRL test for syphilis in 1999. The ratio of VDRL-positive newborns to VDRL-positive mothers was 0:3 in Kuna Yala, 1:1 in Eastern Panama Province, 1:11 in Colón, and 1:24 at the Santo Tomás Hospital.

Nutritional and Metabolic Diseases

In 1997, as part of the Living Standards Measurement Survey, 2,339 children under 5 years old, selected from urban, rural, and indigenous areas, were weighed and measured with a view to demonstrating the correlation between poverty and malnutrition. According to the weight-for-age indicator, 6.8% of the children suffered from malnutrition, while 1.1% had low weight-for-height, which can be an indicator of acute malnutrition (wasting), and 14.4% had low height-for-age (an indicator of chronic malnutrition, or stunting). These percentages were higher among poor indigenous children: 21.6% had low weight-for-age, or general malnutrition, and 50.1% had low height-for-age.

That same year, 9.7% of the liveborn children in the country as a whole had low birthweight (<2,500 g). By province, Kuna Yala, Veraguas, and Chiriquí had the highest rates (20.2%, 12.5%, and 12.5%, respectively), and Colón and Panama Province had the lowest (7.3% and 8.9%).

The status of iron-deficiency anemia was updated by two national surveys conducted in 1999, which revealed the following prevalence rates: 36% in preschool children and pregnant women, 40.3% in women of childbearing age, and 47% in schoolchildren 6–12 years old. Studies carried out in 1999 showed a 10% prevalence of goiter and a 3.5% prevalence of iodine deficiency (<50 µg/L) in schoolchildren aged 6–12. Panama hopes to become free of iodine deficiency disorders in the near future.

A 1995 survey of national health centers found that 54.3% of the adults seen at these establishments were overweight (34% overweight and 20% obese). The following year, the National Multiple Indicators Survey, which studied a sample of 1,185 households and 1,569 children under 5 years old, found that 91.5% of the children had been breast-fed at some time, without differences between urban and rural areas, that 53% of the infants under 6 months had been predominantly breastfed, and that 60% of the mothers continued to breast-feed their children until they were 2 years old.

Diseases of the Circulatory System

In 1998, there were 1,145 deaths from cardiovascular diseases, which were the third leading cause of death (10.7% of the total), and affected more men (57%) than women. That same year, the national mortality rate from this cause was 40.7 per 100,000 population, but in the provinces of Los Santos, Herrera, and Colón it reached levels of 215.6, 152.4, and 151.2 deaths per 100,000 population, respectively.

Malignant Neoplasms

In 1998, the leading cause of mortality was malignant neoplasms, with 1,755 deaths (15.5% of the total on record), 92% of them medically certified. The general mortality rate from this cause in 1998 was 63.5 per 100,000 population. Panama Province and the provinces of Colón and Chiriquí had the most deaths, with rates of 187.6, 127.9, and 122.5 per 100,000 population, respectively. According to the distribution by sex, 54.9% of the deaths were in men; the mortality rate for women was 58.4 per 100,000 population, and for men it was 65.3 per 100,000.

By site, tumors of the stomach were the most frequent cause of death from malignant neoplasms in 1998, with a rate of 8.2 deaths per 100,000 population, followed by the prostate, at 7.3 per 100,000, and the trachea, bronchus, and lung, at 6.7 per 100,000. The uterine cervix was in fourth place, with a rate of 4.8 per 100,000 population, although the provinces of Chiriquí, Panama, and Colón had rates ranging from 94.6 and 62.3 per 100,000. Of the women who died from this cause, 26.2% were between the age of 30 and 39 years, 22.6% were between 40 and 49, and 18.4% were between 50 and 59.

Accidents and Violence

In 1998, violence was the second leading important cause of mortality in Panama, with 1,458 deaths (13.4% of the total), 1,147 of them (78.8%) in males. This figure represented a 20% increase over the level in 1995. Among children 1–4 years old, external causes of death saw an increase in 1997, putting them in second place, at 21.8 deaths per 100,000. This was the number one cause of mortality in the population aged 5–14 years (14.1%), as well as in the populations aged 15–24 and 25–54, with rates of 58 per 100,000 and 66.2 per 100,000, respectively. In all these age groups, the majority of the victims were males. In 1998, the Ministry of Health recorded 2,807 suspected cases of domestic violence, but in 1999 and 2000, the numbers were down to 1,905 and 1,761 cases, respectively. Of all the victims, 76.7% were women (4,963), and of the aggressors, 79.6% were men. The age distribution of the victims in 2000 was as follows: 50% were between 15 and 49 years, 15.5% were between 5 and 14 years, 7.7% were under 5 years old, and 1.9% were 50 years or older.

The suicide rate in 1996 was 4.1 per 100,000 population. That same year transportation accidents claimed the lives of 13.8 in 100,000 inhabitants.

Oral Health

The last national oral health study, conducted in 1997, showed a DMFT index of 3.6 in 12-year-old schoolchildren. Since this calculation included the indigenous population, it is not comparable with results obtained in previous surveys. In schoolchildren 5–9 years old, the DMFT index was 1.9 for boys and 2.1 for girls.

Emerging and Re-emerging Diseases

Cases of disease caused by hantavirus appeared in Panama for the first time in December 1999, and the last case was reported in March 2001. By that date a total of 36 had been reported, with a fatality rate of 16.7%. Twenty-nine cases (80.6%) were hantavirus pulmonary syndrome, 4 (11.1%) were hantavirus disease, and 3 (8.3%) were prior hantavirus infection. The patients ranged in age from 26 to 56 years, with a median age of 46.5 years, and both

sexes were equally affected. The cases were localized in rural or semirural areas in the provinces of Los Santos and Herrera.

Two new hantavirus serotypes have been identified: one is associated with the rodent *Oligoryzomys fulvescens* (pygmy rice rat), which has affected humans, and the other, with the rodent *Zygodontomys brevicauda* (common cane mouse). A seroprevalence study conducted in the affected communities showed a seropositivity rate of 12.9% (40 out of 311); the positive reactors ranged in age from 1 to 79 years, with a median age of 31.5, and there were no differences in terms of age or sex. A survey by the health personnel who treated the patients did not reveal any person-to-person transmission, and this finding is consistent with the absence of secondary cases in household members or other contacts of the affected individuals.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Government's five-year plan for 1999–2004, "Economic, Social, and Financial Development with Investment in Human Capital," and its policies and strategies for social development form the basis of Panama's national health policy. "The Social Agenda 1999–2004," published in 1999, addresses poverty, employment, indigenous issues, science and technology, education, health and social security, water supply and sewerage systems, housing and urban development, the campaign against drug addiction, the situation of women, and the family, among other issues. The Social Agenda also envisages decentralization and deconcentration of the State and calls for citizen participation and consultation. In 2000, the Ministry of Health published the document "Policies and Strategies for Health 2000–2004." The principal public health policies are aimed at achieving comprehensive health, health in development, the development of health system leadership, a strong service network as part of the National Health System (SNS), the development of mechanisms to ensure the financial sustainability of the SNS, expansion of SNS service coverage, and financing to protect the health of the most vulnerable populations groups.

Health Sector Reform Strategies and Programs

In 1997, the Ministry of Health strengthened its surveillance and regulatory role by dividing its structure into two broad areas: service delivery, on the one hand, and, on the other, surveillance and regulation of both the population and the environment. The following objectives have been proposed for the reform process: equity; technical and administrative efficiency in the actions of the SNS, quality in health care, and satisfaction of users' needs.

Efforts were focused on institutional strengthening of the Ministry as the national public health authority, which entails developing the capacity to provide guidance and leadership in the following areas: formulation and implementation of sectoral policy, sanitary regulation, surveillance and control of the health-disease process, health promotion, development and supervision of human resources, and administrative and financial management. New management and health care models were introduced, and steps were taken to modernize the service delivery network, with emphasis on decentralization and autonomy, in order to guarantee sustainability and access by the population. The organizational and functional structure of the Ministry, which had previously consisted of function-based vertical programs, was changed to a process-based matrix.

National policy is consistent with health sector reform and aspires to the following: redirection of primary health care strategies so that they will contribute more fully to human development; refinement of the regulatory network in order to ensure quality throughout the system; universal access to programs and services with a view to closing the gaps; promotion and coordination of actions aimed at improving nutrition; assurance of healthy environments through increased surveillance of risk factors; promotion and execution of research and technology development; improvement of response capacity in the public health services network and the emergency system; creation of a culture of ongoing quality improvement; strengthening of management; upgrading of management processes and systems; improvement of financial efficiency and effectiveness; and establishment of an investment program.

The Health System

Institutional Organization

The Ministry of Health is the backbone of the health sector's public component. Its function is to ensure financing and provide services in conjunction with the Social Security Fund (CSS). The National Water Supply and Sewerage Institute also comes under its jurisdiction. For financing and service delivery there is an articulated administrative structure of public health regions which correspond to the country's provinces except in the case of Panama Province, which is divided into four regions. Under the Constitution, all Panamanians have a right to health care provided by the Ministry, while the CSS offers services to workers and their eligible dependents (69% of the population); however, the two institutions work together to ensure that the entire population is covered regardless of their status.

The private component consists of private clinics, hospitals with more than 100 beds, and private physician offices. It is estimated that 3.9% of the population uses services covered by private health insurance.

Health Legislation

The Public Health Code, approved in 1947, provides the legal framework for action in the health sector. Consideration is cur-

rently being given to either updating it or introducing an entirely new law. Between 1997 and 2000, a number of health-related laws were enacted, including legislation that created beneficent societies for San Miguel Arcángel Integrated Hospital and Santo Tomás Hospital; a General Law on Sexually Transmitted Infections, HIV, and AIDS; a Special Law on Medicinal Drugs; and Decree-Law 2, signed in January 1997, which creates a regulatory institutional framework for the delivery of potable water and sanitary sewerage services. Legislation is also being enlisted to facilitate standardization or harmonization at the subregional level, especially with regard to medicinal drugs, in close coordination with the Health Commission of the Legislative Assembly.

Law 53 of November 1951 was the first legislation to focus on disability as an issue that deserved special attention, and in 1992, the improved protection of disabled children was sought through creation of the National Council on Integrated Care for Disabled Children. With a view to combating gender discrimination, the Legislative Assembly approved Law 4 on 29 January 1999 on the subject of equal opportunities for women, which supplemented Law 44 of 12 August 1995.

Government workers are covered by Law 8 of 6 February 1997, which created a savings and investment system for public servants as a supplement to the regular pension.

Degree of Institutional Separation of Functions

During 1997–1999, the public health care system underwent a reorganization process that emphasized development at the primary level. To replace the traditional forms of health service delivery, a new model was proposed which envisaged greater equity, efficiency, sustainability, effectiveness, and quality in the provision of care. Priority was given to citizen participation in the production of comprehensive health through such entities as health committees, water boards, and other community organizations These changes were accompanied by a new separation of functions; in particular, the Ministry of Health assumed the role of steering and regulation, on the one hand arranging for the resources to finance the services and on the other hand delegating their delivery.

As of the end of 2001, opinion was in favor of adopting a model in which the Ministry and the Social Security Fund would provide health services to the population under a public program-contract administered by a private legal body to be known as the National Health Council (CONSALUD). This formula separates financing from service delivery: the sector's financial resources for delivering medical care are managed by a purchasing entity, and the financing agencies reserve decision-making power over where and how the resources are spent.

The foregoing model entails an ongoing process of strategic planning to identify and assign priority to health problems, as well as to formulate strategies for health promotion, disease prevention, health care delivery, and rehabilitation in the respective areas of responsibility. It has been implemented on a pilot basis in the district of San Miguelito and the Metropolitan Region.

Distribution of the Population by Type of Institution

As mentioned earlier, the Ministry of Health is responsible under the Constitution for the provision of health care to all Panamanians, and it shares this job with the Social Security Fund, which takes care of insured workers and their dependents. The private sector provides services to approximately 17% of the population.

Decentralization of Health Services

To fulfill its functions, the Ministry of Health has a decentralized structure divided into 14 public health regions. Health care is offered through provider establishments that are organized into networks based on three levels of complexity and decision-making authority. To avoid duplication of resources in the delivery of services, since 1997 the Ministry and the CSS have been applying a cost reimbursement system in which bills are presented by all the integrated health care units except the general hospitals and the primary care facilities in the San Miguelito and Metropolitan regions. The specialized national hospitals (Oncology Hospital and Children's Hospital) have separate compensation agreements.

A new management model has been introduced at San Miguel Arcángel Hospital, a public institution which is administered jointly by the CSS and the Ministry with financial contributions from both. Under this model, which is based on a contractual management agreement (program-contract), a fee is set for each service provided and uninsured individuals make a copayment according to their ability to pay. The CSS covers 100% of the costs of the insured population who receive care at this hospital.

Private Participation in the Health System

The private subsector offers health services to those who have the capacity to pay, either directly to the provider or through private insurance companies. There is a network of five private hospitals, each with more than 100 beds and all of them located in Panama City. Six of the provincial capitals have private hospital centers, with a total of 989 beds.

Health Insurance

The Ministry offers health services to the entire population. As of 2000, an estimated 69% of the population was insured by the CSS. According to agreements between the Ministry and the CSS, individuals can choose between the services provided by the Fund, in their capacity as entitled beneficiaries, or those provided by the Ministry, under cost compensation agreements. As mentioned earlier, the private subsector covers 17% of the population.

Organization of Regulatory Actions

Health Care Delivery

In 1998, the Ministry of Health, in coordination with other governmental and nongovernmental health sector institutions, drafted a set of Comprehensive Health Standards for the Population and the Environment, to be applied at the primary care level. The purpose of these standards is to make maximum use of health resources and guarantee comprehensive health care with active social participation while at the same time ensuring gender equity and strongly emphasizing health promotion and disease prevention, as well as recovery and rehabilitation of the disabled population and the environment.

Certification and Professional Health Practice

In Panama, the health sector is governed by 35 different labor laws that set the salary scales for the various professional and technical categories of personnel. In addition, there is a supplemental Law on Administrative Careers which applies to all professional and technical personnel in the sector.

In connection with health sector reform and modernization, some of institutions have been undergoing changes which will mean that health professionals will have to perform new functions. Those who are affected will need to be trained and certified in order to perform their professional and technical tasks at an adequate level of quality. In the short term, the introduction of examinations for technical and professional personnel as a requisite to their being allowed to practice freely in the country is planned. The Health Technical Council, consisting of Ministry officials and representatives of all the unions in the sector, is responsible for approving and certifying professional and technical personnel in the field of health.

Basic Health Markets

Within the framework of the reform process, the National Bureau of Health Services Delivery has started to set up a department for the regulation of medical equipment and devices with a view to regulating and imposing some order on various aspects of health technology.

Environmental Quality

A document presenting the National Strategy for the Environment was published in 1999. It addresses several areas relating to environmental quality, including air, noise, vibrations, water, solid waste, mining, industry, and transportation.

Food Quality

As a member of the World Trade Organization (WTO), Panama is governed by the standards of the *Codex Alimentarius* relating to the trade and marketing of food products.

Organization of Public Health Care Services

Health Promotion Services

To encourage and develop the capacity of the various members of society, as well as to facilitate community organization and social participation in health actions, six Health Promotion Centers have been created in various parts of the country and are already in operation. In addition, there are health committees, whose members carry out health promotion interventions and encourage the adoption of healthy lifestyles in the communities, working in coordination with health personnel.

Disease Prevention and Control Programs

Notable among specific prevention initiatives is the program on diseases preventable by immunization, which in 2000 achieved the following levels of coverage in the population under 1 year of age: polio, 99.6%; DPT (diphtheria, pertussis, tetanus), 94,6%; measles, 91.8%; and BCG (for tuberculosis), 100% (Figure 6).

At the same time, a number of interventions are being undertaken with a view to preventing and controlling communicable and noncommunicable diseases, including vector-borne diseases, tuberculosis, diarrheal diseases, sexually transmitted infections and HIV/AIDS, cancer of the uterine cervix (through early detection), mental illness (through mental health programs), acute pesticide poisoning, drug addiction, and work-related accidents.

In a document prepared by the Ministry of Government and Justice proposing a national policy on safety, policy lines are established for the prevention and control of violence. In fulfillment of these proposed lines of action, activities have already started under an institutional plan for the treatment and prevention of violence and the promotion of harmonious ways in which citizens can live together as partners in society.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Health situation analysis is a methodological tool that supplements the collection, tabulation, and analysis of data. The methodology was used to prepare a document, which is regularly updated, on the current situation in the country. Through this methodology it is possible to assess, among other things, the leading factors of risk and harm to human health and the environment, as well as those that contribute to their protection.

There is also an epidemiological surveillance system, established pursuant to regional and subregional commitments, which gives priority to the timely detection of cases of acute flaccid paralysis as well as suspected cases of measles and the other notifiable diseases. In addition, there is a system for the epidemiological surveillance of maternal mortality, all cases of which must be reported and investigated. And finally, a surveillance system

has been established for the monitoring of violence, especially domestic violence.

Potable Water, Excreta Disposal, and Sewerage Services

The Institute of National Water Supply and Sewerage Systems, an autonomous entity, is responsible for potable water supply services and the collection and sanitary disposal of wastewater in communities with more than 1,500 inhabitants. In 2000, 82% of the total population had potable water supply service with household connections, while 4.5% had easy access to potable water and 13.5% were without service. In urban areas, 86.8% had household connections, 0.9% had easy access, and 12.3% were without service, while in rural areas 76.1% had household connections, 9.7% had easy access, and 14.2% were without service. With regard to sanitation, 51.7% of the dwellings in the country as a whole had in-house coverage, but there was a sizable difference in terms of residence: in the cities this proportion was 71.1%, but in the countryside it fell to 20.7%.

Solid Waste Services

The Metropolitan Sanitation Bureau is responsible for the collection, transport, and final disposal of solid waste in the Panama Province Metropolitan Region. In 1999, between 20% and 30% of the refuse produced in Panama City was not deposited in sanitary landfills. In urban areas, 94.8% of the solid waste was collected, whereas in rural areas the percentage was only 31.4%. This means that 19,500 urban dwellings and 186,700 rural ones did not have the benefit of sanitary systems for refuse disposal. Between 64% and 69% of household refuse consisted of organic matter and 31%–36% was recyclable. Industrial and commercial establishments produced at least 25% of all the solid waste in Panama.

In hospitals, usually no effort is made to separate and treat wastes according to the level of hazard they post. Liquid waste is not treated before reaching the Bay of Panama. Every day, the 12 hospital centers in the Metropolitan Region produce 4,764 kg of ordinary waste and 4,782 kg of hazardous waste, while the 20 health centers in the rest of the country produce 4,641 kg/day of ordinary waste and 1,385 kg/day of hazardous waste.

Pollution Prevention and Control

The Ministry of Health, the Interoceanic Region Authority, and the Panama Canal Authority participate jointly in surveillance and analysis of areas affected by polychlorinated biphenyl (PCB) compounds. Studies conducted in 1998–1999 showed that the average total volume of suspended particles was 390 $\mu g/m^3$, with peaks as high as 1,403 $\mu g/m^3$, considerably higher than the accepted international standard of 260 $\mu g/m^3$. Average carbon monoxide levels were 17.3 ppm, with a maximum of 35 ppm, versus the permissible level of 9 ppm in an eight-hour period. During 1997, nitrous oxide levels resulting from the burning of fossil fuels were near 64.0 g/m^3, which WHO recognizes as the maximum permissible limit.

Food Safety

Coverage with inspection and sanitary surveillance of food of both animal and vegetable origin was 5% higher in 2000 than it had been during 1994–1999. Several factors have contributed to the prevention of foodborne disease, including improved technical capacity of officials in the Department of Food Protection, dissemination and application of knowledge acquired about the epidemiological surveillance of foodborne diseases, and implementation of the hazard analysis critical control point (HACCP) system in cleaning and disinfection procedures. Panama has five schools that teach food handling, three of them government-run and two of them private.

Food Aid Programs

The Ministry of Health's Food Supplementation Program, started in 1995, is for malnourished children from 6 months to 5 years old and underweight and lactating pregnant women. In 1999, the program benefited a total of 47,359 individuals, with the following breakdown: 5,816 children under 1 year, 32,616 children aged 1–5 years old, and 8,927 pregnant women.

There are two main school-based feeding programs in effect: one of them, run by the Ministry of Education, furnishes mid-morning snacks, and the other, managed by the Social Investment Fund, provides school lunches. The aim of both these programs is to improve the nutrition of primary-school children and thus enhance their performance.

Organization of Individual Health Care Services

Ambulatory, Emergency, and Inpatient Services

Health care is provided through the service delivery network of the Social Security Fund and the Ministry, and it consists of health care establishments organized according to degrees of complexity and decision-making authority. In June 2000, the installed capacity of these two institutions came to a total of 776 establishments. The public hospital network includes five national hospitals, 14 regional hospitals, and 17 area hospitals, which together have 5,936 beds. For the 3,709 beds in the hospitals under the Ministry of Health, there were a total of 141,345 discharges in 1999, with an average stay of 7.2 days and an occupancy rate of 67%. The private sector had 989 hospital beds.

Health posts, staffed by health assistants and located in remote, marginalized rural areas, are the least complex installations. In 1999, a total of 2,560,049 medical consultations were provided by these posts, as well as 674,892 consultations with dentists and 600,979 with technical personnel. A hospital management information system that gives information on produc-

tion, performance, resources, and costs was tested in the public hospitals in a pilot project carried out during 1998–2000.

Auxiliary Diagnostic Services and Blood Banks

Panama has a National Public Health Laboratory, which serves as a reference and quality control center for the national laboratory network. In 1999, the laboratories in this network were operating in 36% of the 776 national health establishments and performed a total of 5,795,377 tests. There is also a virology laboratory which serves as a reference center for the diagnosis of measles in the Central American countries.

Panama has 18 blood banks in the public sector, which received a total of 18,660 liters of blood in 1999. Replacements donations accounted for most of the donations (80%), and only a small percentage were voluntary. All the blood is screened for HIV, syphilis, and hepatitis B and C, but only 22% is screened for Chagas' disease.

Specialized Services

In 1999, there were 8,947 dentists' chairs in the primary care network, and that same year a total of 1,214,102 prophylactic procedures and 485,970 curative treatments were performed in the Ministry of Health dental services.

The Social Security Fund has developed the Integrated Home Care Service for the elderly, which provides medical, social, nursing, physical therapy, and pharmaceutical services in the home for a select group of functionally dependent patients (previously evaluated and subsequently monitored), taking advantage of appropriate resources that are available through health institutions, in the community, and in the home.

Health Supplies

Drugs

In 2000, the Ministry of Health spent US$ 10 million on medicinal drugs, while the Social Security Fund paid out another US$ 70 million. Law 1 of January 2001 deals with the subject of drugs and other health products. Most of the drugs procured by institutions are imported, since there are only two drug manufacturers in Panama. A National Drug Commission, made up of officials from the Ministry of Health, the CSS, and the unions, was created in 2000. One of the objectives of the Commission has been to prepare and sanctione a drug formulary, or National Drug List, since up until then the only official list was the one used by the CSS, with 506 products. The Ministry has established a Pharmaceutical Surveillance System, which monitors drug quality, treatment failures, and adverse reactions.

Inmunobiologicals

The vaccines used in the Expanded Program on Immunization (EPI), paid for out of the national government budget, cost an average of US$ 2 million per year and are supplied to the country through the PAHO Revolving Fund for Vaccine Procurement. A commission has been set up to oversee the quality of vaccine lots and control their distribution.

Equipment

It is estimated that the Ministry of Health has about US$ 100 million invested in biomedical equipment, but preventive maintenance is not carried out on a regular basis. The Ministry allocates 1.6% of its operating budget to conservation and maintenance, which does not include personnel costs. In 1997, the Ministry conducted a qualitative inventory of its facilities and equipment; approximately 71% of the facilities evaluated had electrical power service and 32% of them had a sterilization system in good or average operating condition.

The Bureau of Health Services Delivery and the Bureau of Infrastructure and Sanitary Engineering share the responsibility for evaluating and incorporating new technology, as well as overseeing compliance with standards related to the procurement, installation, and maintenance of biomedical equipment. Standards governing and regulating medical devices and equipment have recently begun to be applied.

Human Resources

Availability by Type of Resource

According to a survey of human resources conducted by the Ministry of Health in 1996, the public sector had 19,087 employees working in the Ministry's own establishments and those of the CSS. Of this number, 13.2% were physicians and 11.8% were nurses. There were 11.7 physicians, 2.4 dentists, and 10.7 nurses per 10,000 population. Of the 6,274 employees working in hospitals, 36% corresponded to the CSS, 46.6% to the Ministry, and 17.4% to the hospital beneficent societies.

Continuing Education

The Ministry and the CSS have jointly introduced a National Medical Specialist Training Program that aims to standardize the preparation of professionals and orient programs toward the specialties that the country needs. As part of this initiative, the training of technical groups for the health sector is gradually being transferred to the universities, and a commission has been formed to address issues related to education, service, and research.

Health Research and Technology

Under Ministry of Health Resolution 201 of 6 August 1999, the Gorgas Memorial Institute for Health Studies (ICGES) was given responsibility for scientific research in the health field and for the dissemination of health-related scientific and technical knowl-

edge. The Ministry has defined a policy aimed at promoting research and technological development needed in order to improve the health situation in Panama. The ICGES has prepared a list of research priorities for the health field and drawn up a set of working strategies, and it has also outlined the concept and organizational structure for a national health research system.

Health Sector Expenditure and Financing

The public services of health promotion, disease prevention, treatment, and rehabilitation are financed by the Ministry and the CSS, and the principal sources of financing are current income from the national government; worker-employer contributions to social security; external donations and international loans, usually from public agencies; and fees collected by the Ministry for such services as the registration of drugs and food products, and other fees, mainly in the environmental area. The figure for total expenditure on health is incomplete because of lack of information from the private subsector, but it was estimated at US$ 241 million in 1997. According to the National Accounts System maintained by the Office of the Comptroller General of the Republic, there is no organized information available on direct expenditure incurred by individuals who pay for medication and other health services.

In parallel with social expenditure in general, Panama's public expenditure on health has been rising steadily since 1990, reaching an estimated total of US$ 656.4 million in 1999 (equivalent to US$ 234 per capita). This sum represents about 6.5% of the GDP and 17.1% of all public spending. The CSS accounted for approximately 60% of public expenditure on health and the Ministry of Health for most of the rest, since the health expenditures incurred by other ministries are minimal. The Ministry of Health budget for 1999 was US$ 192.5 million, of which US$ 162.5 million was spent on operations and the rest on investments.

To recover part of its expenditure, the Ministry of Health collects a minimum copayment of US$ .50 from uninsured users of its services, an amount that is more of donation than a payment based on actual costs. Fee schedules are applied for hospitalizations and surgical procedures, subject to the patient's ability to pay. A compensation mechanism based on the outstanding amount is applied to costs incurred by the uninsured population in CSS establishments and by the insured population in the case of Ministry of Health establishments.

External Technical Cooperation and Financing

External financial cooperation funds about 2% of the health expenditure. Among the international organizations that provide technical and nonreimbursable financial cooperation are PAHO/WHO, UNICEF, UNDP, UNFPA, the European Union, AECI, JICA, and the governments of South Korea and Taiwan. The IDB and the World Bank have granted long-term and "soft" loans, mainly for reform of the health system, adaptation of the health care model, further extension of service coverage, construction of aqueducts, modernization of the health sector, and building of infrastructure. Also, several projects have been executed within the framework of binational technical cooperation agreements with other countries of the Region. In addition, international nongovernmental organizations such as Doctors Without Borders and Caritas Internationalis carry out health activities in remote areas.

FIGURE 1. Gross domestic product, annual growth (%), Panama, 1990–1999.

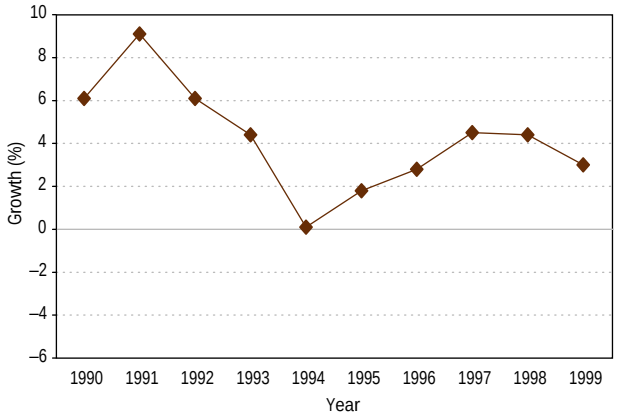


FIGURE 2. Population structure, by age and sex, Panama, 2000.

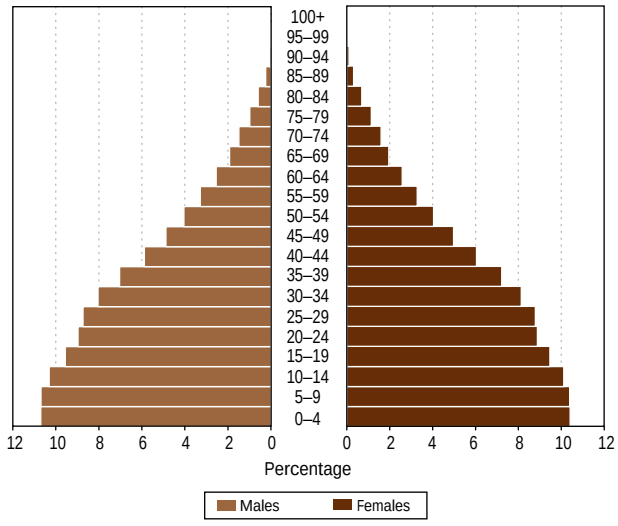


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Panama, 1994–1998.

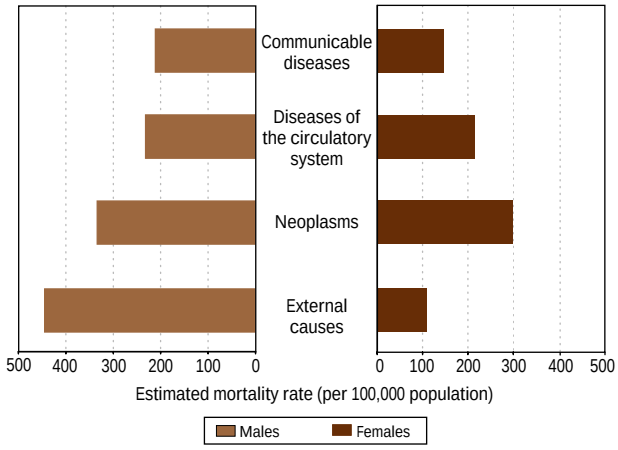
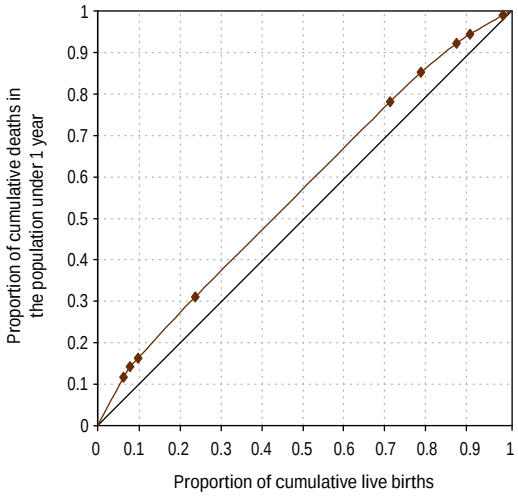


FIGURE 4. Distribution of infant mortality, Panama, 1997.



Source: Demographic indicators, Panama, 1998–1999.

FIGURE 5. AIDS incidence, by sex, with male-female ratio, Panama, 1990–1999.

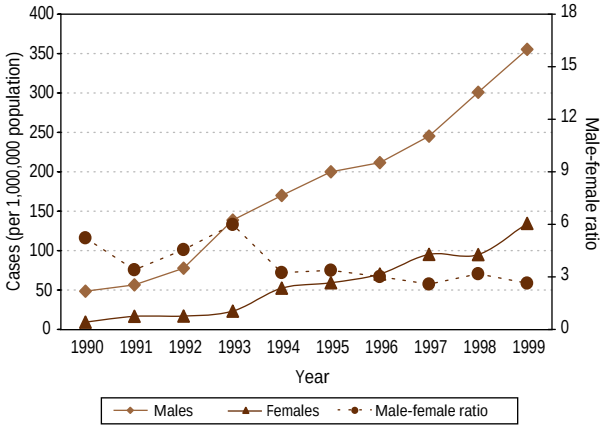
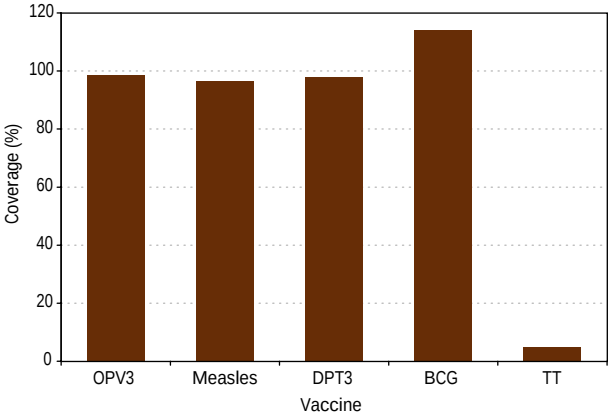


FIGURE 6. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage among women of childbearing age, Panama, 2000.



PARAGUAY

OVERVIEW

Paraguay has a total land area of 406,752 km^2 and is bordered by Argentina, Bolivia, and Brazil. The Paraguay River divides the country into two clearly differentiated natural regions. The western side, or Chaco, covers 60% of the national territory and is divided into three departments. Its climate and topography make it unattractive for human settlement. The eastern region is divided into 14 departments; this is where the capital (Asunción) and all the main cities and population centers are found as well as the country's transportation networks and basic service systems.

Paraguay faces a number of development problems, especially devitalization of the economic growth model, deterioration of the environment, social inequity and exclusion, and weaknesses in the constitutional state. After a long period with authoritarian regimes, an incipient democratic system is finally in place, but there are still difficulties that undermine effective exercise of the constitutional state, including the capacity to address social and economic issues and to embark on an institutional reform process aimed at streamlining public administration.

Paraguay's economic model has been based on exporting agricultural raw materials and, more recently, reexporting foreign goods. In the past decade, the Paraguayan economy has been unable to find an alternative to primary production, which is currently facing a crisis, especially in the area of cotton growing, or to develop a model that will enable the national economy to compete in the MERCOSUR regional integration initiative.

In the 1970s and 1980s, the country's GDP grew at an average annual rate of 8.1%, but in the 1990s, the rate dropped to 2.3%. The per capita GDP was US$ 1,634 (in constant 1982 U.S. dollars) in 1996 and US$ 1,535 in 1999. Figure 1 shows the growth of the GDP in 1995 prices.

Between 1995 and 1998, basic social services—basic education, primary health care, water supply, and sanitation—accounted for 2.2% of GDP. Of this total, 79.1% corresponded to basic education (US$ 33 per capita in 1996), 18.8% to basic health (US$ 8 per capita), and the remaining 2.1% to potable water and sanitation (US$ 1 per capita). In 1999, the State devoted 8.2% of GDP to social services, of which only 2.4% was spent on basic services.

It is estimated that 30.3% of the population was living below the poverty line in 1995 and that, by 1999, that proportion had increased to 33.7%, which represents 1.9 million people (46% of whom live in extreme poverty). Forty-two percent of the nation's children and youths 0–14 years of age—a higher proportion than for the population as a whole—are poor. The poorest 40% of the population received 10% of the total income generated in the country, whereas the wealthiest 10% received 40% of the income. In 1999, the income ratio between the richest 10% and the poorest 10% was 44:1. In rural areas, average income decreased and inequality increased (the Gini coefficient increased from 0.543 to 0.609).

The greater incidence of poverty in rural areas than in cities, paralleled by the unequal distribution of access to resources of production, has forced people to migrate to the cities, where they live in highly vulnerable conditions.

Open unemployment in the population aged 10 and older is 6.8%; this rate is higher among women (7.5%) than among men (6.5%), and it is higher in urban areas (9.4%) than in the countryside (3.4%). Hidden unemployment comes to 9.7%, and it is greater in rural areas (12%) and among women (16.1%). Underemployment (17.6%) is about the same in urban and rural areas.

Thirty percent of women and 26% of men in the labor force make up the informal sector. On average, women's earnings represent only 65% of the amount earned by men. Between 60% and 70% of the women are employed in the services sector. Women hold lower-ranking positions than men, and they have higher rates of open and hidden unemployment as well as underemployment. The rate of female participation in the workforce (41.3%) is lower than that of males (73.9%) in both urban and rural areas.

The proportion of the population living in overcrowded conditions is 21.4%; the percentage is much higher in rural areas (29.9%) than in the cities (12.9%). Water supply, from either public sources or household connections, reaches 47.5% of the population, and this percentage is much higher in urban areas (71.6%) than in the countryside (15.4%). Most rural dwellers get water from wells without pumps. As far as electricity is concerned, 88.5% of the population has service in the home, although in rural areas there is a 23.4% shortfall. In urban areas, half the population has the benefit of refuse collection services, whereas in rural areas 77.6% of the people burn their waste.

The illiteracy rate is 8.9%. The Paraguayan population goes to school for an average of 6.4 years, with the number of years of schooling being higher in urban areas than in rural areas. Men average 6.7 years of schooling, compared with 6.2 years for women. Half the Paraguayan population aged 15 and older has completed primary school, and more people in the cities go on to secondary and higher education than those in rural areas, where most have no more than a primary education.

Deforestation continues to increase with expansion of the agricultural frontier and timber extraction; urban and industrial pollution are also on the rise. The lack of sustainable models for agriculture and urban development has led to loss of biodiversity and deterioration of ecosystems, soil erosion in the eastern region, soil salinization in the western region with consequent loss of fertility, and the increasing endangerment of animal and plant species. There are still no environmental policies, despite creation of the National Secretariat for the Environment, the National Council on the Environment, and the Office of Environmental Health within the Ministry of Public Health and Social Welfare.

The last population census was conducted in 1992. According to projections by the Bureau of the Census, Statistics, and Surveys (DGEEC), the country's population in 2000 was estimated at 5,496,450, with an annual population growth rate of 2.6%.

In 2000, males represented 50.4% of the population, and females, 49.6%; 41% were under 15 years old, and 7.3% were 60 years or older. In the 1992 census, 50.5% of the population was urban, and by 2000 this proportion was estimated to have reached 54.4% (55.1% in the eastern region of the country and 34.5% in the western region). Figure 2 gives the breakdown of the population by sex and age as of 2000.

In terms of population density, in 2000 there were 13.5 inhabitants per km^2, with notable differences among geographic areas. The Chaco region had only 2.5% of the population and a density of 0.6 inhabitant per km^2. The eastern region, on the other hand, had an average of 33.5 inhabitants per km^2, with densities ranging from some 4,800 inhabitants per km^2 in Asunción and 541 per km^2 in the Central Department to 7.3 per km^2 in Ñeembucú and 10–48 per km^2 in the other departments.

Urban development is unbalanced, with a large urban population concentrated in a small land area (65% of the urban population occupies only 5% of the national territory) and most of the remaining inhabitants widely scattered in small population centers with low levels of urbanization. Asunción is the most important urban center and the only city in the country with a population of more than 500,000. Most of the urban population and basic and general services are concentrated there. Internal migration is headed mainly toward Asunción and its surrounding metropolitan area and an urban corridor that stretches from the eastern to the southeastern part of the country.

The estimated crude birth rate was 34.1 per 1,000 population in 1990–1995 and 31.3 in 1995–2000. Life expectancy at birth increased from 66.3 years for men and 70.8 years for women in 1990–1995 to 67.5 years for men and 72.0 years for women in 1995–2000. Overall life expectancy was estimated at 68.5 years in 1990–1995 and 69.7 in 1995–2000.

According to the DGEEC, the estimated total fertility rate was 4.6 children per woman in 1990–1995 and 4.2 in 1995–2000. Varying considerably by geographic area, the rate was 5.6 for rural women, 3.2 for those in urban areas, 2.9 for the women in Greater Asunción, and 4.8 for the remainder of the country. Women with less than two years of schooling had a fertility rate almost four times greater (6.2 children) than those with secondary or higher education (2.3 children).

Mortality

The Ministry of Public Health and Social Welfare registers the deaths that occur in its establishments; it also receives reports of certified deaths from some of the health services, the Social Security Institute, and other private institutions, and it collects data on certified deaths from the Civil Register. The Ministry's Department of Biostatistics processes and publishes mortality data on an annual basis. Since 1996, the data have been coded according to the ICD-10.

The estimated crude death rate was 6.0 per 1,000 population during 1990–1995 and 5.4 in 1995–2000. The DGEEC estimates the number of deaths based on data from the census. Estimates of underregistration for the period 1996–1999 range from 37% to 41%. Between 46% and 48% of registered deaths were not medically certified, and 16.7% of them were due to signs, symptoms, and ill-defined causes, with a range from 10% in 1996 to 20% in 1999. The PAHO 6/61 list is used here to categorize deaths according to six broad groups of causes. Figure 3 shows proportional mortality for these six groups; however, it should be kept in mind that the data correspond to the 10,869 medically certified deaths with defined causes, or fewer than 40% of all estimated deaths.

Mortality rates are highest in Asunción, Cordillera, and Paraguarí and lowest in the western region and the departments of

San Pedro, Canindeyú, Alto Paraná, Itapúa, and Caaguazú. These differences may be accounted for in part by the structure and density of the population, but the main cause is underregistration.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

In 1999, there were 90,007 registered live births (44,147 girls and 45,860 boys). That same year the total of all births was estimated at 166,000.

Of the deliveries attended at Ministry of Health establishments, 5.4% of the children had low birthweight, with the proportion ranging from 7.2% in Asunción to 3.6% in Caaguazú.

In 1999, a total of 1,749 deaths were registered in children under 1 year of age, making for a registered infant mortality rate of 19.4 per 1,000 live births, down slightly from 19.7 in 1995. This national rate conceals significant variations by geographic area—for example, 30.1 per 1,000 live births in Alto Paraná and 28.8 in Amambay, compared with 15.4 in Guairá and 13.8 in San Pedro. The western region had rates higher than the national average, especially in the Alto Paraguay area (50 per 1,000 live births), where, in addition to underregistration, there is considerable variation because of the small size of the population. The DGEEC estimates that, during 1996–1999, between 71% and 74% of all infant deaths went unreported, with variations among geographic areas.

The distribution of infant mortality coincides with that of poverty: it is highest in the north and east, in rural areas, and among children born to mothers with little schooling. There is also an inverse correlation with the distribution of health services and health resources. Estimated infant mortality was more than double for the children of mothers who had not had any prenatal care than for children whose mothers had checkups during the first trimester of pregnancy.

In 1999, registered neonatal mortality was 10.7 per 1,000 live births, up from 9.8 in 1995. The rate in 1999 represented 55% of all registered deaths in children under 1 year of age, compared with 50% in 1995. The leading causes of neonatal mortality were complications of labor and delivery (33.1%), prematurity (20.9%), and infection of the newborn (20.5%). Deaths due to neonatal tetanus are still being seen. The rate of death due to postneonatal tetanus was 8.7 per 1,000 live births in 1999, compared with 9.9 in 1995. The leading causes of death in this age group were pneumonia and influenza (28.1%) and diarrhea (21.3%).

In 1999, the population of children aged 1–4 years was estimated at 607,389 (298,293 girls and 309,096 boys), or 11.3% of the total. That year there were 458 deaths, for a mortality rate of 75 per 100,000 children between 1 and 4 years old (60 per 100,000 girls and 90 per 100,000 boys). The leading causes were communicable diseases (mainly pneumonia and diarrhea), with a rate of 39.5 per 100,000 (47.2 for boys and 31.5 per 100,000 for girls) and external causes, at 14.0 per 100,000 (17.4 and 10.4 per 100,000, respectively, for boys and girls). The rates were highest in Alto Paraná and in the western region.

The mortality rate for children under 5 years was 24.5 per 1,000 live births in 1999, down from 29.8 in 1995. Deaths from prevalent childhood diseases (infection of the newborn and septicemia, pneumonia and influenza, diarrhea, meningitis, tetanus, undernutrition, and anemia) represented 43.6% of deaths in this age group.

Schoolchildren (5–9 years)

As of 1999, the group of children aged 5–9 years was estimated to number 716,471 (364,473 girls and 351,998 boys), or 13.4% of the total population. This age group had 188 registered deaths, for a mortality rate of 26 per 100,000 (21 per 100,000 girls and 31 per 100,000 boys), the lowest of all the age-specific mortality rates. In 1999, external causes headed the list and were responsible for 37.8% of the deaths in this age group, for a rate of 15.4 per 100,000 boys and 6.6 per 100,000 girls. In 1995, these causes accounted for 30% of the deaths. The second most frequent cause was communicable diseases, at 23.4%.

In 1997, the Ministry of Public Health and Social Welfare produced the National Plan for the Integrated Care of Children, which incorporates the concepts of health, integrated care, and growth and development monitoring, and in 1997–1998, a study was conducted to determine the scope of lost opportunities in the provision of health care to children. Between 1997 and 1999, steps were taken to implement the strategy of integrated management of childhood illness (IMCI), and by 2000 progress was being seen in some of the departments.

Adolescents (10–14 years and 15–19 years)

In 1999, the population 10–14 years old was estimated at 655,917 (322,681 girls and 333,238 boys), and that of adolescents aged 15–19, at 576,090 (283,654 females and 292,436 males). Combined, the group aged 10–19 years represented 23% of the total population.

One-third of the population between 13 and 18 years (44% in rural areas) received no formal education in 1999. On the other hand, 96% of those aged 7–12 were in school. The percentage of those who were not in school was 2.6 times greater in rural areas than in the cities, and 5.1 times greater for girls than boys.

In 1998, 16% of those in the 10–14 age group had already entered the national workforce and represented 5% of all the employed; among 15–19-year-olds the proportion was 43.7%.

In 1999, a survey revealed that, among students aged 11–15 in the schools of Asunción and the surrounding metropolitan area, 35.6% had already smoked their first cigarette and 62.5% had

consumed alcoholic beverages. At the same time, 94.7% claimed that they understood the consequences of smoking and drinking. At home, the male figures were more apt to be the ones who smoked and drank, and the respondents reported that 67.2% of their friends smoked and 71% drank.

In 1998, the age-specific fertility rate for adolescent girls between 15 and 19 years old was 78 per 1,000 (48 per 1,000 in urban areas vs. 135 in rural areas; 29 per 1,000 for those who had completed high school or more and 214 per 1,000 for those with less than two years of schooling). Only 33% of the young women in this age group reported that they had used some form of contraception in their first sexual relationship. Among adolescent girls 15–17 years old, 7.3% said they had been pregnant at least once (i.e., not including pregnancies before the age of 15).

During 1996–1999, the group aged 10–14 years, both girls and boys, had the second-lowest age-specific mortality rate. In 1999, the mortality rate was 32 per 100,000 (27 and 38 per 100,000 girls and boys, respectively). External causes headed the list for both sexes (15 per 100,000 overall, 11 for girls, and 19 for boys).

Among adolescents 15–19 years old, the risk of dying was two or three times greater than it was for those between 10 and 14, and the risk was 1.8 times greater for boys than for girls. The age-specific rate was 69 per 100,000 in 1999 (51 and 87 per 100,000 for girls and boys, respectively). Sixty percent of the deaths (70% in males) were due to external causes, with a rate of 41.7 per 100,000 boys and 21.9 per 100,000 girls. Based on the study of lost opportunities to provide integrated care for persons in these age groups (1997–1998), the Ministry of Public Health and Social Welfare developed the National Plan for Integrated Care of Adolescents 1997–2001, with emphasis on health promotion, which has served as the basis for interinstitutional and interagency projects offering differentiated care for this group of the population.

Adults (20–59 years)

In 1999, adults represented 44% of the population and accounted for 26.5% of all registered deaths. The risk of dying was 1.8 times greater for men. Among 20–39-year-olds, external causes were the most common cause of death, representing 47.8% of all deaths in that age group in 1999 (52 per 100,000 for both sexes and 90 per 100,000 men). In the 40–59 age group, diseases of the circulatory system were the most frequent causes of death, with an overall rate of 107.2 per 100,000 (122.7 per 100,000 men), followed by tumors, with an overall rate of 79.2 per 100,000 (86.3 per 100,000 women).

Modern family-planning methods are used by 48% of the women of reproductive age (41% in rural areas). Only 56% of all deliveries take place in institutions—39% in rural areas and 81% in urban areas (93% in Asunción). The proportion of institutional deliveries is 94% for women with secondary or higher education, and it is 74% for the first pregnancy.

In 1999, the rate of registered maternal deaths in Paraguay was 114.4 per 100,000 live births, representing a reduction of 23.8% relative to 1990. For the period 1989–1995, maternal mortality was estimated at 192 per 100,000 live births. The rates of registered maternal deaths between 1996 and 1998 were as follows: 123.3 in 1996, 101.8 in 1997, and 110.9 in 1998. There are significant differences among regions, with the highest rates (Canindeyú, Caazapá, San Pedro, and Concepción) as much as seven times greater than the lowest rates (Central, Cordillera, and Misiones). The causes of maternal deaths during 1996–1999 were hemorrhage (25.4%); abortion (24.6%); toxemia (20.6%); other complications of pregnancy, delivery, and the puerperium (19.3%); and sepsis (10.1%).

The Ministry has established a National Council on Reproductive Health, which in turn has a Technical Committee on the Surveillance of Health and Maternal Mortality. In addition, operational guidelines for surveillance have been implemented at the departmental level, and local committees investigate deaths in women of reproductive age with a view to determining the chain of events that led to the death. It is hoped that the results will help to enlist the participation of health services and the community in reducing maternal mortality.

The Elderly (60 years and older)

In 1999, the population aged 60 and older was estimated at 283,663 (159,391 women and 124,272 men) and represented 5.3% of the total. This group had 56.7% of all registered deaths and 51.4% of medically certified deaths. The specific mortality rate for this age group was 3,630 per 100,000 (4,281.7 per 100,000 men and 3,121.3 per 100,000 women). The leading cause of death was diseases of the circulatory system, with an overall rate of 1,226.2 per 100,000 (1,402.6 for men and 1,088.5 for women).

The country has a Strategic Plan for Older Adults. The elderly are encouraged to organize in groups and become part of a national network with a view to strengthening their participation in national, regional, and local development. Messages promoting the concept of self-care have been prepared and disseminated in the mass media, and several day centers for the elderly have been opened.

Workers' Health

Because Paraguay is an agricultural country, one of the chief health risks for workers is exposure to pesticides. Before the National Toxicology Center (CNT) was created in July 2000, there was no registry of poisoning cases. In the last six months of 2000, the CNT registered 500 cases, most of them in agricultural workers exposed to pesticides.

In 2000, there were 2,500 work-related accidents, corresponding to 1.9% of all reported accidents. The sectors that generate the most accidents are the lumber industry (47 per 1,000), civil construction (45 per 1,000), and bottling plants (45 per 1,000). In

2000, a total of 16 deaths from work-related accidents were reported.

Indigenous Groups

The indigenous population is an ethnic minority that represents only 1% to 2% of the nation's total, and it has a slower growth rate than the rest of the population, although the pattern is similar. However, indigenous groups have been an essential presence in the historic and social formation of the Paraguayan people, and they currently constitute a highly vulnerable sector. There are 17 known ethnic subgroups, which belong to 5 linguistic families: the Guarani, Lengua-Maskoy, Mataco, Guaicurú, and Zamuco. There are no recent data available on these populations. According to the 1992 census, the most numerous groups are found in the Chaco region, where they constitute 30% of the total population, and indigenous groups of the Chaco represented 59% of the indigenous population counted in the national census. Their high rates of infant mortality (93.9 per 1,000) and illiteracy (as high as 94% in the population over 15 years old), coupled with the poor state of their housing (93% of the homes have no sanitation or drinking water), characterize them as the poorest of the poor in Paraguay.

According to the 1992 census, which is the most recent information available, the fertility rate in indigenous women was 5.7 children per woman.

By Type of Health Problem

Natural Disasters

In recent years, especially in 1998, the country has suffered the effects of global climatic change and the El Niño phenomenon, which have generated emergency situations and floods that have taken a heavy human toll and caused extensive damage. Flooding in 1998 caused 49 deaths, the destruction of 4,500 homes, the displacement of 13,000 families, and economic costs estimated at US$ 70 million. Recently, the country has also seen an increase in potential risks from chemical emergencies and disasters as a result of improper handling of hazardous products stored in places that were vulnerable to floods.

Vector-borne Diseases

The period 1993–1997 had an annual average of 624 reported cases of malaria, but in 1998 the number rose to 2,091, and the API was 0.5 per 1,000 population. Then, in 1999–2000, an epidemic occurred, with 9,946 reported cases in 1999 (API 2.2 per 1,000), 72% of these during the first half of the year; in 2000, there were 6,853 cases (API 1.4 per 1,000), which reached their peak between March and May. Most of these cases—82% in 1999 and 80% in 2000—occurred in the three departments at highest risk: Alto Paraná, Caaguazú, and Canindeyú. The male-female ratio was 2.5:1 in 1999 and 2.2:1 in 2000. People of all ages were affected, and the APIs by age group were as follows: 1.3 per 1,000 for adults aged 60 and over, 1.7 for the population 5–14 years old, and 2.1 for adults aged 20–59. All the cases studied, except three in 1999, were caused by *Plasmodium vivax*. No deaths were reported.

In addition to revealing conditions that were propitious for transmission, the epidemic brought to light deficiencies in infrastructure and training as well as the limited action being taken by the health services and the community to address the problem. The Ministry and the National Malaria Eradication Service shored up the affected area by transferring personnel from other regions, reactivating and expanding the network of voluntary collaborators, and progressively enlisting the participation of the health services network.

After a decade of epidemiological silence, dengue transmission was detected in February 1999, and an epidemic ensued, located mainly in the Alto Paraná, Amambay, and Central departments, which lasted until June. The Central Public Health Laboratory documented 1,164 serologically confirmed cases, and international reference laboratories identified the dengue-1 serotype. In December 1999, an extensive outbreak was recorded in the city of Luque, Central Department, next to Asunción, and from January through April 2000, the country was ravaged by a massive epidemic with confirmed cases in 18 departments but concentrated especially in the capital and the Central and Alto Paraná departments. In all, there were 24,282 reported cases, 2,910 of which were confirmed either by serology or isolation of the dengue-1 virus. According to surveys conducted during the epidemic, there may have been more than 100,000 cases in Asunción alone. In the laboratory-confirmed cases, older adults were at greatest risk, and the incidence in children was low (20.3 per 100,000 population in those aged 0–9 years, 38.8 per 100,000 in adolescents aged 10–19 years, 69.7 per 100,000 in adults aged 20–59 years, and 85.5 per 100,000 in those aged 60 and older). No cases of hemorrhagic dengue were documented.

The country undertook an intensive campaign to combat the epidemic, enlisting the participation of institutions and organized community groups. Nevertheless, many Paraguayan cities still have indexes of *Aedes* that are compatible with transmission of dengue.

The endemic area for vector-borne transmission of Chagas' disease encompasses seven departments in the eastern region and much of the Chaco. The main vector is *Triatoma infestans*, but *T. sordida*, *T. guazu*, and *Panstrongylus magistus* are also present.

In a serologic survey conducted between 1995 and 1999 to detect *Trypanosoma cruzi* antibodies in pregnant women, the department of Cordillera was found to have an overall seroprevalence of 15%, with a range in its municipalities from 8% to 34%. In 2000, the rate of positive serology for *T. cruzi* in women aged 15–44 years who came to the Ministry's health services for prenatal monitoring was 14.5% in Cordillera and 12.8% in

Paraguarí, both of which are endemic departments, compared with 3% in Canindeyú and 3.5% in Alto Paraná, which are not within the endemic area. In 2000, 4.2% of the children of the seropositive mothers identified in prenatal monitoring in the department of Cordillera were also positive, and the proportion was 7.8% in Paraguarí. Some surveys of indigenous populations in the Chaco region have yielded seroprevalence rates of nearly 80%. Among blood donors, with 98% of all units screened, seropositivity for *T. cruzi* was 4.1% in 1996, 3.8% in 1997, 4.1% in 1998, 4.7% in 1999, and 4.3% in 2000.

Control activities during the 1980s and 1990s were sporadic, but they nevertheless resulted in the reduction of *T. infestans* infestation levels in households and the reduction of seropositivity in young persons. During 1999–2000, the National Chagas' Disease Control Program redefined its strategies for combating vector-borne transmission, which include mass entomological detection campaigns in all departments; selective spraying (either focal or all premises in a given target area, based on the level of infestation); and subsequent entomological surveillance with community and institutional participation.

During 1995–1998, the annual occurrence of leishmaniasis ranged from 105 to 175 reported cases, but in 1999 the number rose to 409 cases, and in 2000 there were 562 cases. The main endemic areas are in the northern, central, and eastern parts of the country's eastern region, where areas of rainforest are still found, especially in the departments of Canindeyú, San Pedro, and Alto Paraná. The principal etiologic agent is *Leishmania braziliensis*, which accounts for the sizable proportion of cases with mucosal lesions: 39% of the cases in 1999 and 19% in 2000. The male-female ratio was 2.2:1 in 1999 and 1.7:1 in 2000. Although cases in adults were predominant, 22.8% in 1999 and 39% in 2000 were in persons under 20 years of age. Diagnosis and treatment are handled by the Ministry's health services with support from the Institute of Tropical Medicine and the Central Laboratory. Drugs for treatment are provided by the National Malaria Eradication Service.

Visceral leishmaniasis has been rare in Paraguay: the last two documented cases occurred in 1995 and 2000. Serologic studies conducted during this period in Asunción and the surrounding metropolitan area revealed a prevalence of 3% to 11% in dogs but no cases in humans. Preliminary data suggest that there was a hyperendemic of visceral leishmaniasis in dogs in the metropolitan area during 2000–2001. In 2001, given concern about the possible appearance of visceral leishmaniasis in humans, an interinstitutional committee was reactivated to address the problem on an integrated basis.

Diseases Preventable by Immunization

Pursuant to its commitment to eradicate measles, Paraguay has significantly reduced the incidence of this disease. A total of 69 cases were reported in 1995, 14 in 1996, 200 in 1997, and 70 in 1998, when a successful campaign was undertaken to vaccinate the population under 15 years of age. The circulation of measles has been interrupted since November 1998.

The last case of polio was reported in 1985. During the past five years, rates of flaccid paralysis have fallen from 1.1 per 100,000 in those under 15 years old in 1995 to 0.4 in 1998, and in 2000 the rate was 0.9 per 100,000. The last case of diphtheria was recorded in 1995. That same year there were 13 reported cases of pertussis, 40 in 1996, 40 in 1997, 37 in 1998, 29 in 1999, and 24 in 2000.

It is estimated that 70% of the children under 5 years old have been vaccinated against measles, 82% against polio, and 83% against tuberculosis (BCG). Figure 4 shows immunization coverage of infants under 1 year in 2000.

There were 16 reported cases of neonatal tetanus in 1995, 10 in 1996, 20 in 1997, 13 in 1998, 10 in 1999, and 7 in 2000, with fatality rates ranging from 69% to 87%. The occurrence of these cases was associated with rural residence of the mother, low percentage of institutional delivery, few years of schooling, limited access to health services, and the lowest strata of poverty. Cumulative tetanus-diphtheria toxoid (Td) vaccination coverage in women of reproductive age during 1995–1999 was 49%.

Intestinal Infectious Diseases

Since 1997, there have been no reported cases of cholera in Paraguay. The last cases on record were in 1993 (three cases) and 1996 (four cases), all of them confirmed in the laboratory, where the causative agent was identified as *Vibrio cholerae* O1, biotype El Tor, serotype Inaba.

Diarrhea was the third leading cause for outpatient consultations in the health services of the Ministry of Public Health and Social Welfare, ranging from 8% to 12% in the different age groups. During 1996–1999, approximately 42,000 cases of diarrhea were reported each year, representing a slight increase relative to the previous five-year period (40,000 cases a year). Of the reported cases of diarrhea, 69% were in children under 5 years old. Diarrhea with dehydration represented 8% of the total.

The mortality rate for acute diarrheal disease in the general population was 8.3 per 100,000 in 1996 and 6.4 per 100,000 in 1999. This disease was the second leading cause of death in children 1–4 years old (15% of all deaths in that age group), while in children 5–9 years old it ranked fourth (5% of deaths), and in those under 1 year of age it ranked sixth (12% of deaths).

Chronic Communicable Diseases

The high annual incidence rates of tuberculosis (ranging from 35 to 42 per 100,000 population during 1995–1999) show that this disease continues to be a major public health problem, especially for vulnerable populations in deteriorated urban areas of the Central Department and for indigenous communities in the western region. The mortality rate from tuberculosis was 4 per 100,000 population during that period. Also during 1995–1999, about 65% of all new cases were in the population age group

15–59 years. The departments of Boquerón, Alto Paraguay, and Presidente Hayes had the highest incidence. In 1999, 90% of all new cases of tuberculosis detected were the pulmonary form, and 53% of them were confirmed bacteriologically. Nineteen percent of the bacteriologically confirmed pulmonary cases were cured, 55% of the patients completed the course of therapy, and 20% abandoned treatment. During 1996–1999, there were 9–18 reported cases each year of tubercular meningitis in children 0–4 years of age.

The National Tuberculosis Control Program under the Ministry of Public Health provides free medication for directly observed treatment, short course (DOTS), following the regimens standardized by PAHO.

In 2000, the national prevalence rate for leprosy was 1.1 per 10,000 population, very close to the figure set as the target for its elimination as a public health problem. However, new cases continued to be detected: 386 in 1996, 419 in 1997, 362 in 1998, 451 in 1999, and 427 in 2000. The departments of Canindeyú, Ñeembucú, Guairá, and Caaguazú had the highest prevalence. Coverage with the standardized multidrug treatment regimens is nearly 100%, and active case finding is undertaken in selected areas.

Acute Respiratory Infections

Acute respiratory infections continue to be the leading reason for outpatient consultations. They account for 36% of all consultations in the general population and 50% of consultations for children under 5 years old. During 1996–1999, approximately 245,000 cases were reported each year, compared with 200,000 cases a year during the previous five-year period, and 61% of the cases were in children under 5 years. Of all acute respiratory infections, 18% corresponded to all types of pneumonia, and 15% of these were grave.

During 1996–1999, these infections were responsible for 6% of all deaths in the general population, or approximately 1,350 deaths a year, with mortality rates of 22.3 per 100,000 population in 1996 and 19.1 per 100,000 in 1999. Mortality from acute respiratory infections is the leading cause of death in children 1–4 years old, representing 24% of all deaths in this age group. They were also the third leading cause of death in infants under 1 year old (12%), children aged 5–9 years (13%), and adolescents 10–19 years (4%).

Zoonoses

Up until 1998, Paraguay had one of the highest incidence rates of human rabies in the Americas. Canine rabies continued to be endemic in almost all the departments of the country, but it was concentrated in Asunción and cities of the Central Department (82% of the cases). During 1995–2000, 34.3% of the human cases were reported in the central region, with a rate of 1.0 per 100,000 population, but the average incidence was highest in Amambay (2.4 per 100,000). The male-female ratio was 2.9:1, and the age-specific incidence was highest in the older age groups.

In 1999, national authorities began to update control activities, mobilize actors and resources, and revise the vaccination strategy (focalization); at the same time, efforts were stepped up to capture stray dogs, block foci, carry out education and promotion programs, and provide prophylaxis for persons who had been bitten. As a result, starting in the second half of that year, there has been a progressive and significant drop in the number of canine rabies cases (from an average of 34 cases a month in 1998 to 4.3 in 2000), and there were no cases of human rabies between May 1999 and October 2000, when the last case was reported.

HIV/AIDS

The cumulative number of AIDS cases diagnosed between 1986 and January 2001 was 584, and the number of deaths from AIDS during the same period was 293 (for a case-fatality rate of 51%). Despite increased detection in recent years, the epidemic continues to be limited: prevalence is low in the general population; cases continue to be found predominantly among urban men; and incidence among drug users is still quite low. Most of the AIDS cases continue to occur in Asunción and the Central Department; nevertheless, during 1997–1999, cases were registered in almost all the departments, especially in the cities of departments located on the country's international borders (Amambay, Alto Paraná, and Itapúa). The most recent data available show that the prevalence of HIV infection in blood donors is 0.2%. The trends in reported annual incidence during 1994–1999 by sex and by male-female ratio are shown in Figure 5.

The National Program to Combat AIDS is centralized, and the problem of AIDS is not addressed as part of an integrated approach to sexually transmitted infections. The program mobilizes resources for antiretroviral treatment, although they are not sufficient. Prevention strategies have been aimed at adolescents, sex workers, men who have sex with men, and drug users, especially in border areas.

Sexually Transmitted Infections

A total of 699 cases of syphilis were reported in 1996, 861 in 1997, 716 in 1998, and 886 in 1999. In 1996, 37% of the cases were diagnosed in pregnant women and 13% were cases of congenital syphilis; in 1997, the percentages for these same groups were 36% and 15%, respectively; in 1998 they were 49% and 19%; and in 1999 they were 39% and 16%. In 1999, the prevalence of syphilis among blood donors was reported to be 5%, but it should be kept in mind that only 75% of the blood units donated for transfusion were tested serologically. In 2000, when 98.6% of all blood units were screened, 6% were positive for syphilis.

Nutritional and Metabolic Diseases

In 1997–1998, the estimated percentage of children under 5 years old suffering from acute undernutrition (–2 SD below the mean) was 5% at the national level and 6.3% in the rural popula-

tion. In turn, the percentage of children in that age group with mild undernutrition or at risk of undernutrition (more than –1 SD below the mean) was estimated at 20.5% (24% in rural areas and 17% in urban areas). Of those under 5 years, chronic undernutrition (stunting), measured in terms of height-for-age (–2 SD), was found in 10.9% at the national level (14% in rural areas and 7.4% in the cities).

Studies conducted in 2000 among children and adolescents attending schools in marginal urban areas of Asunción showed that 12% were obese and 5% were at risk for undernutrition. Among adults from the metropolitan area, obesity (BMI >30) was a nutritional problem for 36% of the women and 23% of the men.

Studies of micronutrient deficiency disorders conducted in 2000 showed that 6.3% of children aged 6–15 years had goiter. Urinary iodine levels were measured in seven health regions of the country in 1996–1997, and the results showed a median level of 149 µg/L, which is higher than that found in 1988 (71 µg/L); moreover, only 21.3% of the samples were lower than 50 µg/L, compared with 43.2% in 1988. No up-to-date information is available on deficiencies of other micronutrients, such as iron and vitamin A.

A 1998 survey on diabetes and cardiovascular risk factors in 1,606 adults found diabetes in 6.5% of the persons studied and altered glucose tolerance in 11.3%. The most recent study on gestational diabetes, carried out in 2000, found a frequency of 7% in a sample of 134 pregnant women aged 15–48 at all the regional hospitals in the country. Diabetes was the sixth leading cause of death in 1997.

Diseases of the Circulatory System

Diseases of the circulatory system were the leading cause of death in Paraguay during the 1996–1999 period, representing an annual average of 33% of all deaths in both sexes. In 1996, a total of 5,546 deaths (112 per 100,000 population) were attributed to this group of causes; in 1997, they were responsible for 3,900 deaths (77 per 100,000); in 1998, the toll was 4,520 (87 per 100,000); and in 1999, these diseases produced 4,527 deaths (85 per 100,000), without any specific differences by sex. Cerebrovascular disease accounted for 33% to 39% of the deaths in this group of causes, while ischemic heart disease as a specific cause contributed to an average of 27% of the deaths in this group of causes. The National Institute of Cardiovascular Disease Prevention under the Ministry of Public Health and Social Welfare carries out promotion and prevention activities as well as research, such as national surveys on arterial hypertension, in conjunction with programs carried out by the Ministry programs and professional associations.

Malignant Neoplasms

Mortality rates for malignant neoplasms in the general population remained stable over the 1996–1999 period, fluctuating between 42 and 45 per 100,000 population. This group of diseases ranked third as a cause of death during the period in question, representing between 14% and 16% of the total.

In 1999, the deaths in males from this group of causes came to a total of 1,208 (specific rate, 43 per 100,000). The largest number of deaths was from tumors of the trachea, bronchus, and lung, while malignant tumors of the prostate came second, tumors of the digestive organs except the stomach were third, and tumors of the stomach, fourth. Women had 1,076 deaths from malignant tumors (specific rate, 41 per 100,000), of which 298 corresponded to the uterine cervix (11 per 100,000) and 161 to the breast (6 per 100,000).

Accidents and Violence

Of all accidents, traffic accidents are the most frequent, and they constitute a major cause of hospitalization and death, especially in the young population. In a sample of 618 of 2,894 accident victims (21%) treated between July and December 1999 at the Emergency Medical Center in Asunción, the highest frequency was observed in adolescent and young males 15–24 years old. In this sample, 63 of the victims (10%) died, and two-thirds of them were males. According to official national figures, 9,803 traffic accidents were reported in 1998 and 9,433 in 1999.

The Women's Secretariat registered 5,507 cases of violence against women in Asunción during 1994, another 2,974 cases in 1995, 4,608 in 1996, and 3,217 in 1997. Of these cases, 43% corresponded to physical abuse or armed assault and 31% to sexual abuse. Law 1,600 against domestic violence was enacted in 2000, and there is a National Plan for the Prevention and Punishment of Violence against Women.

Between 1996 and 1999, external causes accounted for 12% to 14.4% of all deaths, with a specific rate ranging from 38 to 40 per 100,000 population and marked differences between the sexes, the rates for men being 3.8 to 3.9 times higher. Among external causes, homicides and injuries purposely inflicted were the leading cause in men and were responsible for 29% to 35% of the deaths, with a rate of 17–22 per 100,000. The second most frequent cause in men was motor vehicle traffic accidents, with rates of 14–15 per 100,000, and the proportion of deaths in this group ranged from 20% to 25%. Among women, and with much lower figures, the leading external cause in each of the four years under consideration was motor vehicle traffic accidents (with a rate of 4 per 100,000 and 21% to 29% of the deaths in this group), followed by other accidents (between 20% and 25%), and, in third place, homicides and injuries purposely inflicted (between 13% and 19%). As for the geographic distribution, the department of Amambay ranked first during each of the four years, with rates 1.6 to 2.1 times higher than the national average, followed by Alto Paraná and Asunción in 1996–1998, and in 1999, by Canindeyú and Cordillera in second and third place, respectively.

Oral Health

In 1999 and 2000, Paraguayans made approximately 200,000 visits to the dentist each year. In 1996, the average DMFT index

for the nation's 12-year-olds was 5.1, while in 1999 the average index was 5.7, with a range among regions of 5.0 to 8.5. Among 15-year-olds, the index ranged between 6.4 and 9.2. From 85% to 88% of all children had caries. Forty percent of the children examined needed urgent treatment because of pain or infection.

Emerging and Re-emerging Diseases

The first serologically diagnosed cases of hantavirus pulmonary syndrome appeared in 1995. Between 1995 and 2000, a total of 60 laboratory-confirmed cases were diagnosed, with an average case-fatality rate of 23.8%. The etiologic agent was hantavirus Laguna Negra, and a new variant, Paraguay virus, was described in two confirmed cases that occurred in 1997 and 1998. The main reservoir was the vesper mouse *Calomys laucha*, a field rodent that is widely distributed in the western region and some parts of the eastern region. The rainfall pattern is an important factor in the occurrence of cases: the numbers peaked in both 1995 and 2000 when the dry season was followed by unusually heavy rainfall.

In 1996, an interinstitutional technical group was established to support the surveillance and control of hantavirus pulmonary syndrome. There are still some obstacles to overcome in surveillance, clinical management of cases, research, and social communication in order to disseminate information and avoid panic in the population at risk.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The National Constitution of 1992 declares that health is a fundamental right and entrusts the State with its protection and promotion in the interest of the community. In addition, it charges the National Health System with the execution of integrated public health actions and the formulation of policies that will permit the concentration, coordination, and complementation of programs and resources in the public and private sectors.

The National Health System was created in December 1996 when Congress enacted Law 1,032, which establishes Health Councils at the national, regional, and local levels and specifies their composition and duties. The law also defines criteria for creation and organization of the National Medical Bureau, the National Health Fund, and the Health Superintendency. The enabling regulations of the Health Superintendency were put into effect in 1998.

The National Health Policy 1999–2003, published in 1999, calls for the promotion of public health reform through actions in the following areas: reorganization of health services, strengthening of the leadership function of the Ministry of Public Health and Social Welfare, development of the National Health System, mobilization and execution of financial resources, creation of new insurance models for the population, decentralization of health services, and health promotion.

The National Human Resources Policy, also published in 1999, envisages strengthening of the Ministry's leadership, development of a modern management process for health human resources in order to increase the productivity of the services, and continued strengthening of the National Institute of Health as the key agency for the preparation and training of human resources.

During 1998–1999, national plans were prepared for children, adolescents, and women based on the health promotion approach.

The Public Health Code has been in effect since 1980, and a proposal for a new Public Health Code is currently before the Parliament.

Health Sector Reform Strategies and Programs

In Paraguay, the health sector reform process began with the enactment of Law 1,032, which created the National Health System based on the principles of equity, quality, efficiency, and social participation.

The dynamics of the country's health sector reform have changed since 1998, moving from the active phase of implementing Law 1,032 to more cautious progress within the theoretical framework based on the health policy lines for 1999–2003. The organizations created in the departments (regional and local health councils) remain in place, although not all of them are active or coordinated with the Regional Offices of the Ministry of Public Health.

The Government has created the Secretariat of State Reform, in which the health sector participates in the definition of policies on some of the issues of sectoral reform. Of the formal structures legally established under the National Health Council, so far only the Superintendency of Health has a regulatory framework in place.

During 1999–2000, steps were taken to improve health services delivery by expanding the existing infrastructure and equipment inventory of most of the Ministry of Health hospitals.

No progress has been made in financing or in the separation of functions. Development work was completed on the National Health Accounting System.

The Health System

Institutional Organization

According to Law 1,032, coordination of the sector is the responsibility of the National Health Council, which represents its key institutions and is chaired by the Minister of Health. The Council is legally responsible for coordinating and monitoring the plans, programs, and activities of public and private health institutions. However, it does not currently exercise this coordination function, which has been assumed by the Ministry.

Two sectors are responsible for health care delivery. The public sector comprises the Ministry of Public Health and Social Welfare, the Social Security Institute, the Armed Forces Health Service, the Police Health Service, the National University of Asunción, the department-level and municipal governments, and several autonomous agencies and decentralized state enterprises. The private sector, in turn, is made up of private universities, nonprofit groups (NGOs), and for-profit entities, including hospitals and private clinics. The Paraguayan Red Cross is a mixed institution.

Insufficient coverage is a serious problem in Paraguay: only 58% of the population is covered by the public sector (32% by the Ministry, 8% by the armed forces and police, 17% by the Social Security Institute, and 1% by other public services) and 15% by private services. Hence, about 27% of the population has no access to a health system.

Only 20% of the population has some form of health insurance. Of this proportion, 62% corresponds to coverage provided by the Social Security Institute, 32% to private insurance, and 6% to other types. In rural areas, barely 6% of the population has health insurance.

Public health services and resources are largely concentrated in Asunción and the Central Department, where the national and specialized hospitals are located. Thus, 34% of the population generates 74% of the medical and dental spending by the Ministry and the Social Security Institute, to the detriment of the population in rural areas. In 1998, only 23% of the country's rural communities had a physician, while 92% had nurses and 43% had midwives. More than two-thirds of the rural communities have no health center or health post, and people have to travel as far as 20 km in order to get these services.

Developments in Health Legislation

In addition to the constitutional provisions and Law 1,032, with its corresponding regulations and decrees, a new public health code has been proposed that provides for some of the aspects of state reform, decentralization, strengthening of the regulatory role of the Ministry, health promotion, participation in regional integration initiatives such as MERCOSUR, and alternative approaches to health financing. Law 1,119, which covers products used for health and other purposes, was enacted in 1997. In 2000, upon creation of the National Secretariat for the Environment, the Ministry transferred its responsibilities in connection with environmental monitoring and control to this new institution, while still retaining the functions of standardization and surveillance of sanitation and the environment.

Organization of Regulatory Actions

Law 1,119 empowers the Ministry, through its Office of Health Surveillance, to legislate the manufacture, operation, quality control, prescription, distribution, dispensing, marketing, importation, exportation, storage, rational use, pricing, information, evaluation, authorization, and registration of drugs. Under a presidential decree, the Ministry is authorized to set and regulate the prices of drugs. The Ministry has a quality control system that operates under an agreement with the National University of Asunción through its Multidisciplinary Technology Research Center. This center performs quality control analysis of drugs before they are marketed, and sometimes while they are being marketed, should the Ministry decide to intervene, whether in the form of a complaint filed with the court or simply a written official communication.

The National Food and Nutrition Institute, which also comes under the Ministry, is the agency responsible for control and protection of food for the entire country, working in coordination with the National Commission on Food Safety, made up of the ministries of Health, Agriculture, and Industry and Trade.

Organization of Public Health Care Services

Health Promotion

The Healthy Municipalities and Communities Movement is backed by a strategic plan for 1997–2000 and an Interinstitutional Executive Committee. The concept of health promotion includes, inter alia, the definition of healthy policies, social participation, healthy environments and lifestyles, and reorientation of the services. Internalization of the concept has already led to the generation of community-based projects. Also, youth in various regions of the country have joined in the activities of the Healthy Municipalities and Communities Movement.

The Healthy Schools Project was conceived in 2000, with the idea of preparing leaders to take part in building healthy societies based on the premise of self-care health and preservation of the environment. This initiative has the participation of the Ministries of Health and Education, the *Fundación Primera Dama de la Nación*, and parent-teacher associations.

Disease Prevention and Control Programs

Disease prevention and control is the responsibility of the Ministry of Public Health and Social Welfare, and in particular, its General Office of Health Surveillance and the General Office of Health Programs. Under the General Office of Health Surveillance are the Office of Communicable Diseases, the Office of Noncommunicable Diseases, the National Malaria Eradication Service, and the Central Laboratory. The General Office of Health Programs, for its part, is in charge of mental health, the National Food and Nutrition Institute, and integrated care for children, adolescents, and women.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Responsibility for health information and trend analysis is shared by the Office of Planning and Evaluation and the Office of

Health Surveillance. The former is in charge of the Department of Biostatistics, which processes vital statistics in coordination with the Civil Register and the Bureau of the Census, Statistics, and Surveys and the registers of services provided by Ministry of Health establishments (data on outpatient consultations, hospital discharges, production and coverage of services). Some of the information is published regularly (e.g., annual mortality statistics) and some of it is published occasionally for circulation within the institution. A list of values for basic health indicators was published in 1997, 1998, and 1999. The Office of Health Surveillance has responsibility for the surveillance of health events, especially communicable diseases, and it shares its data with the Department of Biostatistics. Both institutions are responsible for data analysis in support of decision making at the national level. However, at all levels there are deficiencies in terms of both infrastructure and trained human resources to do the analyses. The data flow upward from the local to the regional and then the national level, with no processing or analysis, and sometimes there are problems with quality and timeliness. Moreover, data from other institutions and sectors are not included. The surveillance data are published in an epidemiological bulletin that appears every four months.

According to the current Public Health Code, all cases of communicable disease seen by any health or medical care service, either public or private, or by Social Security must be reported, but in actual practice reporting is limited.

Potable Water, Excreta Disposal, and Sewerage Services

As of 2000, an estimated 43% of the Paraguayan population had access to potable water—73% in urban areas and 13% in rural areas, with a range among departments of 13% in Alto Paraná to 92% in Asunción. With regard to basic sanitation, 44% of the population has sanitary excreta disposal systems, and 92% (99% of the rural population) has an adequate arrangement in situ.

The Ministry's National Environmental Sanitation Service provides potable water and sanitation service to about half the population of the country—i.e., those living in municipalities with fewer than 4,000 inhabitants.

Solid Waste Services

The management of solid waste is inadequate and chemically unsafe, and most people are not fully aware of the risks posed by incorrect handling of chemical products. Agriculture accounts for 81% of the nation's total consumption of chemicals, compared with 13% employed in industrial applications and 6% for sanitary products used in homes.

Every day the country generates approximately 0.87 kg of solid household waste per inhabitant, or a daily total for the nation of 3,113 tons of refuse (61% of it biodegradable), and only 48% of this volume is collected. While 46% of the population has the benefit of some form of household collection service, the distribution is uneven, ranging from zero in the departments of San Pedro, Guairá, and Caaguazú to 36% in the Central Department. Nearly 1 million people in the cities have no trash collection service. In the municipality of Asunción, the more than 4,000 formal and informal workers involved in handling refuse are at high risk because they are without adequate personal protection. It is estimated that approximately 2,000 people in the country, many of them young girls, work in trash heaps separating the refuse.

The country has had only one experience with selective solid waste collection (3,000 homes in Asunción), although ecoclubs are beginning to be formed in some of the communities to raise consciousness about the selective separation of solid waste and its productive transformation, reuse, and recycling. The country has no sanitary landfill, and only in Asunción is there a controlled landfill. Like household waste, the waste from hospitals and health services is untreated; there is an incinerator in Ñemby.

Food Safety

The National Food and Nutrition Institute is currently guided by the Strategic Food and Nutrition Plan 1997–2000. Since 1999, the Institute has coordinated the development of food guidelines for Paraguay with the participation of several other institutions.

The country has laws governing the iodization of salt, as well as the enrichment of wheat flour with iron and B complex vitamins. There is also a program of iron supplementation for pregnant women. Regular deparasitization programs are carried out in the schools nationwide.

Organization of Individual Health Care Services

The Ministry of Public Health and Social Welfare provides services in the 18 health regions at three levels of care. Its actions include prevention and health promotion, curative care, and rehabilitation. It also provides emergency care and ambulance service, and it makes drugs available at its establishments or in local dispensaries at subsidized prices. It does not offer in-home care. In addition, it has 29 blood treatment centers located in the main hospitals, and in Asunción it has the National Blood Transfusion Center. One of the laboratories in the capital does anatomic pathology for all the services in the interior of the country. The Ministry finances its health services with resources from the public treasury, special funds, royalties, copayments made by users, and international cooperation. In 2000, it had 634 health posts, 120 health centers, 17 regional hospitals, 18 district hospitals, 12 specialized hospitals, and 7 specialized centers with a total of 2,184 beds. The National Toxicology Center, created in 2000, performs laboratory services, makes information available to the general public, and provides medical care to individuals.

The Social Security Institute provides benefits for salaried workers in the event of disease, disability, old age, survival, and death. Its activities are financed by contributions based on the taxable income. The employer contributes 14%; the worker, 9%;

and the State, 1.5%. A noncontributory program provides benefits in the event of disease or maternity for combat veterans from the Chaco War and their families, personnel in the public and private school systems, female domestic workers in Asunción, and workers in decentralized agencies. The benefits include medical, surgical, and dental care; drugs; hospitalization; and a subsidy for periods of bed rest. Prostheses are not included. Medications are provided through its own pharmacies, based on the list of approved drugs, and the Social Security Institute produces and distributes some of its own drugs internally. Its establishments have a total of 1,195 beds.

The Armed Forces Health Service treats active and retired military personnel and their families as well as the civilian population in those regions where no public or private health care is available. Its institutions include the Central Military Hospital (250 beds) and the San Jorge Hospital (60 beds) in Asunción and three hospitals on military bases in the interior of the country. Its resources come from the national budgetary allocation for the Ministry of Defense.

The Police Health Service takes care of present and former police personnel and their families as well as prisoners. Its services include the Central Police Polyclinic in Asunción (80 beds) and 22 infirmaries in the main police units. It is funded from the national budget, and it also has a supplementary insurance program for which a fixed premium is paid.

The National University of Asunción provides health care services that are partially free at the Clinical and the Neuropsychiatric Hospital, both of which are in Asunción. Resources come from the national budget. The Clinical Hospital has 450 beds.

In the departmental governments, the Secretary of Health is by law the highest authority on the Regional Health Council and works in coordination with the municipalities of the department, on the one hand, and the central government, on the other. Administration of the National Health System is centralized by the Ministry of Health, and financial and human resources are in the process of being transferred to the regional health levels, where they will be administered with the support of the local health councils.

Among the decentralized autonomous entities and state enterprises, the Itaipú and the Yacyretá binational dam commissions offer health benefits and other medical coverage to current and former employees and their families at their respective installations, usually in the form of outpatient care. They offer prevention programs and medical care for the entire population of the dams' areas of influence.

About 30 nongovernmental organizations throughout the country work in the private nonprofit subsector providing direct medical care to the population most in need. In turn, the private for-profit subsector includes not only medical offices, pharmacies, and laboratories but also 33 companies that provide prepaid medical services through hospitals and private clinics, most of them in the Asunción area and the Central Department. This subsector also has 16 blood banks and blood treatment centers (13 in Asunción and 3 in the interior). There is also a Mutual Hospital Aid service that provides coverage for indigenous people in Central Chaco (18,000 persons) through insurance financed by contributions from workers (5% of their salary) and employers (10%).

The Paraguayan Red Cross has a 125-bed maternity hospital that is financed with contributions from a private nonprofit foundation. The salaries of medical, paramedical, and administrative personnel are paid by the Ministry.

Health Supplies

The drug pricing policy is set forth in Decree 20,996 of 1998. The country does not produce vaccines, which are acquired through the PAHO Revolving Fund for Vaccine Procurement. Social pharmacies that offer drugs at a reduced cost for patients with limited resources have started to operate in some of the health regions.

A total of 47,163 blood donors were registered in 2000—85% in the public services and 15% in the private sector—and 98% of the donors were screened. Of the total donations, 72% were in the capital and 28% in the interior, where donations are made only at public services.

Human Resources

In 2000, the Ministry had 3,427 physicians, 439 dentists, 350 biochemists, 1,567 licensed nurses and midwives, 1,035 technicians, 241 other professionals, 4,542 nursing auxiliaries, 3,852 administrative employees, and 3,474 support staff. There are 6.4 physicians per 10,000 population, 0.8 dentist, 0.7 biochemist, 2.9 licensed nurses or midwives, 1.9 technicians, and 8.5 nursing auxiliaries. Many professionals work in more than one health institution. The information system does not report the actual number of persons working in the sector, and information is also lacking on human resources in the private sector.

The National University of Asunción continues to be the academic institution responsible for training most health professionals, with two sites in the interior of the country. In the private sector, there are three universities that train human resources in the health fields.

In public health, most of the professionals, technicians, and auxiliaries are trained by the National Institute of Health. A program for the master's degree in public health with two different areas of concentration, environmental health and health services management, was introduced in 2000.

Resident programs in the medical specialties have increased, and within the universities new schools have been accredited in medicine, pharmacy, dentistry, nursing, biochemistry, and midwifery. However, there is no policy or planned process to ensure that the distribution, composition, and production of human re-

sources meets the country's real needs in terms of number and quality of health professionals.

Health Research and Technology

There is no national policy on the subject, and work in health science and technology is hampered by limited financial support, minimal institutional structure, and a shortage of human resources. The Institute of Health Sciences Research at the National University of Asunción conducts basic and applied biomedical research with financial support from international agencies.

The teaching faculty at the universities does little to encourage scientific research, and there is no information system that brings together scientific knowledge and fosters the development of research. Most research in the health fields is descriptive.

Health Sector Expenditure and Financing

The public sector's sources of financing are mixed: funds come from the national budget, worker and employer contributions, premiums, direct payments for services, fees, and external cooperation. There is little control over the processes or the results. The public establishments charge fees that are unrelated to real costs, and their revenues are remitted to the Ministry of the Treasury. In the private sector, funding depends on premiums received for various plans (in the case of the medical prepayment groups) and from direct payment by users to private providers. There is not an agency explicitly entrusted with the regulation of financing.

Per capita spending on health in 1999 was US$ 105.30, but the national average conceals significant differences among the country's departments. In 1999, the total expenditure on health as a percentage of GDP was 7.9%. Of the total public expenditure on health, 11.3% corresponded to the Ministry of Public Health and Social Welfare.

No studies have been done on the breakdown of total health spending or on the procedures used for its periodic estimation. The national accounts prepared by the Central Bank of Paraguay provide regular information, but only on public spending. The Institute of Public Health does not offer disaggregated information on health expenditure on a regular basis, nor are there recent studies on the cost of services or their cost-efficiency. In the budgeting of public funds, there continues to be a tradition of assigning the greatest weight to salaries. Information on the breakdown of private spending on health is incomplete.

External Technical Cooperation and Financing

The Government has entered into bilateral and multilateral international agreements for technical and financial cooperation with a view to expanding the coverage of health services and improving the quality of care provided to the population. There has been external cooperation to support development of the regionalized health services network, water supply and sanitation in rural areas, institutional development and strengthening, decentralization of health services, maternal and child care, strengthening of the National AIDS Control Program and immunization programs, diarrhea control, integrated management of childhood illness (IMCI), and care for vulnerable groups within the framework of the campaign to fight poverty.

Joint projects are being pursued with the IDB, the World Bank, and JICA to improve the coverage and quality of maternal and child care. The following projects are also under way: with GTZ, on adolescent care and reproductive health; with JICA, on training in nursing; with UNICEF, on IMCI and micronutrients; with USAID, on reproductive health and decentralization; with UNFPA, on reproductive health, maternal mortality, and violence against women; and with PAHO, on aspects related to health services systems, disease prevention and control, health promotion, environmental health, border health, and care for specific population groups.

The Government of Spain has provided a loan for the improvement of medical and hospital equipment, and activities recently began under the fourth loan from the World Bank to expand potable water and sanitation coverage through the National Environmental Sanitation Service and the Ministry of Public Health and Social Welfare.

FIGURE 1. Gross domestic product, annual growth (%), Paraguay, 1991–2000.

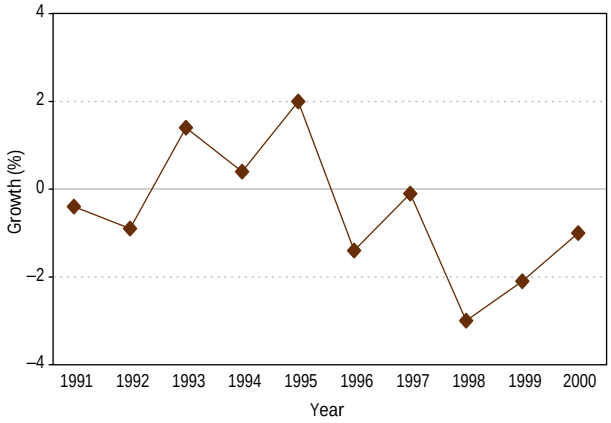


FIGURE 2. Population structure, by age and sex, Paraguay, 2000.

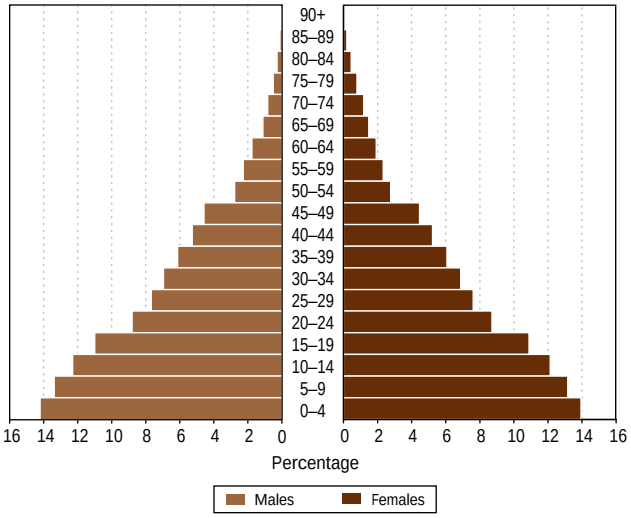


FIGURE 3. Mortality (%), by broad groups of causes and sex, Paraguay, 1999.

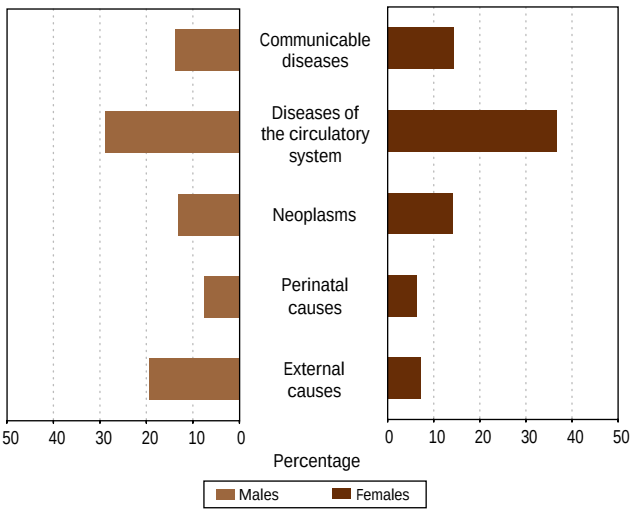


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, Paraguay, 2000.

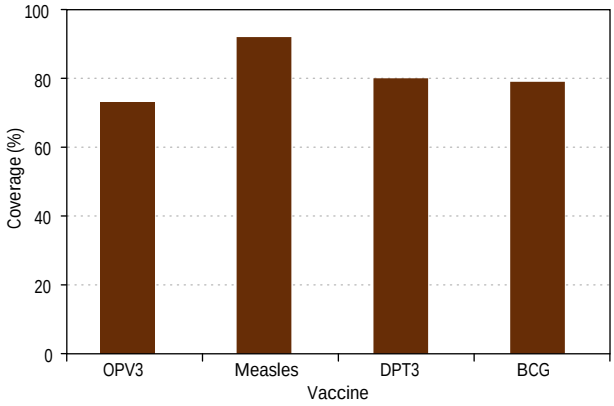
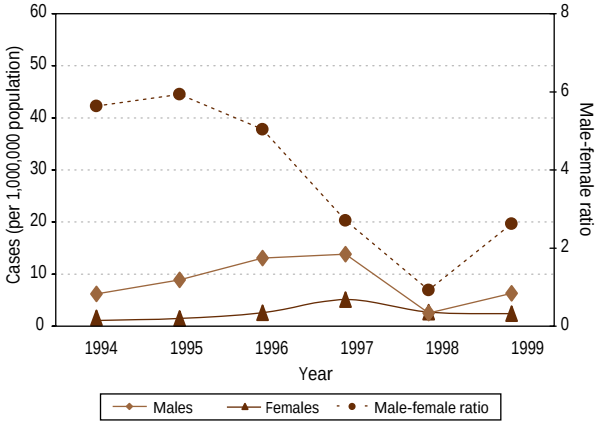


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Paraguay, 1994–1999.



PERU

OVERVIEW

In 2000, the Republic of Peru had an estimated population of 25,661,690. The country has a land area of 1,285,215 km^2. Peru is divided into 25 departments (including the Constitutional Province of El Callao), and the departments in turn have a total of 193 provinces and 1,828 districts. The national territory spans three major geographic regions: the coast, the Andean highlands, and the Amazon jungle. There is wide ethnic and cultural variety within the population, especially in the Andean and Amazon communities. As of 2000, 14% of the population spoke one of the indigenous Andean languages, either Quechua or Aymara, and another 2.5% spoke Amazon languages.

Literacy in the population aged 15 and over increased from 90.9% in 1994 to 92.8% in 2000, and the greatest improvement was among women living in rural areas, whose rate increased from 69% to 77%. Even so, the overall literacy rate for women, at 89.2% in 2000, remained lower than the rate for men, which was 96.7%. That same year, the average years of schooling completed by the population over 15 was 8.5 years.

The government is defined in the Constitution as unitary, representative, and decentralized. However, progress toward decentralization has been limited and inconsistent. Even though Law 26,922 on this subject was promulgated in 1998, it still awaits the necessary enabling regulations. Policy in regard to social development is set by the Interministerial Council on Social Affairs (CIAS), composed of representatives from the ministries of Health, Education, the Presidency, and Advancement of Women and Human Development. The State is committed to a reform process that calls for the restructuring of general and specific functions in the areas of financing, regulation, and oversight, including fuller cooperation between the public and private sectors and among institutions, but this reform has been carried out only intermittently since 1995.

The country's economic performance was reflected in a per capita GDP of US$ 2,180 in 2000 (Figure 1). Up until 1997, economic growth relied on a policy of fiscal and monetary austerity, the restructuring of public spending, re-entry into the world economy, and incentives for private investment. Growth was also stimulated by the abatement of violence in the country and deregulation of the market. Starting in 1998, economic activity severely contracted due to delays in implementing the second stage of State reforms, which were supposed to address public administration and consolidation of the democratic system; flight of capital in connection with international financial crises; effects of the El Niño weather phenomenon; falling export prices; and, most importantly, the political crisis that ended in removal of the elected president in 2000 and installation of the Constitutional Transition Government in July 2001.

The social policies of the 1990s were reflected in increased social spending, which went from 3.9% of the GDP in 1993 to 7.9% in 2000 (from US$ 91.30 to US$ 180.20 per capita), and in broad commitments to public assistance within a context of slow employment growth. This increased spending served to contain extreme poverty, which had affected 26.8% of the population in 1991 and was reduced to only 14.8% in 2000, but it did not alter its root causes. Between 1991 and 1997 the poor population decreased from 57.4% to 50.7%, but by 2000 it was back up to 54.1%. Moreover, between 1997 and 2000 the concentration of income, as expressed by the ratio of the income of the richest quintile to that of the poorest quintile, increased from 4.9 to 7.8. An analysis of the poverty strata in each of the departments, defined in terms of unmet basic needs, shows that the poorest population is concentrated in the predominantly rural departments located in the highlands and the jungle.

The main problem that has hampered both the economic and the social processes is the low level of full employment. Of the 11.9 million people who made up the economically active population at the end of 2000, 10.2% were unemployed, 50.8% were underemployed, and only 39% were fully employed. Lack of intersectoral coordination, duplication of effort, weak steering capacity in the social sectors, inadequate focus, little transparency, poor management of social programs, delays in the decentralization process, weak leadership on the part of CIAS, and the absence of social policies linked to a policy for economic development are the most glaring institutional short-

comings that have been holding back attaining and solidifying the social policy objectives set forth at the end of the twentieth century.

As part of the overall State reform, since 1995 the government has been introducing changes in public administration with a view to gradually reducing government participation in the management of goods and services, while at the same time strengthening its steering and regulatory role. In this way, impetus has been given to modernization of the health sector, among others. So far, reforms have been implemented within the Ministry of Health, and, to a lesser extent, the Health Social Security (EsSalud) system. The principles governing the reform for the 1995–2000 period were: 1) universal access to public health services and individual care; 2) modernization of the sector; 3) restructuring of the financing, service delivery, and oversight functions; 4) prevention and control of priority health problems; and 5) promotion of healthy conditions and lifestyles.

The program of work has highlighted certain goals: improvement of decision-making capacity at the primary care level, changes in the delivery of services to beneficiaries under the contributory health insurance plan, institutional restructuring, development of health care programs for specific vulnerable groups (especially maternal and child care and the protection of schoolchildren), and decentralization of basic care. The overall objective of the reform was to guarantee basic health care for individuals and public health services for the population as a whole, combining a system partially or fully subsidized by the State for the poorest segments of the population with a contributory system for employed individuals and those able to pay premiums. In keeping with this objective, it was proposed to separate the functions of government, financing, administration, and delivery of services, the search for new financing modalities, management and spending, and maximum utilization of installed physical capacity in the public and nonpublic sectors through working agreements and schemes for the sale of services.

Despite the problems faced by the health system as a whole, institutional coverage of patients and accident victims has steadily improved, from 32.2% in 1994 to 43.5% in 1997 and 49.3% in 2000. Thanks to increased budgetary allocations for primary health care, the share of this coverage provided by the Ministry of Health rose from 16.3% in 1994 to 25.0% in 1997 and 29.5% in 2000.

The average annual population growth rate has been gradually declining, from its peak of 2.8% during the intercensal period 1961–1972 to 1.7% in 2000, with there being both reduced mortality and reduced fertility. There has also been a steady drop in the crude death rate, from 21.6 per 1,000 population in the five-year period of 1950–1955 to 6.5 per 1,000 in the period of 1995–2000. The crude birth rate, in turn, fell from 27.6 births per 1,000 population in 1990–1995 to 23.7 per 1,000 in 2000. The general fertility rate declined from 3.4 children per woman in the 1993 census to 2.9 children per woman in 2000, with a rate of 2.3 for urban residents versus 4.6 for women in rural areas, and 5.1 for women without schooling versus 1.8 for women with higher education. Among adolescent women (aged 15–19), the fertility rate fell by 16% between 1986 and 2000, and for other women of reproductive age the rates dropped by percentages ranging from 35% to 50%. Yet another improvement has been life expectancy at birth, which increased from 43.9 to 68.3 years in the second half of the twentieth century.

Although the national averages have improved, there continue to be sizable differences from one department to another, reflecting inequalities in living conditions, especially for people in rural areas of the highland and the jungle. For example, during the period of 1995–2000 the risk of dying was three times higher for people living in Huancavelica, which had a crude death rate of 13.0 per 1,000, than for those in El Callao, where the rate was 3.6. Worse yet was the 21-year difference in life expectancy at birth, which was 56.8 years in Huancavelica and 78.0 years in El Callao.

The age distribution of the population has also changed since 1981, reflecting a consistently steady increase in the older population, so that by the year 2000 the group under 15 years represented 33.4% of the nation's total and those 60 years and older accounted for 7.2% (Figure 2). According to estimates, 72% of the population in 2000 were living in urban areas, and 29% of all the people in Peru were living in its capital, Lima.

Mortality

Life tables indicate that nearly 50% of the deaths in Peru go unregistered. When the recommended correction for underregistration is added to the available figures for physician-certified deaths, it can be seen that the country's mortality profile underwent major changes between 1987 and 1997. The rate for the leading cause of death in both sexes—namely, communicable diseases—dropped from 247.5 per 100,000 population to 146.4 per 100,000. Mortality due to perinatal and cardiovascular causes also declined, although to a lesser degree. On the other hand, deaths due to external causes and neoplasms increased during the same period (Figure 3). In terms of sex distribution, the risk of dying from perinatal causes, communicable diseases, and external causes is greater for males, whereas among females the risk of dying from neoplasms is greater. Thanks to the reduction in mortality, the figure for potential years of life lost was down from 282.8 years per 1,000 population in 1987 to 201.5 years in 1997.

Between 1987 and 1997 tuberculosis and septicemia ceased to figure among the 10 leading causes of death, and intestinal infectious diseases fell from second to fifth place. Cerebrovascular disease rose to second place, but acute respiratory infections continued to be the most frequent cause, by a wide margin. Considered in terms of the sex affected, 7 of the 10 leading causes in 1997 were common to both males and females. However, transport ac-

cidents, cirrhosis, and tuberculosis were among the 10 leading causes for men only, and cancers of the uterus, of the stomach, and of other digestive organs were among the leading causes for women.

Although there was an overall reduction in the crude death rate between 1987 and 1997, the inequalities between the socioeconomic levels or strata (quintiles) did not change substantially: the Gini mortality coefficients were 0.17 and 0.15, respectively. Indeed, the changes in the specific mortality profiles of each of the strata reflected a widening of the mortality gap. In 1987 communicable diseases were the leading cause of death in all five quintiles. However, by 1997 they had ceased to be the leading cause in quintile I (the least poor), edged out by neoplasms, and with communicable diseases and diseases of the circulatory system close behind. In contrast, in quintiles III through V, the risk of dying from communicable diseases was still more than double any other risk.

On the other hand, even though deaths from communicable diseases were reduced by a similar amount in all the economic strata between 1987 and 1997, those due to intestinal infections saw a more pronounced decline in quintiles I through III than in quintile V (the poorest), making for a wider gap in mortality from this cause (Gini coefficients of 0.35 in 1987 and 0.36 in 1997). A similar effect was observed with conditions originating in the perinatal period. The rate for those conditions declined by half in quintile I but remained unchanged in quintile V, thus doubling the mortality gap for this cause (Gini coefficients of 0.08 in 1987 and 0.19 in 1997). Neonatal asphyxiation and respiratory distress has been the leading cause of death among conditions originating in the perinatal period (43.3% in 1987; 51.4% in 1997). The rate for this cause declined in quintiles I through III (especially in I). However, it remained unchanged in quintile IV and actually increased in V, so that the inequality in the risk of dying from neonatal asphyxiation and respiratory distress nearly doubled between 1987 and 1997 (Gini coefficients of 0.11 and 0.21, respectively).

Another important change in the mortality profiles by socioeconomic strata was the risk of dying from external causes, which, as mentioned before, increased between 1987 and 1997. This rise was seen mainly in the poorest strata, whereas the rates in the top two quintiles remained unchanged (Gini coefficients: 0.15 and 0.19 in the years indicated).

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

This segment of the population comprises 2.9 million children, or 11.3% of the total Peruvian population as of 2000. Respiratory infections and intestinal infectious diseases place the greatest demand on their health, accounting for 86% of mortality and 60% of outpatient consultations in this age group. Chronic malnutrition continues to be a health problem, with an incidence of 25.4% in 2000, similar to the proportion in 1996. The prevalence of exclusive breastfeeding for the first 6 months of life increased from 32.9% in 1992 to 67.0% in 2000, and during this same period the average duration of exclusive breastfeeding in the country as a whole rose from 0.8 to 4.2 months (rising from 0.6 to 3.4 months in the cities, and from 2.4 to 5.0 months in the rural areas).

Although the infant mortality rate fell from 88.2 per 1,000 live births in 1987 to 45.0 per 1,000 during the period 1995–2000, the reduction varied from one department to another, and in fact the inequality in infant mortality actually increased (Gini coefficients of 0.15 and 0.24, respectively). The decline in mortality from communicable diseases, which dropped from first to second place in this age group between 1987 and 1997, was an important factor in the overall reduction of infant mortality in the country. Mortality from respiratory infections decreased from 17.0 per 1,000 live births in 1987 to 9.1 per 1,000 in 1997, and for intestinal infections the rate dropped from 10.3 to 3.0 per 1,000. However, there were differences between the socioeconomic strata, which served to increase the inequality between them (Gini coefficients of 0.19 and 0.28, respectively). Communicable diseases continue to be the leading cause of death in children 1–4 years of age, and nutritional deficiencies and certain external causes, such as drowning and transport accidents, have increased in importance.

The profile is similar at all socioeconomic levels, but the rates differ in terms of magnitude. Thus, the risk of dying from intestinal infectious diseases and septicemia is almost 10 times higher for children in quintile V than it is for those in quintile I, and the risk of dying from nutritional deficiencies is 8 times greater. Diseases preventable by immunization, acute respiratory infections, intestinal diseases, meningitis, septicemia, malaria, and nutritional deficiencies are all targeted by the Integrated Management of Childhood Illness (IMCI) strategy. These diseases caused 42% of all deaths in children 0–4 years in 1998 (ranging from 25%–30% in Moquegua, Lima, and El Callao to 50%–60% in Puno, Piura, and Huancavelica).

Schoolchildren (5–9 years)

For the population of 2.9 million children aged 5–9, which represented 11.3% of country's total in 2000, the risk of dying is not as great as for those under 5 years, and the leading causes of mortality are external causes and communicable diseases. Transport accidents are more important in quintiles I to III, where they rank first, as are malignant tumors of the lymphatic tissues, which is the third leading cause of mortality in this group. In the poorest quintiles, acute respiratory infections, intestinal infections, and nutritional deficiencies are the most important causes of death.

Adolescents (10–14 years and 15–19 years)

In 2000 there were 5.5 million youth in Peru (21.4% of the total population) between the ages of 10 and 19 years (2.8 million between 10 and 14, and 2.7 million between 15 and 19). In 1999, according to the National Household Survey, 40.6% of the population 14–17 years old were working, most of them under difficult conditions. Starting at the age of 12, the probability that an adolescent will use some legal drug increases sharply; almost half the population aged 17–19 use tobacco, and three-fourths of them drink alcoholic beverages. Although the prevalence of marijuana and cocaine use is low, it is higher among those 17–19 years old than in other age groups. According to a 1999 national survey on drug use, 50% of the marijuana users began the habit before they were 17. In addition, 50% of those using cocaine or coca paste began doing so before the age of 18.

In 2000, 5% of young women between 15 and 19 years old had had their first sexual encounter before the age of 15, while this figure had been 4.6% in 1996 and 3.6% in 1992. Early initiation of sexual relations does not necessarily mean that these youth are adequately informed: 13.6% did not know how to prevent AIDS, or else they believed that there was no way to prevent it. This finding is consistent with the change observed in the average age of AIDS cases, which fell from 38 in 1983 to 29 in 1999. In other words, HIV infection may be being spread among the youth aged 15–19. In 2000, 13% of women between 15 and 19 years of age were mothers already or were expecting for the first time. This percentage was three times as high among those without schooling and twice as high among residents of the jungle and other remote areas. In comparison, the rate was 8% among young women living in the Lima metropolitan area.

Mortality in adolescents is lower than in the general population. External causes, especially unspecified accidents and transport accidents, were the leading cause of death, and the rate was three to five times higher in the poorest socioeconomic strata. Homicides ranked sixth for males (5.6 per 100,000), and suicide was in seventh place for females (3.2 per 100,000). Tuberculosis was the second leading cause of death for females and the fifth for males, although the rates were similar (5.2 and 5.7 per 100,000, respectively).

Adults (20–59 years)

Adults in Peru numbered 12.5 million in the year 2000 and represented 49% of the total population. For women, malignant tumors of the uterus and the breast are the two leading causes of death; for men, external causes head the list. Tuberculosis is another high-ranking cause of death in both sexes, and it affects them equally in the poorer quintiles. Acute respiratory infections, accidents, cirrhosis, and homicides have higher mortality rates among men in the poorer strata, while among women, mortality from breast cancer is higher in the least poor quintiles.

The use of modern family planning methods by women of reproductive age (who in the year 2000 represented 53% of the total female population) increased from 41.3% in 1996 to 50.3% in 2000, and the rise was greatest in rural areas. The general fertility rate decreased from 3.5 children per woman in 1992 to 2.9 in 2000, with declines both in the countryside and in the cities, except in the Lima metropolitan area. Prenatal care coverage improved between 1992 and 2000, especially in rural areas. Nevertheless, in the country as a whole, medical care coverage of deliveries was only 59.3% (28.7% in rural areas). This would seem to indicate that there are still some obstacles to institutionalizing delivery care. There is an inverse relationship between the proportion of deliveries attended by health professionals and the proportion of maternal deaths reported to the Ministry of Health surveillance system (Figure 4). During the year 2000, this system detected 739 maternal deaths, equivalent to a rate of 122.5 deaths per 100,000 live births, but the rate actually ranged from 0 in Tumbes to 259.4 in Puno. On the other hand, in 1994–2000 the maternal mortality rate for Peru as a whole, as estimated by a survey, was 185 per 100,000. The leading direct obstetric causes of maternal mortality were hemorrhage (49.2%), pregnancy-induced hypertension (13.9%), infection (10.9%), and abortion (5.8%).

The Elderly (60 years and older)

The population of adults over 60 was 1.9 million in 2000 and represented 7.2% of the country's total, compared with 5.7% in 1950. Women account for 53.4% of this age group, due to the fact that their life expectancy (71.6 years) is 5 years greater than that of men (66.6 years). In the year 2000, 49% of the men and 27% of the women over 65 were still working. The mortality profile does not show any significant differences in terms of sex, but the same is not true for socioeconomic strata. In quintile I (the most affluent), diabetes mellitus and lung cancer are the leading causes of death, while in quintile V (the poorest) the most important causes of death, in addition to malignant tumors and diseases of the circulatory system, are nutritional deficiencies, appendicitis, and intestinal obstruction.

Family Health

As of 2000, 17.3% of the nation's households were headed by a woman (20.1% in the least poor segment of the population). Three-fourths of those under age 15 were living with their two parents (78% in rural areas, 73% in urban areas), while 6% were not living with either of their parents, with little difference in terms of rural/urban residence. Ten percent of the households had an adopted child or were raising a child who did not live with his or her parents even though they were alive.

Workers' Health

The economically active population (EAP) in 2000 was estimated at 7.8 million, or 30.4% of the total population, and the economic activity rate was 65.9% (76.9% for men versus 55.9% for women). Of the employed urban population over 14 years of

age, 72.0% were in microbusinesses with up to 10 employees, 4.2% were in businesses with 10 to 20 workers, and 23.5% were in larger businesses. Those in the informal sector represented 55% of all urban workers.

The two main challenges to workers' health are deficiencies in worker safety and the low coverage of occupational health services. Social security coverage in the country fell from 40.7% of the EAP in 1986 to 23.4% in 1995, with an estimate of 22% for 2001, and coverage of occupational risks is even lower. The legislative changes in this area have failed to improve the figures, although progress has been made in terms of institutional development and increased human resources in the field of occupational health. Indeed, broad sectors of the working population remain unprotected, and new risk factors are being added to the traditional ones. Flexibilization has had a negative effect on working conditions and consequently on workers' health. The least protected workers are those in the informal sector, minors, and those in the formal sector employed under third-party contracts and subcontracts.

Although information on work-related accidents and occupational diseases suffers from underreporting, it is known that the number of mining accidents decreased between 1992 and 2000, thanks to initiatives on the part of employers, social security, and the workers themselves. In 1998 there were 1,300,000 workers between 6 and 17 years of age, most of whom had no health care services or protection through worker safety programs.

The Disabled

Development of the Disability Information Module (His-Dis) in 1995 has made it possible to have national statistics on disability since 1997. The National Rehabilitation Institute provided 191,000 consultations in 1998, and the most frequent type of disabilities were locomotor (37%) and body disposition (18%). By degree of disability, 53% of these cases were mild, 27% were moderate, and 10% were severe. The last-mentioned were primarily associated with alterations in higher-level mental function (34%), other diseases of the nervous system (27%), and spinal cord lesions (26%). Activities related to the strategy of community-based rehabilitation made it possible to expand coverage and provide more care for the disabled. Since 1998 pilot centers have been established, consciousness-raising work has been done with health professionals and technicians, and 13 of the 70 rehabilitation centers in Peru have been upgraded.

Indigenous Groups

In 2000, the mother tongue of nearly 17% of the Peruvian population (and a similar proportion in 1997) was an indigenous language: Quechua, Aymara, Campa, Shipibo, or other, of which Quechua had the largest number of speakers. Relative to the Spanish-speaking population, the country's indigenous peoples are disadvantaged in terms of both their general situation and their health status, and these conditions have not changed since 1997.

By Type of Health Problem

Natural Disasters

Because of its location on the so-called "Pacific Rim of Fire," Peru is vulnerable to the effects of earthquakes and volcanic eruptions. It is estimated that 80% of the population is at risk of suffering damage from an earthquake. In addition, the country's orography makes for frequent avalanches and landslides, and the National Civil Defense Institute has estimated that 35% of the population is at risk of being affected by such disasters. Between 1993 and 1997 there were a total of 1,478 natural disasters of some kind—mainly floods, avalanches, and localized seismic tremors. These events took the lives of 1,667 people, caused injury or loss to another 872,750, destroyed 38,360 homes, and damaged an additional 131,855 dwellings to some degree. The agricultural losses affected some 254,000 hectares, and the overall economic toll was calculated at US$ 100.4 million.

Vector-borne Diseases

It is estimated that 2.5 million inhabitants live in areas at high risk or very high risk for malaria transmission (8% of the districts in the country). Between 1989 and 2000 there were an average of 180,000 confirmed cases of malaria each year, and incidence of the disease was on the increase up until 1998. In that year the annual parasite index was 10.0 per 1,000, but by the year 2000 it had fallen to 2.7 per 1,000. Malaria in Peru follows a definite cyclic and seasonal pattern. It is also associated geographically and ecologically with specific sections of the country: the tropical areas and irrigated desert areas of the northern coast, the northeastern montane jungle, the central and southeastern jungle, and the Peruvian Amazon basin. In 1999, 70% of all reported cases were concentrated in the most active endemoepidemic areas, located in the departments of Loreto, Tumbes, and Piura. Plasmodium vivax malaria is predominant. The proportion of *P. falciparum* cases, after increasing from 19.7% in 1995 to 41.6% in 1999, dropped back down to 30.2% in 2000. The rise in *P. falciparum* malaria has been linked to the expanded geographic range of the vectors in Loreto in 1995–1996 and in Tumbes and Piura after the El Niño phenomenon of 1997–1998; to the emergence, spread, and dispersion of treatment-resistant *Plasmodium* strains; and to the increase and dispersion of *Anopheles darlingi* in Loreto and *Anopheles albimanus* in Tumbes and Piura. The mortality rates from severe malaria were 0.19 per 100,000 population in 1999 and 0.08 in 2000, and the age groups most affected were adults over 45 and children aged 1 to 4 years. Loreto had the largest number of deaths.

The *Aedes aegypti* dengue vector is found over an area of 175,000 km^2 (13.6% of the national territory), which is home to 3.4 million persons (13.2% of the total population). Dengue is endemic in Iquitos, Pucallpa, and Tarapoto, where it entered Peru in 1990 in the form of an epidemic that has produced 7,858 reported cases of classic dengue. Initially, the dengue-1 serotype

was isolated. The epidemic has continued to spread westward and southward, and as of 2001 a total of 13 departments had reported cases. In 2000 all four serotypes of the dengue virus were isolated, including the American and Asian strains of the dengue-2 serotype, found in a study of 11 health regions, and the cumulative incidence was 21.7 cases per 100,000 population. In the first 26 weeks of 2001 a total of 23,454 cases of dengue were reported, 90% of them in Piura. Also in the first half of 2001 the country's first cases of hemorrhagic dengue were reported, eventually resulting in a total of 206 cases and 3 deaths.

Cases of bartonellosis were on the increase from 1985 until 2000, especially in the northern departments of Ancash, Cajamarca, and Amazonas. In 2000 Ancash reported a rate of 87.8 per 100,000 population.

Chagas' disease is a public health problem in southern Peru. The area subject to household infestation by *Triatoma infestans* covers 120,000 km^2 (9.3% of the national territory) and includes 14 provinces and 80 districts in the departments of Ica, Arequipa, Moquegua, Tacna, Apurímac, and Ayacucho, which have a total population of 600,000. Although epidemiologic information is incomplete, studies conducted since 1996 in various population groups have shown seroprevalences of human *Trypanosoma cruzi* infection ranging from 1.3% to 12.0%. In 1999 the screening of all donated blood for *T. cruzi* yielded positive results in 436 out of 311,550 units, for a rate of 0.14%. However, in the six endemic departments, the 9,871 units of donated blood produced 60 positive samples, for a rate of 0.77%.

The Peruvian departments in the highlands and jungle have the most cases of leishmaniasis. There are two predominant species of the parasite: *Leishmania braziliensis-peruviana*, which is responsible for the Andean cutaneous form, also known as *uta*, and *L. braziliensis-braziliensis*, which produces the mucocutaneous form. In addition, isolated cases due to *L. amazonensis* have been described. The stationary trend observed between 1950 and 1980 (6.6–8.5 cases per 100,000 population) took an upswing with the intensification of agricultural activity and timber extraction in the jungle. In 2000 a total of 9,588 cases of *uta* and 863 cases of mucocutaneous leishmaniasis were reported, for an overall rate of 40.7 per 100,000 population. The highest rates were in the departments of Madre de Dios (760.8), Amazonas (379.2), and Cuzco (160.5). On both slopes of the Andes, the Andean cutaneous form affected the population under 15 years of age, attributable to the early incorporation of this age group in agricultural activity. The mucocutaneous form affects persons over 15 and is associated with migration to colonize the jungle and to exploit its timber and petroleum reserves.

Diseases Preventable by Immunization

The last case of poliomyelitis to be registered in the Americas occurred in Peru in 1991. In 2000, 102 cases of acute flaccid paralysis were reported (notification rate: 1.2 per 100,000 population under 15 years). The indicators for assessing the quality of epidemiologic surveillance of this condition in Peru show that it is adequate. The last epidemic of measles occurred in 1992, with 22,605 cases and 263 deaths. Since then there have been no more deaths from this disease. In 1995, when surveillance was initiated with a view to its eradication, 636 cases of eruptive febrile illness were reported, and in 2000 only one case was confirmed out of 5,256 suspected cases of measles-rubella reported through the integrated surveillance system for the two diseases. That same year 10 cases of neonatal tetanus were reported, compared with 94 cases in 1995. In 2000, 41 suspected cases of jungle yellow fever were reported, 7 of which were confirmed and 4 were fatal. Also that year there were 1,148 confirmed cases of hepatitis B, for a rate of 4.5 per 100,000 population, and 24 deaths. Since 1990 vaccination coverage under the Expanded Program on Immunization (EPI) has maintained levels of over 90%, with a significant epidemiologic effect.

Intestinal Infectious Diseases

In 2000 the prevalence of diarrhea in children under 5 years was 15.4%, compared with 17.9% in 1992 and 31.9% in 1986. The 2000 prevalence was greatest among infants 12–23 months old (25.5%), rural inhabitants (17.6%), and inhabitants of the jungle (25.0%). That year, 68% of children with diarrhea under 5 years of age received oral rehydration therapy. The proportion of cases that received adequate treatment in the Ministry of Health services increased from 7% in 1993 to 25% in 1996. The proportion of cases with dehydration fell from 34% in 1994 to 26% in 1996, and cases of severe dehydration dropped from 4.0% to 1.5%. Since appearing in 1991, cholera has been declining steadily, from 322,562 suspected cases that year to 4,369 in 1996 and 934 in 2000. The exception was 1998, when nearly 42,000 cases were registered, while the country was experiencing the effects of El Niño. Cholera has mainly affected the population over 15 years old, and it tends to occur between December and March on the coast and between June and October in the jungle. The average death rate held steady at 0.09%, although higher figures were reported in areas with limited access to health services. National surveillance of *Vibrio cholerae* strains failed to detect any of the O139 strain.

In terms of parasitoses of the digestive system, in 1997 the incidence of ascaridiasis in the country as a whole was 15% (3%, 15%, and 68% in the coastal, highland, and jungle regions, respectively); for trichuriasis, the rate was 16% (4%, 16%, and 74% in the respective regions); and for hookworm disease, 6% (0.3%, 1.5%, and 46%).

Chronic Communicable Diseases

Tuberculosis has been on the decline since 1992. In 2000 the morbidity rate for tuberculosis in any form was 155 per 100,000 population, the incidence rate was 133 per 100,000, and the incidence rate for pulmonary tuberculosis with a positive sputum smear was 88 per 100,000. The proportion of tuberculosis cases with HIV coinfection was 1.3%, or a rate of 2.2 per 100,000 pop-

ulation. In the country as a whole, the annual risk for tuberculosis infection in children aged 5–6 years old fell from 2.0%–2.5% at the beginning of the 1990s to 0.9% in 1997–1998. The proportion of cases that were resistant to the multidrug scheme and required repeated treatment was equivalent to 1.5% of the morbidity level. According to surveillance data for 1999, 17.8% of the cases showed primary resistance to at least one of the antituberculosis drugs, and acquired resistance was encountered in 13.5% of the cases, while primary resistance to the multidrug scheme was 3.0%, versus 12.3% for acquired resistance. The corresponding figures for 1996 were 15.4% and 2.5%, respectively, for primary resistance to at least one of the drugs, versus 23.5% and 15.7% for acquired resistance.

Leprosy has also declined. In 1999 there were 180 cases under treatment in Peru, 29 of them paucibacillary and 151 multibacillary. All were in persons over 15 years of age, and 7 new cases were reported in the jungle region. One of the new cases was paucibacillary and 6 were multibacillary, and all the patients had grade-2 disability.

Acute Respiratory Infections

Although mortality from acute respiratory infections in children under 5 years dropped 42% between 1994 and 1998, they remained the leading cause of death in this age group, accounting for an estimated 14,000 deaths a year. Of this number, 20% were due to pneumonia, with higher levels of incidence in the highlands and the jungle. Acute respiratory infections place the heaviest demand on health services, representing 40% of all consultations and 30% of the hospitalizations in this age group. A survey conducted in 1995 found that 39.2% of the cases of acute respiratory infections were correctly treated in the health services.

Zoonoses

Eight cases of canine-transmitted human rabies were reported in 1997 and 2 in 2000, neither of the latter in a large urban area. At the same time, 302 cases of rabies were reported in dogs in 1997 and 54 in 2000. The drop in incidence is attributed to broader canine vaccination coverage, which increased from 51.4% in 1996 to 73.9% in 2000. Laboratory-confirmed cases of plague fell from 55 in 1997 to 17 in 2000, an improvement credited to the use of metal silos in the departments of Piura, Cajamarca, and Lambayeque, where the disease is endemic. The main risk factor for human brucellosis continues to be the consumption of fresh cheese made with unpasteurized milk from infected goats owned by small farmers and nomad herders. Most of the cases (95%) are concentrated in Lima, Ica, and El Callao. Following a campaign to vaccinate goats, the number of cases fell from 2,525 in 1996 to 1,085 in 2000.

HIV/AIDS

Between 1983 and 2000 the country had a total of 11,310 reported cases of AIDS (1,189 in 1996), and of this number, 83% were in men. The male-female ratio declined from 11:1 in 1990 to 3:1 in 2000. Seventy percent of the cases were in adults between the ages of 20–39, with a rising proportion in the group aged 20 to 24. In the historical series, sexual transmission accounted for 95.7% of the cases, vertical transmission (mother to child) for 2.8%, and blood transmission for 1.5%. In 1999 the number of HIV carriers was estimated at 76,000, including 4,500 in the population under 15 years and 18,000 women. HIV seroprevalence in sexual workers increased from 1% in 1994 to 2% in 2000. Among homosexual males the seroprevalence rate was 11% in 2000, while in pregnant women the rate was 0.3% in 1999. The epidemic is still concentrated in populations with high-risk behavior and in high-density urban areas, especially on the coast, where commercial activity and rapid communication have created industrial hubs. Since 1997 there has been compulsory HIV screening of all blood samples and blood products. HIV screening is offered at no cost to all pregnant women, and free zidovudine treatment is given to those who test positive starting at week 35 of the pregnancy, as well as to the newborn for the first 6 weeks of life. In a survey conducted in the year 2000, 13% of the women respondents aged 15–49 said they had no knowledge about HIV/AIDS; 25% said that they had heard about it, mainly on radio or television, but did not know how to prevent the infection; 14% either did not know what to do or believed there was no way of avoiding it; and 67% stated that they had not altered their sexual behavior after learning about AIDS.

Sexually Transmitted Infections

In the entire country, only 49% of the women had heard about infections besides HIV/AIDS that can be transmitted by sexual contact. Of the women who declared that they were sexually active, 25% had had one of these infections or an abnormal vaginal discharge or a genital ulcer in 2000, and 63% of these women had sought medical treatment. Also that year there were 629 cases of congenital syphilis (versus 266 in 1999) in the country as a whole, and half of them were in Lima and Huánuco. In 2000 the seroprevalence of syphilis was 1.0% in the blood banks of the Ministry of Health.

Nutritional and Metabolic Diseases

There has been a progressive decline in the proportion of children with low weight-for-age and low weight-for-height, from 10.8% and 1.4%, respectively, in 1992 to 7.8% and 1.1% in 1996, and 7.1% and 0.9% in 2000. Chronic malnutrition, which dropped from 36.5% in 1992 to 26.0% in 1996, appeared to have stabilized at 25.4% in 2000. The highest rate in 2000 was in rural areas, where the proportion reached 40.2%, whereas in the Lima metropolitan area it was only 7.3%. In that same year the incidence of anemia among women of reproductive age (15–49 years) was 30%, compared with 34% in 1996, and the proportion was greatest in the highlands (34%) and rural areas (37%). Among children under 5 years the rate was 50% (57% in 1996),

and even higher in the groups 12–15 years (78%) and 6–9 months (59%), as well as in the highlands (56%) and rural areas (53%). According to preliminary findings from a national monitoring exercise conducted during 1996–1997 in children under 5 years, the occurrence of vitamin A deficiency was 50%, and the rate of low serum retinol was 20%. Iodine deficiency has been brought under control with the universal iodization of salt for human consumption. The salt is being consumed by more than 90% of the population in high-risk areas of the highlands and jungle, and urinary iodine excretion levels remained above 100 mg/L during 1997–2000. The frequency of goiter in schoolchildren was 10.8% in 1995.

Diseases of the Circulatory System

Between 1986 and 1997 the mortality rate for diseases of the circulatory system fell from 132.7 to 104.9 per 100,000 population. Malignant neoplasms and cardiovascular diseases continue to be the most widespread noncommunicable diseases. According to surveys conducted in five Peruvian cities in 1998 and 1999, the prevalence of hypercholesterolemia is 30.2% in men and 24.2% in women, and for arterial hypertension the rate is 17.5% and 9.2%, respectively, for the two sexes.

Malignant Neoplasms

According to the Metropolitan Lima Cancer Registry, the incidence of breast cancer in 1990–1993 was 31.8 cases per 100,000 women, and that of uterine cancer, 26.1. For stomach cancer the rate was 20.5 in men and 14.5 in women, and for lung cancer, 14.8 in men and 6.3 in women. Mortality from malignant neoplasms did not change significantly between 1987 and 1997, but the proportion of deaths from cancer increased from 9.0% in 1987 to 14.2% in 1997, and the potential years of life lost from tumors increased from 292,350 to 390,024 (33.4%), indicating more premature death from these causes. In the cancer mortality profile for women the leading sites of malignant tumors are the uterus, stomach, and other digestive organs, while in men the primary sites are the stomach, lung, and prostate. Malignant tumors of the respiratory tract, lymphatic system, and hematopoietic organs in both sexes, and of the breast in women, have significantly higher mortality rates in the higher socioeconomic strata, whereas those of the uterus and uterine cervix, prostate, and other sites do not vary as much between the quintiles.

Accidents and Violence

Subversive violence has declined considerably, from 2,779 acts in 1990 to 144 in 1999, and the number of victims fell from 1,477 to 55 over the same period. On the other hand, there was a considerable increase in transport accidents, especially those caused by motor vehicles, which rose from 52,633 in 1990 to 79,695 in 1999. Mortality from transport accidents, homicide, and suicide represented 8% of the physician-certified deaths in 1998, and the police reported 2% more that same year. One-third of the population over 12 years old in the Lima metropolitan area was the victim of a violent act in 1997. Robbery of persons (18.5%) and burglary of homes (12.1%) were the most frequent crimes. The rate of physical assaults was 2.5%, ranging from 0.7% in the more affluent socioeconomic strata to 3.0% in the poorer segments of the population. Family violence is targeted mainly against women and children at all socioeconomic levels and in all the regions. The police reported an increase in abusive treatment of women from 24,576 cases in 1997 to 30,893 in 1999 in Lima alone. After food pension disputes, family violence and abuse was the second leading reason for consultation at the Municipal Children and Adolescent Defense Leagues in Metropolitan Lima. The type of sexual abuse cited most often was verbal (76.5%), followed by rape and attempted abuse.

Oral Health

The incidence of dental caries was 84% in the year 2000, and the DMFT index was 5.6 for children 12 years of age, while the prevalence of periodontal disease was 85% and that of malocclusion, 70%.

Emerging and Re-emerging Diseases

Plague reappeared in the northern part of the country in 1994, and, although its incidence decreased in the latter half of the 1990s, the disease continues to pose a risk, and the threat tends to be exacerbated by the El Niño phenomenon. Yellow fever occurs cyclically in parts of the jungle, as in the outbreaks of 1986–1987 and 1995–1996, but there is also risk of it becoming urbanized in areas that are heavily infested with the mosquito vector. The relocation of civilian and military populations has led to the appearance of hepatitis B and hepatitis delta outbreaks in the northern jungle in the same areas where there have been cases of wild rabies transmitted by bats. Other new diseases that have been detected in Peru during the 1990s are: exanthematic typhus (in Cuzco, since 1990), Oropouche virus disease (Loreto, 1992), Venezuelan equine encephalitis (Loreto, 1993–1995), Mayaro fever (Ucayali, 1995), and leptospirosis (in some Amazon localities, 1998). Since 1997 the antibiotic resistance of various pathogenic agents has been subject to surveillance. As of 2000, the sensitivity of *Vibrio cholerae* to chloramphenicol, furazolidone, and the tetracyclines was over 90%; *Salmonella typhi* and *S. paratyphi* were at least 98% responsive to ciprofloxacin, chloramphenicol, cotrimoxazole, and gentamicin; *Shigella* sp., less than 30% responsive to ampicillin, chloramphenicol, and cotrimoxazole, but 100% to ciprofloxacin and norfloxacin; *Streptococcus pneumoniae*, 70% responsive to ampicillin and 90% to third-generation cephalosporins; *Haemophilus influenzae*, 84% sensitive to ampicillin, 88% to chloramphenicol, and 94% to cotrimoxazole; *Neisseria gonorrhoeae*, at least 75% responsive to ciprofloxacin, ceftriaxone, and spectinomycin; and *Plasmodium falciparum*, less than 70% responsive to chloroquine in Tumbes, Piura, Sullana, and Loreto, and less than 70% to sulfadoxine-pyrimethamine in Loreto.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Ministry of Health is the body responsible for steering the health sector, and its functions include the formulation of sector policies and plans. During the last decade of the twentieth century the Ministry's actions were guided by the Health Policy Guidelines, which defined the bases for the sector's reform process. The reform has sought to extend basic care coverage through insurance mechanisms and the provision of free services for the poor. At the same time, in some of the country's departments, it attempted to introduce a separation of functions through management agreements, but this initiative was not entirely successful. In 1994 the Ministry of Health set up basic health care packages for children, adolescents, women of reproductive age, and the adult population, financed with government funds under the program of Basic Health for All. That same year the Ministry also launched a project for health service strengthening that was aimed at shoring up infrastructure and delivery-related operational systems in its own services. In 1997 the school health insurance program was implemented, offering comprehensive care for children in public schools, and in 1998 a pilot program for maternal and child health insurance was initiated to cover mothers during pregnancy, delivery, and the puerperium, as well as children up to the age of 2 years. Participative processes, to the extent that they have gotten under way, have been based on the model of local health administration committees (CLASs), in which health facilities are administered jointly by Ministry of Health authorities and members of the community. This model is being followed in nearly 20% of the Ministry's health centers and health posts.

In the area of finance, progress has been made in health-outcome planning, with emphasis on the primary care level in the service network under the Ministry of Health, especially in the poorest areas. Since 1999 pilot tests have been conducted to assess the reliability of certain methods for identifying target beneficiaries of the subsidy. Several payment mechanisms have been discussed, with a view to gradually tailoring the subsidy to correspond more precisely to the available supply and turning it into an allocation based on demand, productivity, and efficiency.

As far as health care equity is concerned, of the Ministry's entire 1997 public subsidy, defined as executed spending minus payments received from users and the cost of central administration, 38.2% went to hospitals and 61.8% to health centers and health posts. The distribution of this expenditure by income quintiles followed a progressive pattern at the primary care level in the cities, compared with a regressive pattern in hospitals, especially in rural areas. As part of the initiative to reform the sector, attention was given to developing a care model based on networks of health systems and facilities that would involve users and resources at various decision-making levels, based on the complexity of the needs to be met. This model should improve decision-making capacity within the system and thus enhance the return on resources invested. Five national hospitals were modernized through improvements in their management, costing systems, contracting and administration of human resources, and logistical management of supplies.

The Health System

Institutional Organization

There are several health care subsystems, with little functional coordination at the national and subnational levels and fragmented information management, which hampers decision-making. The health services are divided into two subsectors, the public and the private. The public subsector comprises the Ministry of Health, the social security system, and the health services of the armed forces and the police. Altogether, it has 51% of the country's hospitals, 69% of the health centers, and 99% of the health posts. The Ministry of Health has the largest number of facilities and the broadest national coverage (139 hospitals, 1,115 health centers, and 4,954 health posts, out of 486, 1,778, and 5,237, respectively, in the country as a whole). However, in the year 2000, 32.2% of the population suffering from a disease, other health condition, or accident had no access to any subsystem. The Ministry of Health serves mostly the uninsured population. The social security system (EsSalud), whose facilities are mainly located in cities, offers coverage to workers in the formal sector and to their dependents. The health services of the armed forces and the police take care of the personnel in these institutions and their immediate family members. The private subsector has most of its resources in the large cities and is composed of clinics, physicians' offices, and, to a lesser extent, facilities run by nongovernmental organizations.

Developments in Health Legislation

The health sector's legal framework was revamped in 1997 based on two new laws, the General Law on Health, and the Law on the Modernization of Social Security. A system of social security health insurance, EsSalud, was created in 1999 within the framework of the Peruvian Social Security Institute (IMPS). The General Law on Health entrusts the State with the provision of public health services and the promotion of conditions that will ensure the population adequate health benefits in terms of insurance coverage, timely delivery of services, and reliable quality. Also, under this law the State must endeavor to ensure equity-based provision of medical care. In addition, the State is responsible for monitoring and addressing the problems of malnutrition, mental health, environmental health, health of the disabled, and the health of children, adolescents, mothers, and older adults who are in socially marginalized circumstances. State financing must give preference to actions in the area of public health and the total or partial subsidy of medical care for low-income groups

that are not covered under any other public or private system of health benefits. Finally, the law establishes that it is the will of the State to promote progressive universal insurance for the entire population. For its part, the Law on the Modernization of Social Security is intended to improve the quality and coverage of services by easing the public monopoly on the delivery of medical care. Accordingly, EsSalud beneficiaries are given the freedom to affiliate with private sector providers or health provider organizations (EPSs) to obtain coverage for low-complexity care.

Private Participation in the Health System

At the end of the 1970s the growth of State participation in economic activities such as mining, fishing, and petroleum exploration led to a concomitant increase in the economically active population covered by its health services, and the demand was not being adequately met by the government's social security system. This situation gave rise to private health insurance schemes and other mechanisms for the provision of social benefits that expanded the supply of private health services in the 1980s, especially in Lima and the department capitals, to the point that their capacity to deal with the need was comparable to or greater than that of the public sector. The economic crisis at the end of that decade and the beginning of the next, coupled with reduced State participation in production and services, led to an excess supply of private services at the end of the 1990s, with consequent losses for investors and little incentive to undertake new projects. According to data from national standard-of-living surveys, in 1997 and 1998 private physicians' offices and clinics had received 18% of the respondents' total expenditure on health. This spending was linked to private insurance, such that 40% of private spending on for-profit health services was financed by the subscribers' insurance plans. The survey showed that, in addition to absorbing a sizable share of the health expenditures, private providers had attracted 8.2% of the population who reported an illness or accident during the four weeks prior to the survey, that is, one-fifth of the population with access to health services.

Health insurance coverage is provided under three different regimens in Peru: social security, the health services of the armed forces and police, and private insurers. The monies contributed to health insurance by households and employers amounted to 1.4% of the GDP in 1998 and accounted for 36% of all health financing as well as 40% of private spending on for-profit health services. Social security insurance represented 82% of this sum, and private insurance the remaining 18%. In the case of social security, employers collect the equivalent of 9% from workers' monthly wages to cover their health insurance, and the number of contributors depends on the growth of the formal sector of the economy. The armed forces health insurance plan is funded from the national treasury. Private insurance is usually contracted for by employers, and to a lesser extent, directly by families. The growing trend toward a more informal economy, the flexibilization of working conditions, and the limited increase in real income have led to a reduction in health insurance from 37.7% in 1994 to 23.5% in 1997. The gradual increase in premiums for private insurance has fueled this phenomenon. In 1997, 86.5% of all insurance beneficiaries were covered by social security, 6.8% had only private insurance, and 2.5% had both. That year insurance coverage ranged between 35.9% for the population of the Lima metropolitan area and 6.2% for the rural population. In 2000, two years after the EPS organizations had begun operations, about 5% of social security beneficiaries had enrolled in the new system, with no increase in the overall insured population.

Organization of Regulatory Actions

As the steering body of the health sector, the Ministry of Health formulates policy guidelines, sets standards and protocols for health care, and determines technical procedures for regulating the delivery of services in public and private health facilities. However, application is limited almost exclusively to the Ministry's own network, while there is only limited compliance in the social security system or private practice. Interinstitutional coordination has been haphazard because of the absence of any permanent bodies for negotiating agreements and formulating policy for the sector.

The National Council for the Environment, a decentralized agency directly under the Council of Ministers, has the mission of planning, coordinating, and monitoring the environment and the country's national heritage, as well as overseeing its preservation. However, management of the environment is shared by several sectors, each responsible for its own aspect of the situation. Since there is no one agency responsible for the handling of chemical substances from their generation to their final disposition, these functions are carried out by various government agencies. The Office of Environmental Health, under the Ministry of Health, is the technical agency responsible for standardization, supervision, monitoring, assessment, and coordination with regional and local governments and other components of the national health system, as well as other sectors, on matters related to protection of the environment, basic sanitation, food hygiene, zoonosis control, and workers' health. The Ministry of the Presidency, through the Office of Sanitation, is the State steering body that sets policies and strategic objectives for the development and sustainability of sanitation services. The National Superintendency of Sanitation Services regulates and supervises the provision of these services at the national level, ensuring their adequate quality and coverage, as well as appropriate cost. The provincial municipalities are responsible for ensuring the provision of services in their jurisdiction and for contracting with service providers. In rural areas the services are administered, operated, and maintained by the communities through sanitation service administration boards.

Unacceptable water quality is a critical problem in some areas. The sources of pollution are mainly industrial runoff, especially

from mining and metallurgical operations, and household and agrochemical waste. Sewage treatment is provided for 14% of the nation's households. Lima and El Callao empty nearly 17 m^3/second of untreated household waste into the ocean. During 2000 water quality surveillance was being implemented in 20 river basins, bringing to 145 the number where this is being done. There is also a program for the protection of coastal and beach areas that is responsible for sanitary surveillance of all the officially sanctioned beaches. Soil quality is deficient in several areas. For example, salinity is a problem in 40% of the 300,000 hectares of coastland and 45 of the 53 coastal valleys. In the highlands, agricultural land is being leached by inappropriate cultivation practices, which are also leading to destruction of the protective layer on mountain slopes. In the jungle, deforestation continues to increase with growing agricultural exploitation. Working with other sectors of the State and municipal governments, the Office of Environmental Health is the focal point for the Codex Alimentarius and is responsible for the surveillance, control, and safety assessment of food. Its activities are governed by a set of food and beverage safety regulations. However, there are no public or private agencies to oversee the assessment of sanitation technology.

Organization of Public Health Care Services

As the health services carry out their work, they are giving increasing attention to health promotion and the incorporation of preventive aspects, as well as sociocultural adaptation and community participation. In addition, some 30 provincial and district municipalities have set up local networks of "Healthy Communities" in the north (Tumbes and Piura), south (Arequipa), and the central part of the country (Lima and El Callao). These networks are dedicated to working in four priority areas: safe and healthy maternity, prevention and control of domestic violence, care of older adults, and healthy surroundings, especially environmental health. Similarly, health promotion has been incorporated into public education through a national program for Healthy Schools (2,000 in the country as a whole), which promotes opportunities for education, participation, organization, and the sharing of views with and for children and adolescents.

Within the framework of its international commitments, Peru has been executing the following priority strategies: "Stop Tuberculosis," using DOTS (directly observed treatment, short course) and DOTS-Plus; eradication of polio and measles; elimination of neonatal tetanus; Integrated Management of Childhood Illness (IMCI); "Roll Back Malaria"; elimination of leprosy; elimination of *Triatoma infestans* from household environments and interruption of the transfusion transmission of Chagas' disease; elimination of urban canine rabies; surveillance of antimicrobial resistance; safe blood supply; and surveillance, prevention, and control of other emerging and re-emerging diseases.

Since 1995 significant coverage has been maintained in programs for the immunization of children under 1 year against measles and polio, with levels reaching 97.2% for measles and 93.1% for OPV3 in 2000. In the 1,828 districts of the country, the proportion with at least 95% coverage was 52.1% for measles and 44.8% for polio. To combat neonatal tetanus, since 1992 women of reproductive age have been being vaccinated with tetanus toxoid (TT), "mop-up" campaigns with two doses of TT have been conducted in high-risk districts, and traditional birth attendants and health promoters have been trained to administer the vaccine and take appropriate precautions during deliveries. Implementation of the IMCI strategy got started in 23 of the 25 departments during 1997 with the training of health professionals and health promoters in case management and the rational use of antibiotics in health facilities. Peru's commitment, reflected in the slogan "Healthy Children 2002," has been to prevent 9,000 deaths in children under 5 years of age between 1997 and 2002. These strategies are being implemented by units within the health sector's organizational structure, especially the disease prevention and control programs, which are responsible for standardizing, supervising, and evaluating activities under these strategies, while execution is up to the health services and decentralized technical teams. Epidemiologic surveillance of infectious diseases is the responsibility of the Office of Epidemiology (OGE) in the Ministry of Health, while diagnostic support and laboratory surveillance comes under the National Institute of Health (INS).

The national epidemiologic surveillance system of the OGE consists of 3,500 reporting units in health facilities. The following diseases are the subject of surveillance and weekly reporting: cholera and acute diarrheal disease, plague, yellow fever, malaria, dengue, human and animal rabies, meningococcal meningitis, acute flaccid paralysis, neonatal and adult tetanus, diphtheria, whooping cough, measles, exanthematic typhus, hepatitis B, AIDS, acute respiratory infections, and maternal mortality. The control programs, for their part, have their own direct registration systems for tuberculosis, leprosy, leishmaniasis, bartonellosis, brucellosis, HIV infection, foodborne diseases, American trypanosomiasis (Chagas' disease), hospital infections, and antimicrobial resistance. Diabetes mellitus, violence, transport accidents, and neoplasms have begun to be incorporated into the national surveillance system. The INS conducts basic and applied research on the prevention and control of priority diseases and sets technical standards for the network of public health laboratories, which consists of 16 regional laboratories that work together to supply reagents and that perform the functions of quality control, evaluation, supervision, and training. The laboratories have the capacity to diagnose priority diseases and are organized according to increasing levels of complexity, ranging from direct observation techniques to virus isolation in cell cultures and tests based on molecular biology.

Information on morbidity treated in outpatient and hospital services is recorded and periodically summarized in all health fa-

cilities and then submitted to the corresponding central level in each sector. The lack of standardized methods for processing the data has compromised the integrity of the analyses. The statistical processing of death certificates is the responsibility of the Ministry of Health, which has been using the tenth revision of the International Classification of Diseases (ICD-10) to code the causes of death. However, in 1998 medically certified deaths represented only 47.2% of total estimated mortality in the country, and the proportion is even lower in the poorest departments. Despite efforts to promote training in health situation and trend analysis, this activity has been mainly limited to the regional and central levels and has not been developed much at the local level.

Potable Water and Sewerage Services

The last decade of the twentieth century saw improved national coverage in the area of water supply and sanitation (sewerage, cloacal, or drainage systems). In 2000 the proportion of homes with water supply (from a public network with a household connection either inside or outside the dwelling, public fountains, or wells) was 88.6% (78.1% in rural areas, 93.9% in Lima). The proportion of homes with sanitation (elimination of waste by public network, septic tank, or cesspool) was 80.8% (53.0% in the countryside, 97.5% in Lima). Between 1994 and 2000 the proportion of households with water connections increased from 65.8% to 71.4% in the country as a whole, and from 28.5% to 40.7% in rural areas. The proportion of water supply systems that use disinfection is 80% in the cities (99% in the Lima metropolitan area) but very low in rural areas, where the procedure is not considered practicable because chlorine is too difficult to obtain. In the cities, almost all the water supply systems have interruptions in their service and are actually in operation for an average of only 13.7 hours a day. As a result, it is necessary for households to keep reserve supplies, which are not well protected or regularly disinfected. Water supply service is also intermittent in rural areas.

Solid Waste Services

Little information is available on services for the management of solid waste, including hospital waste, but it is estimated that 60% to 65% of the population has the benefit of refuse collection service. Except in Lima, where 57.6% of the collected waste goes to a controlled sanitary landfill, the cities use dumps where no sanitary precautions are taken, or else the waste is emptied into watercourses. The general law on solid waste (Law 27,314), promulgated in 2000, stipulates that contracts for the management and commercial use of solid waste may only be granted to accredited businesses and that municipalities must have plans at the provincial level for solid waste management. Nonmunicipal waste is handled by multiple sectors; in other words, each ministry is responsible for regulating and overseeing solid waste management in its respective area of jurisdiction. Some hospitals in Lima microwave or incinerate their waste, and a centralized system is being installed at the Trujillo Regional Hospital on a pilot basis. A national-level management system with standards for the internal handling of hospital waste is in the planning stage, and a centralized collection and treatment system is being built in the northern section of Lima.

Pollution Prevention and Control

Air quality is poor in the metropolitan areas of Lima, El Callao, and Arequipa and in the industrial centers of Chimbote, Ilo, and Cerro de Pasco. The main causes of this situation are industrial development without pollution control and the growing number of and poor condition of the country's automotive vehicles. In 2000, measurements taken in five areas of Lima and El Callao showed that the average annual concentration of total suspended particulates is more than 200 $\mu g/m^3$, surpassing by far the 75 $\mu g/m^3$ limit that has been set as a standard for air quality in other countries of the region. In addition, the average annual concentrations of nitrogen dioxide, sulfur dioxide, and lead measured in central Lima over the period 1990–1999 exceed the recommended values established by the World Health Organization.

Food Safety

Although there are regulations and standards for the sanitary control of food and beverages, there is no comprehensive food protection program that covers all the sectors involved in the food chain. Despite the deficiencies in the surveillance of foodborne disease outbreaks, 24 such events were reported in 1997–1998, and 20 of them were investigated. The results showed that 12 cases were produced by a staphylococcal toxin, *Salmonella* sp., *V. cholerae*, *Shigella* sp., or enterotoxigenic *Escherichia coli*. In addition, methyl alcohol and organophosphate compounds were detected in food and beverages.

Food Aid Programs

Food assistance programs carried out under the National Food and Nutrition Plan 1998–2000 were aimed at improving the nutritional status of the population living in extreme poverty, reducing the incidence of anemia in children under 5 years of age by 50%, and lowering chronic malnutrition from 26% to 18% or less. In 1999 the programs benefited 11 million people through an overall investment of US$ 260 million (90% from the public treasury, 7% from the U.S. Agency for International Development (USAID), 2% from the European Union, and 1% from the World Food Program). In 2000, 2.33 million households, or 46.6% of the 5 million households in Peru, benefited from food aid of some kind. The proportion of households receiving food assistance ranged from 72.7% in the decile corresponding to those with the least resources, to 18.5% in the decile with the most resources, while 70.3% of the rural households received food aid, compared with 36.0% of those in the cities, excluding the Lima Metropolitan area, where the proportion was 31.5%. In the coun-

try as a whole, 36.8% of the low-income households and 26.4% of those in extreme poverty did not receive food assistance.

Organization of Individual Health Care Services

Ambulatory, Emergency, and Inpatient Services

The institutions in the public sector organize their services by levels of complexity. However, operation on this basis poses several problems: 1) the primary care level is not where everyone enters the system, especially in the cities; 2) adequate referral mechanisms between the different levels of complexity are lacking; 3) the health facilities do not share resources, nor are they organized into networks, which creates a critical problem for the emergency services; and 4) the allocation of resources at the different levels of complexity is unbalanced. Nor is the private sector immune to these problems. At the end of the 1990s a decision was made to give preferential funding to the primary care level within the Ministry of Health services network, and this helped to reorient the health services toward promotion and prevention, with priority focused on risks, health damages, and population groups. Nevertheless, a collateral effect of the incentives designed to shore up primary care has been the reduction of financing for the other levels, which limits access for the poorest sector of the population. A proposed new comprehensive care model for the social security system is intended to increase access by beneficiaries to the primary care level and at the same time implement an adequate system for the referral and counter-referral of patients. Experiences in the private sector have been varied. Services are provided at all levels, with a predominance of offerings at the more complex levels.

Auxiliary Diagnostic Services and Blood Banks

The safety and timely provision of blood supplies have improved significantly since 1995, when a law was promulgated declaring that the procurement, donation, conservation, processing, transfusion, and provision of human blood and its components and derivatives are a public responsibility in the national interest. The law goes on to specify seven tests that must be used to screen out contamination by HIV, hepatitis B and hepatitis C, human T-cell lymphotropic virus (HTLV-I and HTLV-II), syphilis, and Chagas' disease. In 1997 the blood banks in Lima were found to have serious shortcomings: inadequate collections, lack of good immunohematologic practices, and limited serologic screening. These findings led to creation of the National Hemotherapy and Blood Bank Program, which is responsible for guaranteeing the safety and timely provision of blood supplies and promoting the voluntary donation and rational use of blood products. In 2000 there were 144 collection centers and 100 blood processing centers registered by the national program (50% of them under the auspices of the Ministry of Health), which together received 332,800 units of blood: 80.1% from family donors or replacements, 13.7% from unpaid volunteers, 4.5% from autologous donors, and 1.7% from paid donors. In that year, 100% of the blood processed in registered blood banks was screened, and the following seroprevalence rates were found: HIV, 0.1%; HBsAg, 0.9%; HBcAg, 4.2%; HCV, 0.3%; HTLV-I/II, 1.3%; syphilis, 1%; and Chagas' disease, 0.2%. In 1997 more than 50% of the blood was transfused without being fractionated, while in 2000 only 15% was transfused in this condition, and 85% was broken down into packed red cells, fresh plasma, frozen plasma, cryoprecipitate, or platelets.

Health Supplies

Drugs

The General Law on Health sets standards for the registration, production, marketing, quality control, and use of drugs. In 1999 the Peruvian pharmaceutical market was estimated to total US$ 386 million, of which between 16% and 18% corresponded to the public sector. A total of 11,241 drugs were listed as available on the official register, and 65% of these were imported. Of the total number, only one-fourth were being marketed, and only 5.6% were generic products. There were 46 manufacturing laboratories in operation, but only 13 had total or partial good manufacturing practices certification. Quality control of pharmaceutical products is done after they are registered, and priority is assigned on the basis of health risk. Unlike the Ministry of Health, the EsSalud system has a centralized drug supply. Both institutions base their procurements on compulsory lists of essential drugs.

Immunobiologicals

There are no vaccine production plants in the country. Vaccines are procured, on the basis of annual demand, through the EPI Revolving Fund administered by PAHO. The national immunization scheme includes vaccines against tuberculosis (BCG), polio (OPV), diphtheria-pertussis-tetanus (DPT3), measles, tetanus toxoid (TT), diphtheria toxoid (Td), *Haemophilus influenzae* type b (Hib), and hepatitis B (HBV), as well as the pentavalent vaccine against diphtheria, tetanus, pertussis, *H. influenzae* type b, and hepatitis B.

Reagents

Reagents for clinical diagnosis are marketed after they are registered through the Ministry of Health's Office of Medications, Supplies, and Drugs, which is usually done by groups of reagents, depending on the firm that is marketing them. So far there is no system for assessing the quality of these products.

Equipment

In 2000 the country had a total of 30,720 hospital beds, or 1.2 beds per 1,000 population, and 79% of these were in the public

sector. Of the 781 clinical laboratories in operation, 81% are in the public sector, as are 72% of the 100 blood banks and 50% of the 2,462 pieces of radiodiagnostic equipment. However, the equipment in the private sector tends to be more recently purchased, more technologically advanced, and better maintained. According to 1999 reports by the Ministry of Health, 15% of the 8,315 pieces of highly complex equipment acquired between 1995 and 1998 for its network of facilities was not operational, and it was estimated that 42% would not be working by 2002, even though they were at most four to seven years old. As a result, the Ministry is taking steps to improve its capacity in the technical management of medical equipment and supplies, with emphasis on the planning, procurement, operation, use, maintenance, renovation, and regulation of technology.

Human Resources

Availability by Type of Resource

Between 1992 and 1996 the supply of professionals increased in all categories: the rate of physicians per 10,000 population rose from 7.6 to 10.3; professional nurses, from 5.2 to 6.7; dentists, from 0.7 to 1.1; and obstetricians, from 1.1 to 2.1. The increased supply of obstetric personnel was the result of greater priority assigned to maternal care, and, in the other professional categories, to the upgrading of health centers and health posts as they increased their coverage of the poorest segment of the population under the Basic Health for All program. Nevertheless, by 1996 questions began to be raised about the centralist trend and inequitable distribution of human resources. This was reflected, for example, in the significantly lower rate of physicians per 10,000 population in the poorer departments of Huancavelica (2.8), Apurímac (2.9), or Cajamarca (3.1) as compared with El Callao (21.3), Lima (18.9), or Arequipa (14.5). The composition of the health workforce also changed, with the proportion of professionals growing from 44.6% in 1992 to 51.7% in 1996. In 1999 the Ministry of Health employed 11,157 physicians (compared with 9,658 in 1996 and 7,557 in 1992), and the EsSalud system had 5,237 (4,495 in 1996 and 3,476 in 1992).

Training

In the country as a whole, the number of institutions devoted to the training of health professionals increased from 14 schools of medicine in 1990 to 27 in 2000. The situation in nursing was similar, and in 2000 there were 43 schools in operation. The training has an eminently curative orientation, and the system appears to be distinctly out of touch with future labor market trends. Since 1985 the number of institutions for the training of technical personnel has continued to grow, especially in the private sector, without any planning or control on the part of the State. At the end of the twentieth century an accreditation process was introduced for medical schools in order to guarantee the quality of the education being provided, and a proposal is currently being studied for the accreditation of advanced technological institutes that train technical personnel in the health field.

In 2000 there were 2,328 resident physicians in 50 clinical specialties, confirming the fact that health sector reform had not yet altered the classical trend toward medical specialization. In 1989 the Office of Epidemiology in the Ministry of Health inaugurated the Epidemiology Field Training Program (PREC) to train specialists in epidemiology and strengthen health management. By 1996 the program had produced 39 epidemiologists under its in-service training program. PREC was reactivated in 2000 with a program based on decentralized execution and four stages of academic certification. So far, 800 professionals have completed the first stage. No information is available on the number of graduate-level students enrolled in public health courses, although in 2000 there were 21 programs for the master's degree and one, recently established, for the doctorate.

Continuing Education

Continuing education efforts in the health field have been isolated and weak, sometimes undermined by labor interests, the health services, professional societies, or universities. Since 1999 the Medical Association of Peru, in coordination with universities and scientific societies, has been conducting a continuing education program for professional recertification. It appears to be difficult to sustain and institutionalize the educational experiences gained from the investment projects carried out by the Ministry of Health in the area of human resources development.

Job Market

The supply of health professionals has expanded because of both the increased number of training institutions and their growing numbers of graduates. Medicine and nursing are among the top 10 university majors in terms of the numbers of their alumnae. Every year nearly 1,000 physicians and 1,200 nurses join the labor market. No studies have been done that would show whether the supply is greater than the demand, but there is anecdotal information to the effect that Peruvian nurses migrate to Chile, Italy, Spain, and the United States of America. The rates of professional unemployment and underemployment are also unknown. In the early 1990s working conditions in health sector institutions were affected by State policies that altered the contractual relationship between the employer and employee, with lifetime jobs and permanent appointments being turned into various types of fixed-term contractual arrangements. These changes made employment more unstable. Whereas 84.2% of all health professionals had permanent appointments in 1992, by 1996 the proportion had fallen to only 59.3%.

Health Research and Technology

Organization and Financing of Scientific Activity and Training for Research

Peru has various groups working in health research, but there is no structured national research system. At the beginning of the 1990s a technical secretariat was created for this purpose within the Ministry of Health, but it never became operational. The Ministry of Health's "Project Lookout," which is on the alert for emerging and re-emerging diseases, promotes and finances research on tuberculosis, malaria, AIDS, dengue, diarrheal diseases, and acute respiratory infections. Through institutions and a competitive fund, it has awarded a total of US$ 6 million for research projects to be executed between 1998 and 2004. There is a growing tendency to promote the use of protocols and guidelines in clinical practice in order to improve the quality of care and to reduce spending. The Ministry of Health has developed and disseminated protocols and guidelines for most of the health programs.

Scientific/Technical Documentation

Technical and scientific information in the health field is produced mainly by government agencies and universities, and to a lesser extent by nongovernmental organizations, international agencies, and private organizations. Many of these institutions have made their information available on the Internet. However, the few health information centers that do exist are mostly traditional libraries, where research must be done in person. These health information centers also suffer from shortages of specialized staff and up-to-date materials. Since 1987 the Peruvian health libraries network (REPEBIS) has linked together 63 centers, and its main product is the Peruvian database of literature on the health sciences (LIPECS), which contains nearly 13,000 references. In addition, 25 Peruvian journals are indexed in the Latin American and Caribbean Health Sciences Information System, but few full-text versions are offered on the Internet. In 2000 the leading producers and users of health scientific and technical information expressed interest in establishing a national consultative committee to explore development of a Peruvian virtual health library along the lines of PAHO/WHO BIREME.

Health Sector Expenditure and Financing

In 1998 the country spent 4.3% of its GDP on health, or the equivalent of US$ 100 per capita. The main sources of financing were household spending (38%), employer contributions (35%), and the national budget (25%). Government resources were channeled to the Ministry of Health at the central level and to the departmental health directorates through the transitional regional governments. Household spending was mainly for pharmaceutical products—often purchased without involvement by the health services—and fees to public and private care providers.

Few households subscribe directly to optional insurance under the social security system or take out policies with private insurers. Employers contribute to social security to insure their regular workers, and, to a lesser extent, they also contract with private insurance companies. The funds for health insurance schemes include resources collected by social security and private insurers. Although external financial cooperation accounts for only 2% of health finances, it is qualitatively important in the design and execution of the reform process, where it takes on strategic value. This importance may be diminished if the reforms cannot be sustained with public funds.

The provider responsible for the largest distribution of expenditure in 1998 was the Ministry of Health, because of the additional income it received from fees and from international funding. The heading "pharmaceutic products" includes the drugs sold outside the provider facilities. Much of the monies under this heading were spent on direct purchases in pharmacies, without the intervention of a provider. Public expenditure by the Ministry of Health has been growing since 1993, although it leveled off in recent years because of the fiscal crisis resulting from the country's political situation and its economic recession. In 1998 current spending represented 95% of total expenditure on health, while investment accounted for the remaining 5%. Medical supplies and drugs represented 32% of the total.

External Technical Cooperation and Financing

In 1998–1999 a total of 102 health projects were financed by international technical cooperation, for a total sum of US$ 452 million. USAID contributed 63.3% of these funds, followed by WFP (8.2%), UNICEF (5.6%), Germany (4.3%), and Japan (3.7%).

FIGURE 1. Gross domestic product per capita, Peru, 1990–2000.

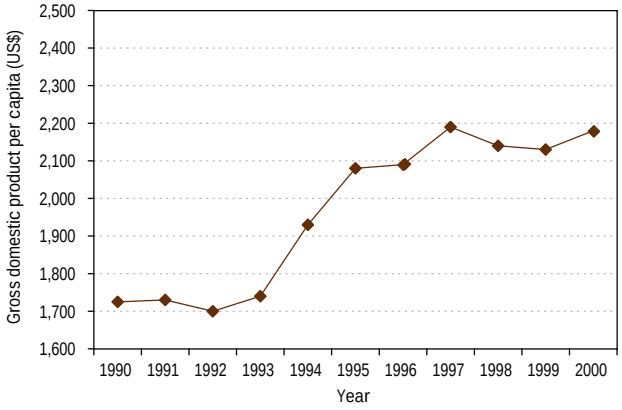


FIGURE 2. Population structure, by age and sex, Peru, 2000.

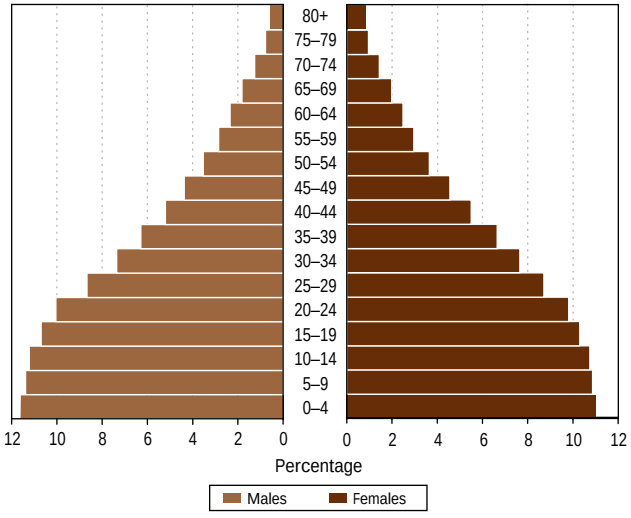


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Peru, 1987 and 1997.

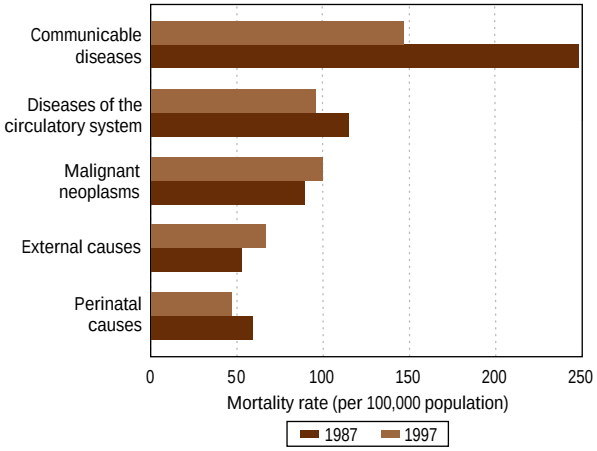
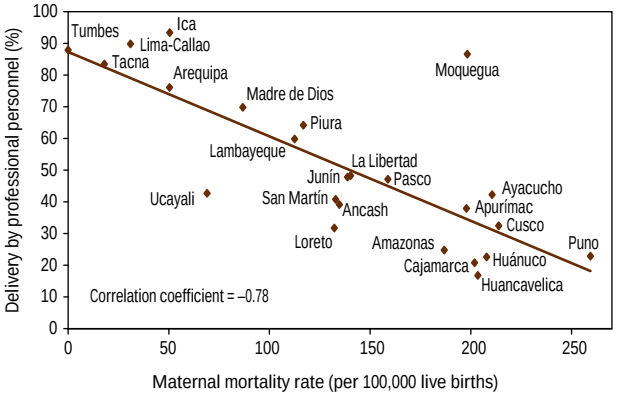


FIGURE 4. Deliveries by professional personnel[a] and maternal mortality, Peru, 2000.



[a]Physician or midwife.

Sources: MINSA/OGE. Sistema de Vigilancia de Mortalidad Materna, 2000. Encuesta Demográfica y de Salud Familiar–ENDES 2000, Lima, 2001.

PUERTO RICO

OVERVIEW

Puerto Rico is the easternmost and smallest island of the Greater Antilles. In addition to the main island, it includes the islands of Vieques, Culebra, and Mona, as well as several islets. It is located in the Caribbean Sea, east of the Dominican Republic and west of the British Virgin Islands. It has an area of 9,104 km^2 and a population of 3.8 million. The highest point is Cerro Punta (1,336 m), and its perimeter consists of coastal plains. The island is divided into 78 municipalities, and the capital, San Juan, is on the northeastern coast.

As a result of the Spanish American War (1898), Puerto Rico became an unincorporated territory of the United States of America; in 1917, the U.S. Congress granted Puerto Ricans American citizenship. In 1952, Puerto Rico ratified the Constitution, which establishes its own government for exclusively local affairs, in accordance with the U.S. Constitution. The Government of the Commonwealth of Puerto Rico consists of the legislative, executive, and judicial branches.

According to data provided by the Planning Board, the Puerto Rican economy enjoyed sustained growth during fiscal year 2000, when GDP totaled US$ 63.1 million. Although GDP increased by US$ 3.1 million (5.2%), there was a deceleration of production, since the increase in fiscal year 1999 was US$ 5.9 million (10.9%) (Figure 1). This reduction is attributed to the manufacturing sector, which represented 43.5% of the total and grew just 3.0%, after significant growth of 15.9% in fiscal year 1999. The financial, insurance, and real estate sector, which accounts for 14.1% of GDP, showed deceleration of 19.7% as compared to the previous year. The trade sector, which accounted for 13.4% of the total, represented an increase of 6.9% in its share of GDP, less than that achieved in 1999 (8.4%). The government sector share of GDP fell by 0.9% in 2000, and in 1999, it registered growth of 5.2%. The decline in the government sector share of GDP was due to the fact that the Commonwealth Government share of GDP fell 1.9%; the termination of the Health Facilities Administration operations contributed to this reduction. The other industrial sectors registered growth exceeding 1999 levels. Noteworthy among these is the agricultural sector, which registered an increase of 34% in share of GDP, after the 23% drop in 1998 as a result of damage from Hurricane Georges.

According to the Housing Survey conducted by the Puerto Rico Department of Labor and Human Resources, an average of 1,159,000 people aged 16 and older were employed in 2000. These employed individuals represented 89% of the economically active population, with males accounting for 58%. In the same year, the number of employed people increased by 12,000 (1.0%), mostly males, as compared with 1999. In fiscal year 2000, there were 144,000 unemployed, down 11.7% from 1999. That resulted in an unemployment rate of 11.0% (12.5% for males and 8.8% for females) and a reduction of 1.5 percentage points with respect to the previous year. The highest unemployment rates were found in the youngest age groups: 27% in the 16–19 years age group; 12% in the 25–34 years age group, and 6% in the 55–64 years age group.

The distribution of employment by occupation shows that professionals, managers, technicians, salespeople, and related occupations together represented 54% of the total. Starting in fiscal year 1980, this group grew at an average annual rate of 3.1%. Craftspeople, foremen and forewomen, manual workers, service workers, and other related occupations have grown moderately since fiscal year 1980. For agricultural workers and general manual workers, the 1999–2000 levels do not differ much from those of previous years. For example, agricultural workers, who represented 4.9% of the total in fiscal year 1980, dropped to 3.0% in fiscal year 2000.

The most recent national census was taken in April 2000, and the total population was 3,808,100, 8.1% more than that reflected in the 1990 census. The average annual population growth rate for the period 1990–2000 was 0.8%, but it dropped 19% during that period. It is expected that, during the coming years, the growth rate of the island's population will continue to decline, barring extraordinary changes in immigration to Puerto Rico.

Population density was 397 inhabitants per km^2 in 1990 and 429 per km^2 in 2000. In 2000, the municipalities with the highest population densities were San Juan (3,509 per km^2), and Cataño

(2,406 per km^2); the municipalities with the lowest population densities were Maricao (68 per km^2) and the island of Culebra (62 per km^2). In that year, 39% of the population lived in the Northeast Region.

During the 1970s and 1980s, net migration was negative—more people left the country than entered. However, during the 1990s, arrivals exceeded departures, and the average net positive balance was approximately 31,000 people per year. The net positive migratory balance was 39,143 in 1997 and 22,508 in 1999. The majority of those who entered the country had lived in Puerto Rico before for a period of 1 to 5 years and had been born in Puerto Rico; the next largest group was those who had been born in the United States. The women who returned to the island were mostly homemakers, followed by professionals, technicians and workers in related fields, business owners, administrators and officers, clerical workers, and salespeople. The men tended to be craftspeople, foremen and workers in related fields, machinists, and nonagricultural workers. The agricultural occupations include farmers and plantation managers, as well as foremen and farm workers. The principal reason for returning to Puerto Rico was to seek work, despite the fact that most males were working before immigrating.

The median age of the population increased 13% between 1990 and 2000, from 28 to 32, which is indicative of an aging population. It is estimated that in the period 1990–2000, the number of persons aged 65–74 years increased by 11%, and in the 75 years and older age group, the increase was on the order of 23%. In 2000, 11% of the population was 65 years or older and 24% was under 15 (Figure 2). Life expectancy at birth for both sexes in 1990 was 74.1 (78.5 for females and 69.7 for males), and in 1998, it was 75.2 (79.3 for females and 71.4 for males).

Mortality

The overall mortality rate rose slightly, from 7.4 per 1,000 population in 1990 to 7.5 per 1,000 in 1999, which is probably explained by the aging of the population. In the same period, the number of deaths increased 12%. In 1999, there were 29,145 deaths (16,554 males and 12,591 females). Also in 1999, heart disease was the leading cause of death (139 per 100,000 population)—a 10% decrease with respect to 1997. In absolute numbers, heart disease continues to be the leading cause of death; 5,364 people died of this cause in 1999 (154 per 100,000 males and 125 per 100,000 females). As a group, cardiovascular diseases (including heart disease, cerebrovascular disease, hypertension, and atherosclerosis) caused 29% of all deaths. Malignant neoplasms were the second leading cause of death (115 per 100,000 population), and decreased by 3.2% in comparison with 1997. In females, the mortality rate from malignant neoplasms was 92 per 100,000; the most common were breast cancer (6.5%) and colon cancer (3.5%). In males, mortality from this cause was 139 per 100,000. Prostate cancer was the most common cancer (10%), followed by cancer of the trachea, bronchus, and lung (9%). As in previous years, diabetes mellitus was in third place, with a rate of 56 per 100,000; hypertensive diseases (4.1 per 100,000) and accidents (32 per 100,000) were fourth and fifth, respectively.

Analysis of mortality by broad groups of causes, age, and sex (Figure 3) shows that in males, the highest rate was for diseases of the circulatory system (246 per 100,000 in 1999 and 273 per 100,000 in 1990). In both years, the highest number of deaths from this cause was recorded in the 85 years and older age group. Malignant neoplasms were in second place, with a rate of 145 per 100,000 in 1999 and 143 per 100,000 in 1990. In 1999, most deaths from this cause were recorded in the 85 years and older age group, while in 1990 they corresponded to the 75–79 years age group. External causes were in third place, with 111 per 100,000 in 1990 and 105 per 100,000 in 1999; in both years, the highest number of deaths from this cause occurred in the 20–24 years age group. Communicable diseases were in fourth place, with a rate of 55 per 100,000 in 1999 and 75 per 100,000 in 1990. In both years, the highest number of deaths from this cause occurred in the 30–34 years age group. Conditions originating in the perinatal period occupied fifth place, with a rate of 11 per 100,000. In the same years, the pattern for females was similar that for males, with the exception of external causes, which were the fourth leading cause of death among females.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Infant mortality showed a declining trend, from 13.4 per 1,000 live births in 1990 to 10.6 per 1,000 live births in 1999. According to the 2000 census, the population of children under 5 was 295,406 (male-female ratio = 0.95), which represented 7.8% of the total population. In 1999, there were 632 deaths in children under 1 year (10.6 per 1,000 live births). The neonatal mortality rate was 7.3 per 1,000 live births, and the postneonatal mortality rate was 3.2 per 1,000 live births. Disorders related to prematurity and malnutrition were the leading cause of infant mortality (160 per 100,000 live births); congenital anomalies were in second place (130 per 100,000 live births); bacterial sepsis and respiratory distress syndrome were in third place, both with a rate of 90 per 100,000 live births; other, unspecified respiratory problems (40 per 100,000 live births) and diseases of the circulatory system (30 per 100,000 live births) were in fourth and fifth place, respectively. In the 1–4 years age group, the deaths recorded in 1999 represented 11% of all deaths, with accidents being the leading cause.

Moreover, according to data from the Epidemiological Surveillance System Report on Infant Mortality, the infant mor-

tality rate fluctuated during the period 1993–1997; however, there was a declining trend, with a 15.7% reduction during this five-year period. The reduction was observed in both components of infant mortality; the neonatal mortality rate dropped from 9.7 to 8.1 deaths per 1,000 live births, which represents a 12.5% reduction in the period, and the postneonatal mortality rate dropped 12.3%.

In 1997, the infant mortality rates by the mother's health plan were: private plan, 8 per 1,000 live births; reform plan, 11.9 per 1,000, and Medicaid, 15.5 per 1,000 (1.9 times higher than for the private plan). The neonatal mortality rate was 5.7 per 1,000 live births for the private plan; 8.9 for the reform plan, and 10.9 for Medicaid. Postneonatal mortality was 2.3 per 1,000 live births for the private plan, 3.0 for the reform plan, and 4.6 for Medicaid.

In 1999, the inequalities in infant deaths by municipality were not very pronounced, with a Gini index of 0.18. This analysis also shows that 50% of infant deaths occurred in 38% of the live births.

Schoolchildren (5–9 years)

The 2000 census reported a population in the 5–9 years age group of 305,162 (8% of the total population), with a male-female ratio of 1.04. In 1999, the mortality rate for this age group was 21 per 100,000. Accidents were the leading cause of death, with a rate of 6 per 100,000, followed by malignant neoplasms and congenital anomalies, each with a rate of 3 per 100,000.

Adolescents (10–14 years and 15–19 years)

According to the 2000 census, the population of adolescents aged 10–19 represented 16.2% of the total, with a male-female ratio of 1.04. The 10–14 years age group represented 8.0% of the population, and the 15–19 years age group represented 8.2%. In 1999, the overall mortality rate in the 10–14 years age group was 0.22 per 1,000, and in the 15–19 years age group, it was 0.83 per 1,000. The two leading causes of death for the 10–14 years age group were all accidents (6.4 per 100,000) and neoplasms (3.2 per 100,000). In the 15–19-year-old population, the two leading causes of death were homicides (34 per 100,000) and accidents (27 per 100,000).

The survey on risk behavior in adolescents in grades 9 to 12 in Puerto Rico's public schools, conducted by the U.S. Centers for Disease Control and Prevention (CDC), found that the percentage of sexually active students in this group declined from 36% in 1995 to 31% in 1997. In 1997, 7% had had four or more partners and just 34% had used condoms during their most recent sexual encounter. Some 63% reported drinking alcohol, 15% reported using marijuana, and 2% reported using cocaine. The number that reported having carried a weapon during the preceding month fell from 16% in 1995 to 14% in 1997; those who reported carrying a pistol on a frequent basis dropped from 8% in 1995 to 7% in 1997. In 1995, 31% reported having participated in a physical fight during the last year, and 18% had attempted suicide. These numbers dropped to 26% and 11%, respectively, in 1997.

In 1997 and 1999, 20% of births were to adolescent mothers. In 1999, three percent of these births were to girls under age 15 and 97% were to girls aged 15–19. Of all births to adolescent mothers, 73% were to single mothers; 2% of children born to adolescent mothers had very low birthweight (<1,500 g) and 14% had low birthweight (<2,500 g).

Adults

In 1999, 62% of the population was aged 15–59 years (48% males and 52% females). Twenty-four percent of all deaths recorded in 1999 were in this age group, with a rate of 2.9 per 1,000. Among 15–24-year-olds, the mortality rate was 1.1 per 1,000; of these deaths, 46.4% were homicides and 29% were caused by accidents. In the 25–49 years age group, the mortality rate was 2.5 per 1,000 (3.8 per 1,000 males and 2.5 per 1,000 females). The leading causes of death for males aged 25–29 were homicide and accidents, while for women they were accidents and malignant neoplasms. For men aged 30–39, the leading causes of death were accidents and homicides; for women, they were malignant neoplasms and accidents. In the 40–44 years age group, AIDS and accidents were the leading causes of death for men, and malignant neoplasms and AIDS were the leading causes of death for women.

In men aged 45–49, the leading causes of death were malignant neoplasms and liver disease; in women, they were malignant neoplasms and heart disease. The leading causes of death for both sexes in the 50–59 years age group were heart disease and malignant neoplasms.

In 1999, there were 59,684 births, 99% of which were to mothers between the ages of 15 and 49. The birth rate fell from 18 per 1,000 population in 1997 to 15 per 1,000 population in 1999. The available data on the specific fertility rate show a decline in all maternal age groups during recent decades. Between 1997 and 1999, the decline was most pronounced (10%) in the 25–29 years age group; the 35–39 years age group showed the smallest reduction (1.8%) in that period. Similarly, the total fertility rate shows a declining trend, from 2.0 children per woman in 1997 to 1.9 children per woman in 1999. Most of the births registered in 1999 were to mothers aged 20–24, with an age-specific fertility rate of 111. The late initiation of prenatal care (third trimester) increased from 2.2% in 1990 to 2.7% in 1999, while the number of females who received no prenatal care fell from 1.2% in 1990 to 0.9% in 1999.

Maternal mortality rates have fluctuated, dropping from 19.5 per 100,000 live births in 1990 to 13.8 per 100,000 in 1993, and rising to 18.4 in 1999. In 1999, the maternal mortality rate was 18 per 100,000 live births, and 4 of the 11 maternal deaths were in the 25–29 years age group. The most recent survey on reproductive health was conducted from November 1995 to July 1996

using a representative sample of 5,944 females aged 15–49. The results showed that 1 in 4 (23%) was not using contraception. The three most commonly used methods were female sterilization (45%), oral contraceptives (9.7%), and the male condom (6.4%); the least used methods were Norplant (0.1%), vaginal methods, including sponges, jellies, creams, and foams (0.2%), and the intrauterine device (1.0%); 6.2% of the females interviewed used a natural method.

The Elderly (60 years and older)

According to data provided by the Planning Board, 14% of Puerto Rico's population was 60 or older in 1999 (44% men and 56% women). In that year, the mortality rate for this age group was 3,971 per 100,000. The leading causes of death were heart disease (997 per 100,000 males and 746 per 100,000 females); malignant neoplasms (869 per 100,000 males and 441 per 100,000 females), and diabetes mellitus (360 per 100,000 males and 320 per 100,000 females). Other important causes of death were cirrhosis and other chronic liver diseases, hypertension, cerebrovascular disease, and pneumonia and influenza.

Workers' Health

In 1999, 93 people died as a result of work-related accidents, for a rate of 2.4 per 100,000. The highest number of deaths from this cause was in the age group 50–54 years (10%). Also, the highest number of deaths by occupation occurred in machine operators (19%) and craftspeople (13%). In fiscal year 1999–2000, the State Insurance Fund Corporation, which is responsible for providing medical care (including provision of drugs and hospitalization) for workers who suffer work-related accidents or illnesses, reported 74,296 cases (44% in females and 57% in males) out of a total of 1,058,273 employed individuals. Of the cases reported, 35% were in the public sector and 65% were in the private sector. Compensation paid came to US$ 169.1 million, and 39,356 certificates of disability were issued, 1,022 (3%) of them permanent. The injuries that resulted in the highest number of cases filed were contusions (33%), back injuries (30%), and cuts and lacerations (18%).

The Disabled

The Office for the Protection of Persons with Impediments was established in 1985 to coordinate services for people with disabilities. In 2000, it was estimated that there were 153,598 people with visual disabilities and 191,997 with developmental problems.

Data obtained in pediatric centers where children with special health needs are cared for show a decrease in the number of people under age 21 being seen. In 1994–1995, some 21,335 received care, and in 1999–2000, the number was 9,772. Of these 9,772, 75% were 6 years or younger; 22% were aged 6–17, and 3% were 18 years or older.

By Type of Health Problem

Communicable Diseases

Infectious and parasitic diseases caused 6% of all deaths in 1999 and 7% in 1990. In 1999, the mortality rate was 43 per 100,000 population (55 per 100,000 males and 31 per 100,000 females). The leading causes were septicemia, which was responsible for 3% of the deaths, and HIV/AIDS, which caused 2% of the deaths. In 1990, the leading causes of death were HIV/AIDS (4%) and septicemia (2%).

In 1995, there was laboratory confirmation of 2,046 cases of dengue, and there were 1,804 in 1996. Some 2,543 cases were reported in 2000, 807 of which were positive. The virus was isolated in 270 of the cases. Some 258 were dengue-3, 8 were dengue-2, and 4 were dengue-1.

Diseases Preventable by Immunization

In 2000, 30 cases of pertussis, 1 of measles, 4 of meningitis caused by *Haemophilus influenzae* type b, and 313 of hepatitis B were reported; 2 deaths from tetanus were also reported, both in males. In May 2000, a study conducted by the Vaccination Section found annual coverage of 88% in 1998 and more than 94% in 1999 and 2000 for the DPT4, OPV3, Hib3, and MMR1 series of vaccines (Figure 4). In the first months of that year, the transition was made to the injectable polio vaccine from the oral vaccine, eliminating the risk of contracting the disease from the vaccine.

In January 1997, vaccination of all children against chicken pox at 12 months of age became mandatory. In June of that year, compliance with the vaccination regimen became a requirement for 4-year-old children entering school. Also, since January 2001, the entire population between the ages of 0 and 18 must have three doses of hepatitis B vaccine in order to enter the Puerto Rican school system. Moreover, the new vaccine to control bacterial pneumonia (Pneumococcal Vaccine-Prevnar) in infants aged 2, 4, 6, and 15 months and in children aged 2–5 years with severe health problems was also included in the vaccination regimen. This was achieved thanks to a combination of several strategies, notably: cooperation from the private sector, specifically the sponsoring of promotional campaigns; the implementation of reminder systems for parents; the establishment of special vaccination clinics; the creation of the electronic system for recording and monitoring vaccination data on children born from 1992 on; and the vaccination component of the federal Special Supplemental Food and Nutrition Program for Women, Infants, and Children (WIC), which makes it possible to identify the participants' vaccination needs and send them to vaccination centers.

Infectious Intestinal Diseases

In 2000, the incidence of intestinal infections due to salmonella was 20 per 100,000, and the incidence of shigellosis was 1 per 100,000. No cases of cholera have been reported in recent decades.

Chronic Communicable Diseases

The mortality rate from tuberculosis fell from 17 per 100,000 in 1997 to 9 per 100,000 in 1999. In 2000, 174 cases of tuberculosis were reported, with an incidence of 5 per 100,000 population, for a 15% decrease in cases as compared to the previous year. The number of tuberculosis cases has declined each year since 1997, and the incidence rates fell 33% up until the year 2000. The incidence rate in males was 9 per 100,000 in 1997 and 6 per 100,000 in 2000; in females, it was 5 per 100,000 in 1997 and 3 per 100,000 in 2000. In 2000, the distribution of cases by age group showed the highest rate (1.6 per 100,000) in 25–44-year-olds. Pulmonary tuberculosis accounted for 90% of the cases in 1996 and in 86% in 2000. Between 1998 and 2000, the percentage of tuberculosis cases in people infected with HIV increased. In 1998, 27% of the tuberculosis patients had AIDS, while in 2000, 26% of the tuberculosis patients had AIDS.

Zoonoses

According to the Office of the Undersecretary for Environmental Health, 8,245 animal bites were reported during fiscal year 1999–2000. Some 202 animals were tested for rabies (51% dogs, 13% cats, 31% mongooses, and 5% other), and 37% were positive. Despite these numbers, no case of human rabies has been reported in the last three decades. In 1999, 1,001 animals were vaccinated against rabies and 749 doses of rabies vaccine were administered to human beings.

HIV/AIDS and Other Sexually Transmitted Infections

The incidence rate of AIDS decreased 23% between 1990 and 2000, with rates of 54 and 24 per 100,000 population, respectively (Figure 5). In 1994, AIDS was the fourth leading cause of death, and in 1999 it fell to thirteenth place. In 1999, there were 610 AIDS deaths (75% in males), for a rate of 16 per 100,000 population. As of April 30, 2001, there were 25,920 confirmed cases of AIDS, of which 16,301 (63%) had died. Of all cases diagnosed, 25,525 were in adults and adolescents, and 395 were in children; 44% of victims were aged 30–39 and 25% were aged 40–49. The greatest risk factors were drug use in males (55%) and heterosexual contact in females (59%).

The incidence rates for primary and secondary syphilis rose 21% between 1999 and 2000 (3.8 and 4.6 cases per 100,000 population, respectively). The incidence rate for gonorrhea showed an increase of 35% between 1999 and 2000 (8 and 14 cases per 100,000 population, respectively). Almost twice as many chlamydia infections were reported in 2000 (71 per 100,000 population) as in 1999 (37 per 100,000 population).

Nutritional and Metabolic Diseases

Mortality from diabetes mellitus increased 17% between 1990 and 1999; in 1999, it was the third leading cause of death, with a rate of 56 per 100,000 population (55 per 100,000 females and 58 per 100,000 males). In that year, the disease began to appear as one of the five leading causes of death in women aged 50–54 (20 per 100,000 population), and presented the highest number of deaths in the 75–79 years age group (386 per 100,000). In men aged 55–59, it was one of the five leading causes of death (117 per 100,000 population), and the highest number of deaths was in the 70–74 years age group (411 per 100,000).

According to data from the Behavioral Risk Factor Surveillance System of Puerto Rico, the prevalence of diagnosed diabetes fell from 11% in 1997 to 8.5% in 2000. In that period, the decrease was from 9.9% to 8.7% in males and from 11% to 8.4% in females. In both years, the highest prevalence was in the age group 65 years and older (25% in 1997 and 25% in 2000). Moreover, with data from the same surveillance system, a study was conducted in 1999 to estimate the weighted prevalence of diabetes mellitus reported by the patients themselves and to identify the determining factors associated with the disease in Puerto Rico. A prevalence of 9.6% was found, higher in the elderly, females, individuals with low incomes and limited education, the unemployed, and those not covered by a health plan. In those under 65, significant associations were found between diabetes and high blood pressure, high cholesterol, obesity, and limited education; in those over age 65, the only trait that showed a significant association with diabetes was feminine gender. The same study found that 35% were insulin dependent; 57% used it once a day; 14% measured their blood glucose levels 1–3 times a day; 18% had heard about the glycosylated hemoglobin test, and of these, 72% had taken the test between one and six times in the year prior to the study. Approximately 42% reported that their feet had been examined during the last year, and 54% had had a thorough eye examination.

Diseases of the Circulatory System

Cardiovascular diseases are the leading cause of death in Puerto Rico. The mortality rate from this cause rose from 205 per 100,000 population in 1997 to 218 per 100,000 in 1999, when cardiovascular diseases accounted for 29% of all deaths. Heart disease had the highest mortality rate (139 per 100,000): 154 per 100,000 men and 125 per 100,000 women. Ischemic heart disease caused the most deaths in both sexes, with a rate of 90 per 100,000 men and 67 per 100,000 women. Heart disease begins to be the leading cause of death among men at age 50–54 and among women at age 65 and over.

Malignant Neoplasms

In 1999, malignant neoplasms were the second leading cause of death in Puerto Rico. The mortality rate from this cause dropped from 118 per 100,000 in 1997 to 115 per 100,000 in 1999. Neoplasms of the digestive, genitourinary, and respiratory organs, combined, accounted for 66% of all deaths from this cause. The most frequent sites were the digestive organs and the peritoneum, with a rate of 37 per 100,000; of these, 28% were tumors of the colon (13 per 100,000 males and 8 per 100,000 fe-

males). Neoplasms of the genitourinary organs were second, with a rate of 21 per 100,000 (63% in males and 38% in females); the most common location in males was the prostate (24 per 100,000) and in females, the ovaries (4 per 100,000). Neoplasms of the respiratory and intrathoracic organs were third, with a rate of 17 per 100,000; of these, neoplasms of the trachea and lung registered the highest numbers (22 per 100,000 males and 9 per 100,000 females). Malignant neoplasms were the leading cause of death in women aged 35–64 and the second leading cause in women 65 years and older; they were the second leading cause of death among men aged 50 years and older.

Accidents and Violence

Accidents were the fourth leading cause of death in 1997 (42 per 100,000 population), dropping to fifth place in 1999 (33 per 100,000); in males, they decreased from 64 per 100,000 in 1997 to 53 per 100,000 in 1999, and in females, they decreased from 21 per 100,000 to 14 per 100,000. In 1999, 48% of deaths due to accidents were the result of motor vehicle accidents. Some 22% of these were in the 15–24 years age group and 23% were in the 25–34 years age group. Homicides were the twelfth leading cause of death in 1999, with a rate of 19 per 100,000 (34 per 100,000 males and 3 per 100,000 females). Of all homicides recorded, 89% were by firearm (94% of these deaths were males) and 63% of the deaths of 15–29 year olds were by firearm (92% in males). In 1999, the mortality rate due to suicide was 8 per 100,000 (14 per 100,000 males and 2 per 100,000 females). The highest suicide rates were in the 65 years and older age group (35 per 100,000), the 20–64 years age group (22 per 100,000), and the 10–19 years age group (4 per 100,000). The most common method was hanging (62%), followed by firearms (19%).

Mental Health

The mortality rate from mental and behavioral disorders decreased from 12 per 100,000 population in 1990 to 11 per 100,000 in 1999 (18 per 100,000 males and 4 per 100,000 females). In 1999, mental and behavioral disorders due to the use of psychoactive substances accounted for 78% of the total; of these, those due to alcohol use represented 66% (13 per 100,000 males and 1 per 100,000 females).

The Substance Abuse and Mental Health Services Administration delivered 54,018 integrated treatment and recovery services in fiscal year 1999–2000; of these, 83% were provided to males and 17% were provided to females. The services provided included 5,396 interventions for alcohol abuse problems (96% were for males). It was found that, in general, the people evaluated in these services are married, have full-time jobs, and are between 25 and 54 years old. The highest percentage of males in treatment (33%) was found among 35–44-year-olds, followed by 45–54-year-olds (24%) and 25–34-year-olds (22%). These three groups represented 83% of all cases seen, 95% of which were in men. For both sexes, the age groups showing the highest levels of alcohol consumption were 45–54 years (41%), 35–44 years (35%), and 25–34 years (18%).

In 1999–2000, there were 65,337 interventions for drug addiction problems (78% in males and 22% in females). Of the people evaluated in connection with these services, it was found that 51% had between 10 and 12 years of education, 43% were single, and 49% were employed full-time. The distribution of males in treatment by age group was: 18–20 years, 24%; 21–24 years, 27%; and 25–34 years, 27%. Some 92% of all persons treated were males. In both sexes, the 25–34 years age group had the highest percentage of drug users (34%), followed by the 35–44 years age group (22%) and the 21–24 years age group (17%).

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Government of Puerto Rico initiated the health reform process in 1993, using a new model for medical service delivery based on integration of the biomedical and biosocial health systems. The basic principles of the reform are aimed at monitoring the delivery of health services by public and private entities, eliminating discrimination in medical care, ensuring access to quality services for all Puerto Ricans, increasing the efficiency and productivity of the sector through health services administered by third parties (managed care), and redefining the governmental function as the direct provider of medical services to the indigent population.

As part of the reform process, new laws were promulgated and others were amended or repealed. The laws promulgated include the Law on Privatization of Government Health Facilities and the Puerto Rico Health Insurance Administration Law. Law 26, which established the Puerto Rico Health Facilities and Services Administration in 1976, was repealed in August 1998 in order to dissolve the legal entity and integrate its powers and authorities into the Department of Health.

Within this legal framework, the Department of Health delegated the administration and delivery of direct services, retaining responsibility for overseeing health service delivery in the public and private sectors.

The Health System

The public institutions of the health sector in Puerto Rico are part of the "Umbrella" Department of Health. This Department consists of the Department of Health, which governs and oversees health service delivery by private entities; the Substance Abuse and Mental Health Services Administration, which delivers medical care, issues certificates of registration for the manufacture, distribution, and shipment of controlled substances, and grants licenses to institutions for the prevention and treatment of drug and alcohol addiction and the rehabilitation of drug and al-

cohol addicts and to placement facilities for the mentally ill; the Puerto Rico Medical Services Administration, which provides health services and education and conducts research; the Cardiovascular Center of Puerto Rico and the Caribbean, whose mission is to provide the most advanced treatments to patients with cardiovascular disease in Puerto Rico and the Caribbean Islands and to promote education, research, and the development of health professionals in this field; and finally, the Correctional Health Program, whose mission is to protect, restore, and maintain the physical, dental, and mental health of the penitentiary population in the custody of the Department of Corrections.

In 1996, the Puerto Rico Health Insurance Administration was established as an independent public corporation. Its mission is to negotiate and contract quality health insurance for its insured population, particularly the indigent, and to set up control mechanisms to prevent unjustified increases in health service costs and insurance premiums.

Organization of Regulatory Actions

Environmental Quality

Several public agencies, corporations, and institutions are responsible for regulating and monitoring environmental protection activities. The Environmental Quality Board has, for 30 years, been responsible for establishing the public policy in this area in Puerto Rico, with the support of the Department of Natural Resources and the U.S. Environmental Protection Agency (EPA).

As part of Puerto Rico's Environmental Public Policy, various laws and regulations were drawn up, including the Substantive Law on Environmental Emergencies; the Law to Encourage the Reduction of Hazardous Waste; the Regulations for the Control of Air Pollution; the Regulations on Water Quality Standards; and the Regulations for the Control of Noise Pollution. The Regulations for the Project on Permits and Certification for Lead-based Paint and the Regulations for Submitting, Evaluating, and Processing Environmental Documents were also approved in 1999.

Organization of Public Health Care Services

Health Promotion

The Office of the Undersecretary for Health Promotion and Protection is responsible for health promotion and disease prevention. The noteworthy activities carried out in fiscal year 1999–2000 include the integration of the health education and HIV/AIDS prevention sections; implementation of a project to prevent vertical transmission of HIV and to detect syphilis and HIV/AIDS in women of childbearing age, with emphasis on intravenous drug users, sex workers, and illegal immigrants in selected municipalities; a decrease of approximately 50% in the incidence of neural tube defects, with the folic acid campaign; the inclusion of cleft lip or cleft palate in the Registry of Congenital Conditions; and the development of the 2000–2005 Strategic Plan for Breast-feeding Promotion in Puerto Rico.

Moreover, specific prevention programs are being carried out. These include educating young diabetics at summer camps, and conferences on the control of and risk factors for cardiovascular disease. There are also programs for the early detection of diseases, such as blood pressure screening in the community and cancer diagnosis clinics in the Northern Region of the island, in cooperation with the health reform insurers. The Division of Mothers, Children, and Adolescents makes home visits to deliver services to children and pregnant women.

Epidemiological Surveillance Systems

The surveillance system operates through the notification of diseases by public and private sector doctors, hospitals, and laboratories. The data flow through an information network from the local to the regional level (where an epidemiological nurse and an epidemiologist are available); they then go to the Epidemiology Division at the central level and, finally, to CDC.

The surveillance system includes active and passive surveillance phases. The active phase is conducted through a weekly telephone reporting (or daily for any urgent situation) for 17 diseases that could be the cause of outbreaks.

Under the passive surveillance system, the regional epidemiologists record the data on communicable diseases (except animal rabies) on a weekly basis; also included is information received from the programs on tuberculosis and sexually transmitted infections.

Potable Water, Excreta Disposal, and Sewerage Services

The Puerto Rico Aqueduct and Sewer Authority is subject to all EPA water quality standards. As of October 1999, some 3,196,000 people had potable water service in their homes. Also, 1,674,000 inhabitants' households were connected to the sewerage system. The Aqueduct and Sewer Authority reports that drinking water is typically supplied 24 hours a day in urban areas. All of the potable water systems in urban areas use disinfection.

Solid Waste Services

The Solid Waste Authority is a public corporation authorized to provide technical and economic assistance to municipal governments regarding the management and proper disposal of solid waste. According to the Authority's estimates, nearly 2,374,690 tons of solid waste were generated on the island in 1998; much of this was disposed of in municipal dumps and just 18% was recovered for recycling.

Food Aid Programs

The Office of the Undersecretary for Public Assistance administers Department of Family Services programs which provide financial aid to families that lack the resources necessary to satisfy their basic needs. This aid is channeled through the programs for Nutritional Assistance, Financial Assistance, Food Distribution, Food for the Care of Children, Shoes and Clothing for Schoolchildren, Electricity Subsidy, and the Energy Crisis subprogram. These programs offer services to children, individuals with physical and mental disabilities, the elderly, the homeless, and families in general.

In fiscal year 1994–95, the federal Special Supplemental Food and Nutrition Program for Women, Infants, and Children had 197,663 participants, and 219,135 in fiscal year 1999–2000.

The Department of Family Services, through the Office of the Undersecretary for Assistance, operates the Nutrition Assistance Program. This program was established in July 1982 to offer financial aid to low-income families for supplementary food and for emergency situations. During fiscal year 1999–2000, a monthly average of 425,435 families received assistance. The total amount of funds distributed came to US$ 1,100 million (US$ 222.61 per month per family).

According to the Department of Family Services, 132,397 (25%) of all elderly persons participated in the Economic Assistance Program during fiscal year 1999, and 131,397 (24%) participated during fiscal year 2000.

Organization of Individual Health Care Services

Before the reform process, the health system in Puerto Rico was a dual organization with public and private components. The public system delivered preventive and curative services to the entire population and provided medical care for individuals with limited funds in government institutions staffed by salaried personnel. The Department of Health provided medical and hospital services by region and according to levels of complexity (primary, secondary, and tertiary). There were six health regions, divided in accordance with their epidemiological profiles; each covered approximately 500,000 inhabitants, with the exception of the metropolitan region, which covered more than 800,000 inhabitants. The regions were comprised of two or three areas, each with an area hospital that provided care at the secondary level, and each hospital provided services to a group of three to seven municipalities. The diagnostic and treatment center or the family health center in each municipality provided primary care; the area hospital or health center provided secondary care; the regional hospital provided secondary and tertiary care; and the Medical Center of Puerto Rico offered specialized or supratertiary care, comprised of a network of specialized hospitals.

Under health reform, the regionalized model of care was modified to allow for a model based on privatization of the public facilities; then the country was divided into regions, in which the Government finances a medical insurance program and the private sector provides the services through a bidding process. In early 2000, the Office of Health Reform reported that 77 municipalities were taking advantage of this benefit, and all that was necessary to complete its extension to the entire country was the inclusion of the residents of the capital. In late 2000, all 78 municipalities had been incorporated into the health reform plan, with which there were 99% insured and 1.8 million participants in Government of Puerto Rico health insurance plan.

Health reform having been implemented, the health services delivery system now consists of public, privatized public, and private facilities. The facilities that offer health services must meet the accreditation requirements of the Health Facilities Law, which provides that the Department of Health is the official authority responsible for planning health services. According to data from the Department of Health's Office of the Undersecretary for Health Facility Regulation and Accreditation, there were 71 hospitals operating in Puerto Rico in 2000. Of the 13 public hospitals, 5 are general, 3 are specialized, 4 are psychiatric, and 1 is a U.S. Veterans Administration hospital. Of the 45 private hospitals, 39 are general, 3 are specialized, and 3 are psychiatric. The 13 privatized facilities are general hospitals. The 71 hospitals have 12,178 beds available and 10,050 in use. The public hospitals have a total of 3,043 beds available and 2,170 in use. The private hospitals have 6,877 beds available and 6,194 in use.

Human Resources

According to the registry of health professionals, in 1998–2001, there were 64,890 professionals, of which 74% were active in Puerto Rico and 3.6% were active in the United States. During the same period, 45% of the professional nurses, 45% of the auxiliary nurses, and 30% of the doctors were in the public sector, while 55% of the nurses in both categories and 70% of the doctors were in the private sector. Of the 7,623 physicians practicing in Puerto Rico, 70% worked in the private sector. There were 6,007 professional nurses in the public sector, 7,227 in the private sector, and 17 in volunteer work. Of the 9,666 auxiliary nurses, 4,384 were in the public sector, 5,264 were in the private sector, and 18 were in volunteer work. Between 1995–1998 and 1998–2001, the ratio of doctors per 10,000 population declined approximately 4%, and the ratio of nurses declined 5%. In 1999, there were 2.5 dentists per 100,000 population.

The majority of health professionals graduate from the School of Medical Sciences of the University of Puerto Rico, which is part of the Commonwealth educational system. This institution offers undergraduate and graduate programs in health sciences, conducts scientific research, and provides medical services. As of the year 2000, the School of Medical Sciences had trained 28,288 health sciences professionals, such as doctors, dental surgeons,

doctors of biomedical science, masters in public health and health services administration, nurses, and specialists in medical technology.

Moreover, in response to the needs created by health reform, steps were initiated to change the human resources training process. As a result of analysis of the status of postgraduate medical education in light of the privatization of the public health institutions, the Substantive Law on the Development of Medical Education in Puerto Rico was developed. The Law organizes the island into academic regions, each with a university hospital sponsored by a medical school.

Health Sector Expenditure and Financing

The main sources of financing are Commonwealth funds (general budget, special allocations, public improvements fund), service fees, and federal (U.S.) funds. The total consolidated budget for the "Health Umbrella" for fiscal year 1999–2000 was US$ 993.3 million; of that amount, $570.3 million came from federal contributions. In the same fiscal year, Government of Puerto Rico Health Insurance, also called the "health reform card," had a revised budget of US$ 1,045.8 million and covered 1.8 million insured persons in the 78 municipalities. These funds are allocated principally by the legislative branch, the municipalities, and Medicaid (federal funds).

FIGURE 1. Gross domestic product, annual growth (%), Puerto Rico, 1990–2000.

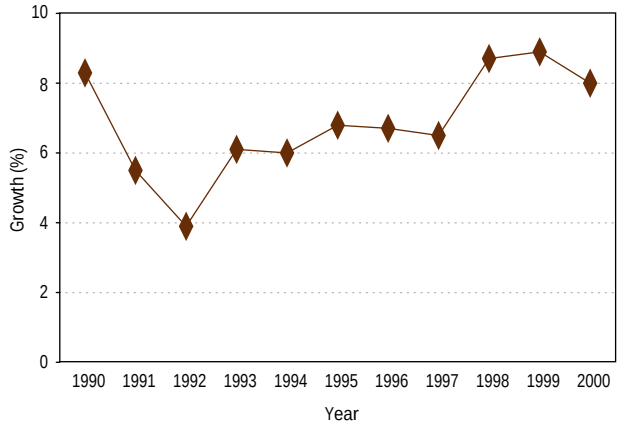


FIGURE 2. Population structure, by age and sex, Puerto Rico, 2000.

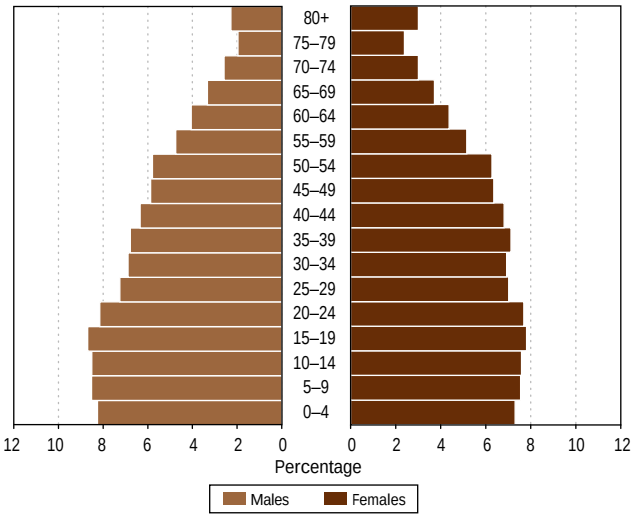


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Puerto Rico, 1999.

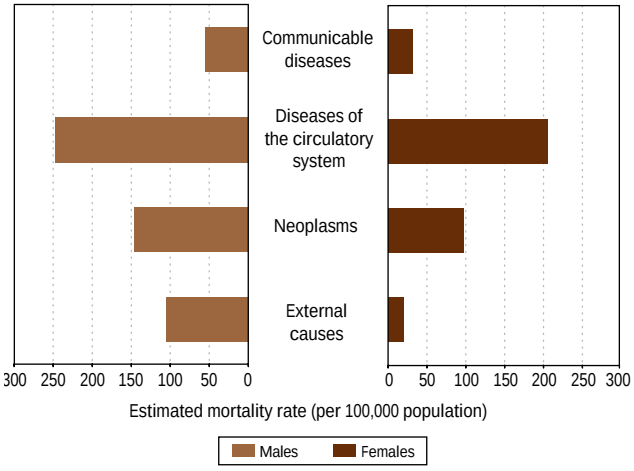


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, Puerto Rico, 1999–2000.

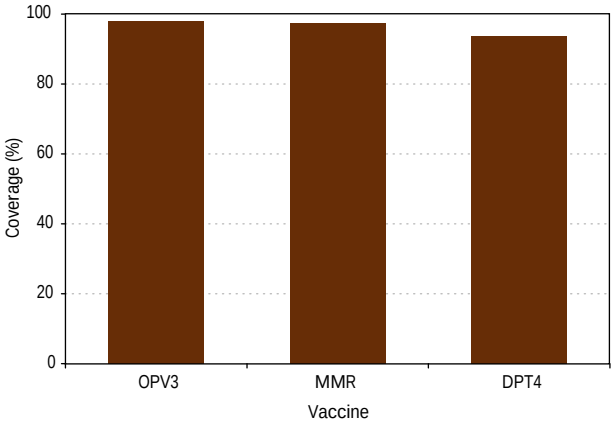
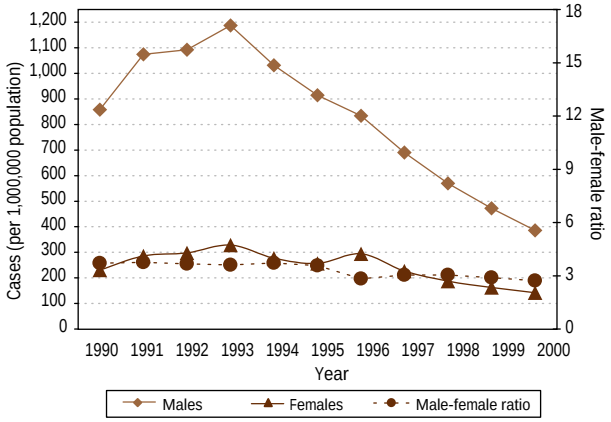


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Puerto Rico, 1990–2000.



SAINT KITTS AND NEVIS

OVERVIEW

Saint Kitts and Nevis is situated in the northern section of the Leeward Islands in the Eastern Caribbean Sea. Volcanic in origin, Saint Kitts (176 km^2) and Nevis (93 km^2) are separated at their closest point by a 3-km channel. Transportation between the two islands is via plane or ferry. Both islands have airports as well as berthing facilities for cruise ships. The islands are particularly vulnerable to hurricanes, and all the aforementioned facilities sustained considerable damage due to the three major hurricanes experienced during the 1996–1999 period.

The twin island state attained full political independence in 1983. The Federal Parliament, located in Saint Kitts, is the highest legislative decision-making body and is responsible for foreign affairs and national security. However, Nevis enjoys considerable autonomy, and the Nevis Island Administration is responsible for the conduct of its domestic affairs.

The secession of Nevis from the Federation has long been a point of contention between the islands. In August 1998, a referendum on the matter was held in Nevis, and as only 61% of the vote was affirmative instead of the requisite two-thirds, Nevis did not secede.

Public service arrangements in Nevis parallel those in Saint Kitts. Each Ministry of Health acts as an executive arm of the Government, with specific responsibility for mobilizing resources for the promotion of health. Saint Kitts and Nevis have separate annual budgets that are approved by each island's statutory entity and are implemented relatively independently of each other. There are some areas, however, such as access to international assistance and implementation of national projects, in which collaboration is mandatory.

The Government's goal is to optimize resource use to generate sustainable growth while ensuring equity. To achieve this, efforts are directed towards

- using the capital investment program, and the legislative and regulatory framework, to create favorable conditions for and facilitate private sector-led growth;
- restoring public sector savings to adequately finance the capital program;
- reforming the public sector to increase efficiency;
- engaging in appropriate human resource development;
- optimizing resource use to adequately provide public goods and services; and
- reducing economic vulnerability by encouraging economic diversification and increased investment by domestic economic agents, and by taking into account the threat of hurricanes in the capital development program.

Saint Kitts and Nevis has a small, open economy that produces a narrow range of goods and services, including sugar, clothing, electronic parts, food, and beverages, and which is heavily dependent on indirect taxes, such as custom duties. Tourism and related services, and to a lesser degree, light manufacturing, have become key areas of economic activity. Government services, banking, insurance, construction, tourism, and wholesale and retail trade have emerged as leading contributors to GDP. As a result of this diversity, the economy achieved sustained levels of growth during the period 1996–2000, despite damage due to hurricanes (Figure 1). Per capita income in Saint Kitts and Nevis increased in nominal terms from US$ 4,869 in 1996 to US$ 6,993 in 2000.

Food is imported due in part to the relatively low level of local crop and livestock production and the demands of the growing tourist industry. Livestock and crop production were valued at US$ 3.5 million in 2000, and food imports totaled US$ 27.1 million (9.6% of GDP). A diversification committee was established in 2000 to assess crop and livestock production.

From 1980 to 1991, Saint Kitts and Nevis had a population growth rate of –6.2%. In June 2000, the estimated population was 40,410, of which 50.5% were males and 49.5% were females (Figure 2). The dependency ratio was 65%. Forty percent of the population were under 20 years of age and 11% were older than 60 years.

According to a 1999–2000 survey of living conditions, Saint Kitts' unemployment rate was 5.6% and Nevis' was 8.6%. Approximately 31% of the population were considered poor, and

63% of the poor were under 25 years of age. An average of 60% of the poor were females. A 1999 poverty assessment survey report indicated that the poor depended on health centers to a greater extent than the rest of the population (42%), and reported a lower level of ill health (9.7%) than the rest of the population. Unemployment among the poor was minimal, and the survey found that government subsidies in the health sector help offset the effect of relatively low wages on access to health care.

Approximately 57% of persons in the labor market had not completed secondary education. Nevertheless, literacy in the islands is estimated at 98%. School attendance is compulsory until 16 years of age. Ninety-eight percent of primary school students continue on to secondary school. In 1996, a total of 11,956 students were enrolled in public and private schools, representing 92% of the population age 5 to 19 years. In 2000, school enrollment was 11,363. In 1999–2000, 721 males and 823 females were enrolled in preschool.

An integrated tertiary-level education system provides academic, vocational, and professional training; local college registration was 422 students. The Ministry of Gender Affairs promoted continuing education and training for women who have dropped out of formal education due to pregnancy. The Government increased aid to students seeking tertiary education overseas. More students have been accessing training in institutions other than the University of the West Indies (UWI), particularly in the U.S. and Cuba, where between 1997 and 1999, 12 students pursued studies in medicine and 5 in other related fields.

There were 4,275 births during 1996–2000, for a yearly average of 855. The average crude birth rate during the period 1996–2000 was 21 per 1,000 population. The average annual fertility rate was 2.6 children per woman (age 15 to 49 years). There is no underregistration of births.

Mortality

In 1996–2000, there were 2,031 deaths in Saint Kitts and Nevis, of which 1,054 were males and 977 were females. In 1996, there were 393 deaths (201 males, 192 females) and in 2000, there were 358 (183 males, 175 females). During 1996–1999, the crude death rate averaged 10 per 1,000 population; the crude death rate in 2000 was 9.0 per 1,000 population. Most deaths (69% or 1,392) occurred in the 65 years and older age group.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

The infant mortality rate was 24.1 deaths per 1,000 live births in 1996 and 12.7 deaths per 1,000 live births in 1999. During the period 1996–2000, there were 87 infant deaths. Seven of the 20 infant deaths in 1996 were due to prematurity, 4 to neonatal asphyxia, 2 to respiratory distress syndrome (RDS), and 2 to congenital abnormalities. RDS, asphyxia, and congenital abnormalities were the leading causes of the 12 infant deaths in 2000.

The main causes of the 20 deaths among 1–4-year-olds during 1996–2000 were acute respiratory infections and gastroenteritis. In 1996, there were two deaths, one due to gastroenteritis and one to acute respiratory infection. In 2000, there were two deaths due to acute respiratory infections, one to gastroenteritis, and one to cerebral palsy.

Low birthweight remains a concern. Approximately 9% of babies born in 1997, 13% in 1998, and 9.6% in 1999 had low birthweight.

Gastroenteritis and acute respiratory infections were the main causes of illness among children 0–4 years of age. In 1996, a total of 219 cases of gastroenteritis were reported, with 55 hospital admissions; in 1999, there were 254 cases reported. The main causes of hospital admissions among children in this age group were gastroenteritis and acute respiratory conditions, including asthma.

Schoolchildren (5–9 years)

Children age 5–9 years represented approximately 10% of the population in 2000. There were four deaths recorded in this age group during 1996–2000, two due to neurological conditions, one to drowning, and one to septicemia.

The main causes of morbidity in this age group were gastroenteritis and acute respiratory infections. Between 1999–2000, 335 cases of gastroenteritis were reported (161 males, 174 females). Over the same period, 25 cases of acute respiratory infection were reported.

Adolescents (10–14 and 15–19 years)

Adolescents age 10–19 years comprised approximately 20% of the population in 2000. In the period 1996–2000, there were 11 deaths in the 10–14 years age group, two due to cancer, two to homicides, one to drowning, and one to suicide.

There were 15 deaths in the 15–19 years age group over the period. Three deaths were due to motor vehicle accidents, three to homicides, and one to electrocution.

An adolescent health survey of 341 students (50% males) in Saint Kitts and Nevis was conducted in 1998–1999. The survey concluded that adolescents are vulnerable to problems relating to nutrition, drugs, violence, sexuality, and abuse. An average of 96% of students surveyed claimed not to have used cocaine, tobacco, marijuana, heroin, or cigarettes. Forty-six percent of students reported using alcohol once or a few times; alcohol use was reported mainly by 16–19-year-olds.

Teenage pregnancy rates remain relatively high. Of the 833 live births in 1996, 5 were to mothers 10–14 years of age and 155 to mothers 15–19 years of age. In 2000, of the 838 live births, 2 were to mothers age 10–14 years and 133 to mothers age 15–19 years.

Adults (20–59 years)

Of the 397 deaths recorded in the 20–59 years age group between 1996 and 2000, 232 were males and 165 females. The leading causes of the 86 deaths in 1996 were cancer (14 deaths), myocardial infarction (10), accidents/injury (9), and stroke (7); overall, deaths were evenly distributed by sex. In 2000, there were 71 deaths in this age group (41 males), with a similar pattern of leading causes. AIDS was also an important cause of death in 2000, accounting for seven deaths. Breast cancer was the most common cancer in this age group, accounting for four deaths in 1996 and five in 2000.

In 1996, there was one maternal death. In 1996, 3.2% of mothers attending prenatal clinics were found to have low hemoglobin levels (<9 g/dl), 33% had medium levels (9–10 g/dl), and 64% had high levels (≥11 g/dl). In 1999, low levels were detected in 1.6% of the 431 women attending prenatal clinics; 36% had medium levels, and 63% had high levels. In 2000, 0.7% of the 404 women assessed had low levels, 27% had medium levels, and 73% had high levels.

Data provided by the Federation's main hospital, J.N. France Hospital, indicate that the top five causes of morbidity for the period 1996–1999 were diabetes mellitus, hypertension, heart disease, gastroenteritis, and pneumonia. Alcohol abuse and asthma were also significant causes of morbidity. Motor vehicle accidents, which ranked as the eighth leading cause of morbidity in 1996 and 1997, were not among the top ten causes of morbidity in 1998 or 1999; patterns of morbidity were similar in 2000. Of the 709 medical ward admissions, 145 (47 males, 98 females) were for diabetes, 106 (41 males, 65 females) for hypertension, 47 (19 males, 28 females) for ischemic heart disease, 85 (40 males, 45 females) for other heart disease, 46 (24 males, 22 females) for asthma, and 45 (22 males, 23 females) for pneumonia.

According to data provided by the Family Planning Unit, there were 4,482 family planning users in 1996, including 3,107 users in the public system and 1,375 females who utilized the Family Planning Association service, a private entity. Oral contraceptives were chosen by 48% of users, injectables by 22%, and the intrauterine device by 10%. Approximately 20% of clients utilized other methods, mainly condoms.

During 1996–2000, the public laboratory analyzed 8,850 Pap smears. Human papilloma virus (HPV) detection on Pap smears began in 1999. Seven cases of HPV were detected in 1999 and 10 in 2000.

The Elderly (60 years and older)

Persons age 60 years and older represented approximately 11% of the population in 2000, with persons 80 years and older accounting for 3%. During the period 1996–2000, there were 1,505 deaths among 60–79-year-olds (746 males, 759 females). In 2000, there were 265 deaths (134 males, 131 females), with the main causes being stroke (15 deaths), cancer (22), myocardial infarction (18), congestive cardiac failure (10), and pneumonia (7). Six of the 16 male deaths due to cancer were attributable to prostate cancer.

There were 146 deaths among persons age 80 years and older in 2000 (59 males, 87 females). The leading causes of death were stroke (31 deaths, 8 males and 23 females), myocardial infarction (23), septicemia (17), cancer (11), and pneumonia (8). Five of the eight male deaths due to cancer were attributable to prostate cancer.

Chronic noncommunicable diseases and their sequelae are important causes of morbidity in the elderly.

The Social Security Scheme provides a pension for needy elderly persons even if they did not contribute to it. In 1999, US$ 1.5 million was paid out to 1,225 pensioners.

Workers' Health

Child labor is virtually unknown. Data collected by the Labour Department indicate that 60% of the 5,459 persons employed in "Principal Services and Industries" (i.e., private sector fields of banking, insurance, tourism, airline services, publishing, manufacturing, and professional services) during the fourth quarter of 1998 were women.

In 2000, in its efforts to improve workers' health, the Ministry of Health held consultations with an occupational health hygienist whose main aim was to carry out an assessment of workplace health and safety in order to develop a protocol for workplace audits. In addition, a process was established to evaluate needs.

The Social Security Scheme paid US$ 822,050 in sickness benefits in 1999, and US$ 816,061 in 2000. Of the 4,473 claims in 1999, 511 were injury claims made by 322 persons.

The Disabled

During 1996–2000, an early detection/intervention and stimulation program for the disabled was introduced in Saint Kitts; 68 children and young adults were registered as disabled. Through home visits, a trained nurse from the Ministry of Health provides stimulation for children as well as counseling, information, and support for parents. A special education unit in Saint Kitts and a similar unit in Nevis provide education for a combined total of 112 students age 4–20 years. The range of students' disabilities includes hearing impairment, autism, fetal alcohol syndrome, Down syndrome, visual impairment, hydrocephalus, cerebral palsy, and other forms of mental and physical disability. Seventeen teachers and 12 assistants are employed at these units.

At 15 years of age, job training begins for persons with mild disabilities, who are later integrated into the workforce. The Ministry of Education employs some of the more severely disabled on a special farm.

Approximately 30 persons, ranging in age from 19 to 55 years, were registered with the Saint Kitts Society for the Blind and Visually Impaired.

Indigenous and Other Special Groups

There are no indigenous groups in Saint Kitts and Nevis. Some 525 workers from Guyana were brought in yearly during 1996–2000 to work in the sugar industry. These workers are integrated into the local health care system, and therefore no separate data regarding this group are available.

By Type of Health Problem

Natural Disasters

Between 1996 and 2000, the Federation experienced four major hurricanes and flooding in the capital, Basseterre. In 1998, Hurricane Georges caused five deaths and an estimated US$ 402 million in damage. In 1999, Hurricane Jose and Hurricane Lenny caused an estimated US$ 3.8 million and US$ 42 million in damage, respectively. There were no major outbreaks of disease following these disasters. There was, however, considerable structural damage, including to several health centers and to J.N. France Hospital.

The Federation experienced periodic ashfalls as a result of the volcanic eruptions in neighboring Montserrat, which the medical community believes has been associated with an increased incidence of respiratory problems and eye and skin irritation.

A National Disaster Management Agency, run by a Board of Directors, coordinates national disaster management efforts. A revised national disaster plan provides for involvement of the public sector, private sector, and NGOs. The Saint Kitts and Nevis National Disaster Mitigation Council, with public and private sector and NGO participation (including churches), meets at least once per month and provides policy direction in relation to mitigation approaches.

The Ministry of Health and Environment's disaster plan addresses such issues as mass casualty management, water supply monitoring, environmental sanitation, disease surveillance, and maintenance of health facilities. The plan has both an institutional and a community component.

Vector-borne Diseases

In 1996, six cases of dengue fever were reported, at a rate of 14.2 per 1,000 population. Four cases were reported in 1997, two in 1999, and six in 2000. One death due to dengue fever was reported during 1996–2000. Viral typing by CAREC indicates that two types of dengue were circulating during that period.

In 1999, there was one imported case of malaria. There is no other case on record and the *Anopheles* mosquito is not found in Saint Kitts.

Twenty-seven doses of yellow fever vaccine were administered in 2000. No cases of yellow fever, Chagas' disease, plague, or schistosomiasis were recorded during 1996–2000.

Diseases Preventable by Immunization

During 1996–2000, average coverage for DPT, OPV, and MMR vaccines among children under 1 year of age was over 99% (Figure 3). In 1997, BCG vaccination was introduced for newborns, and coverage was 100% from 1998 through 2000. In July 2000, pentavalent vaccine for diphtheria, pertussis, tetanus, hepatitis B, and *Haemophilus influenzae* type b was introduced; coverage that year was 12%.

No cases of diphtheria, whooping cough, or poliomyelitis were reported for the 1996–2000 period. Between 1997 and 2000, 29 suspected cases of measles were reported, but none were confirmed. One case of rubella and two cases of mumps were reported for the period 1996–2000.

Between 1996 and 2000, 10 cases of hepatitis were recorded; it is not known whether these were all cases of hepatitis B. Thirteen of the 207 blood donors tested in Saint Kitts in 1999 were positive for hepatitis B; in 2000, 18 of the 232 donors tested were positive. In 1997, hepatitis B vaccination was re-introduced after having been disrupted by vaccine loss due to a hurricane in 1995; average coverage from 1998 to 2000 was 98%.

A mass rubella vaccination campaign was conducted from October 1999 to March 2000. The target population was 16,900 adults 15–39 years of age; 88% coverage was achieved.

In 1996, there was one death due to tetanus. No data are available on *Haemophilus influenzae* type b.

Intestinal Infectious Diseases

There were no reports of cholera during 1996–2000. Intestinal parasite infections are underreported, as only five cases of giardiasis were reported from 1996 to 2000. A 1997 parasitology survey of 250 primary school students detected that *Trichuris* infection affected 27% of the population surveyed. No cases of hookworm, *Ascaris*, *Ancylostoma*, or *Necator* infection were reported for the period.

Chronic Communicable Diseases

Two cases of tuberculosis were reported in 1996. Ten of the 12 cases reported in 1997 were new cases. Following this increase in cases, Directly Observed Therapy, Short Course (DOTS) was introduced and a tuberculosis coordinator was hired. In 1998– 1999, five new cases were reported; no cases were reported in 2000.

No cases of leprosy were reported for 1996–2000.

Acute Respiratory Infections

From 1997 to 2000, there were 339 cases (152 males, 187 females) of acute respiratory infection among children under 5 years. In the population over 5 years of age, 74 cases were reported (30 males, 44 females). Data from J.N. France Hospital indicate that asthma was one of the top ten causes of morbidity. In 1996, 21 males and 23 females, and in 2000, 24 males and 23 fe-

males, were admitted due to asthma. An asthma clinic was started at the hospital in August 1999, and in 2000, 108 patients were seen in a total of 150 visits.

Zoonoses

No cases of rabies were reported between 1996 and 2000. Seven cases of leptospirosis were reported.

HIV/AIDS

In 1996–1997, there were 58 HIV-positive cases recorded. Over the 1996–2000 period, two blood donors in the 55–59 years age group were found to be HIV positive. The sex ratio of AIDS cases was relatively equal between 1998 and 2000 (16 males, 18 females). From 1996 to 2000, 26 deaths from AIDS were recorded (17 males, 9 females). A child (under age 5 years) of an HIV-positive mother was included among deaths due to AIDS; all other AIDS deaths were in the 20–59 years age group.

Sexually Transmitted Infections

In general, sexually transmitted infections are underreported in Saint Kitts and Nevis, and the higher incidence among females may reflect underutilization of the health services by males. In 1999–2000, there were 288 cases (115 males, 173 females) of genital discharge syndrome, 22 cases of genital ulcer syndrome, 10 cases of chlamydia, 14 cases of syphilis, and 2 cases of gonorrhea reported. Some 57% of syphilis cases were in the 50–64 years age group. Though no cases of *Trichomonas* infection were reported in 1999, a review of 1,697 Pap smears performed at J.N. France Hospital revealed *Trichomonas* positivity in 75 samples.

Nutritional and Metabolic Diseases

According to data from the Nutrition Unit, an annual average of 1,832 children under 5 years were assessed in child health clinics between 1996 and 2000. Nutritional status is measured using the height and weight criteria established by the CFNI growth chart. Severe malnutrition is almost absent, at levels of 0.1% or below. Mild to moderate malnutrition is decreasing, while obesity is increasing. In 1996, 6.7% of the 1,831 children assessed were obese. In 2000, 11% of the 2,271 children seen were obese. This increase in the number of obese children is a cause of concern.

Of a total of 946 children assessed in 1999, the exclusive breast-feeding rate among infants age 4 months and younger was 78%. Continued breast-feeding at age 12–15 months was 26%.

A Diabetes and Cardiovascular Needs Assessment Survey was conducted in 2000 among 353 workers (average age 35 years). Eight percent were found to be diabetic, two-thirds had abnormal lipid levels, and two-thirds were overweight. Diabetes accounted for 98 female and 47 male admissions of the total 3,114 admissions to J.N. France Hospital in 2000. In 1998, 874 patients (672 males, 202 females) were registered at the diabetes clinics; an unknown number of diabetics received primary care from private practitioners.

Diseases of the Circulatory System

Cardiovascular disease, particularly hypertensive heart disease, is a major cause of morbidity and mortality. Of the 393 deaths in 1996, 114 (65 males, 59 females) were due to hypertension, myocardial infarction, and other cardiovascular diseases. In 2000, deaths due to stroke (51), myocardial infarction (47), and heart failure (47) comprised 41% of all deaths, with a male-female mortality ratio of .99. Over 60% of deaths due to stroke were among females.

In 2000, 248 (100 males, 148 females) persons were admitted to J.N. France Hospital for hypertension, ischemic heart disease, and other forms of heart disease. The Diabetes and Cardiovascular Needs Assessment Survey found that 50% of men and women were hypertensive (based on 140/90 mmHg). The number of patients registered at hypertension clinics was fairly constant over the 1996–2000 period; in 1998, there were 265 males and 861 females registered.

Malignant Neoplasms

Cancer was one of the top five causes of mortality between 1996 and 1999, accounting for 14% (282) of deaths between 1996 and 2000. The main cancer site in male deaths was the prostate, with about 12 cases per year. Breast cancer was the most common cancer among females, causing four deaths in 1996, three in 1997, six in 1999, and seven in 2000. During 1996–2000, there was one male death due to breast cancer. Other common sites among cancer deaths were the colon, stomach, cervix, uterus, and pancreas.

Accidents and Violence

Police statistics for 1999–2000 show a total of 455 violent crimes, 86% of which were classified as wounding and 2.6% as murder. Statistics from the main referral hospital for 1998–2000 indicate that of the 3,677 admissions during that period, fewer than 2% were due to stabbing and gunshots.

Between 1998 and 2000, the Traffic Department recorded 925, 927, and 1,035 motor vehicle accidents for each respective year. The number of hospital admissions due to accidents also increased during that period, with 173, 252, and 308 for each respective year.

Oral Health

There were 6,779 patient visits to the Saint Kitts Dental Unit in 2000, with 3,106 extractions and 1,668 restorations performed. There were 2,417 patient visits to the Dental Unit in Nevis in 2000, with 682 extractions and 892 restorations performed.

Mental Health

The number of registered psychiatric patients attending community clinics in Saint Kitts was fairly constant during 1996–2000, averaging 224 per year. Schizophrenia was the most common diagnosis, accounting for an average of 85 patients, fol-

lowed by substance abuse (including alcohol abuse), for an average of 54 patients.

The Drug Abuse Resistance Education (DARE) project is a program conducted mainly by the Saint Kitts and Nevis Police Force, with input from educators, health personnel, and the community. Its objective is to prevent substance abuse among children. In 1996, 8 primary schools participated in and 500 students graduated from the program. By the end of 2000, 30 schools were involved in the program, including secondary schools and the special education unit, and 1,500 students had graduated from the program.

Emerging and Re-emerging Diseases

Except for one infant male in 2000, there have been no reported cases of meningococcal meningitis or other emerging or re-emerging infectious diseases.

RESPONSE OF THE HEALTH SYSTEM

Health Sector Reform Strategies and Programs

Saint Kitts and Nevis has made some efforts at health reform. Measures adopted aim to achieve better utilization of limited resources, create conditions to facilitate an improved capacity to deliver quality health services, and reorient the health sector towards primary health care. Steps taken include organizational infrastructure development, in part fuelled by the considerable damage the various institutions suffered from the succession of hurricanes. Under this program, two main hospitals, along with many of the Federation's 17 health centers, have undergone refurbishment. The dental unit at the Charlestown Health Centre (Nevis) was refurbished, a new dental unit was built at Newtown (Saint Kitts), and a dental unit was equipped at Mary Charles Hospital (Saint Kitts). Equipment on both islands, including technological and diagnostic equipment, has been upgraded, and mammography and ultrasonography services are now available.

The Ministry of Health's recurrent expenditure has almost doubled due to organizational restructuring and the creation of 19 new posts in the areas of operations management, mid-level management, and health promotion. Budgeting was converted from line item to program budgeting in 1996.

Much emphasis was placed on the development or enhancement of HIV/AIDS, health promotion, data collection and utilization, surveillance, environmental health, and disaster preparedness programs.

An emergency medical service; a modernized and fully equipped eye clinic; an intensive care unit; and a telehealth service, with teleradiology and continuing medical education components, were instituted during the review period.

The Health System

Institutional Organization

The Minister of Health and Environment is responsible for implementing the Federal Government's policies and programs. The Ministry of Health is divided into three programs: Policy Development and Information Management, headed by a Permanent Secretary; Community-based Health Services, run by a Director; and Institution-based Health Services, which are managed by the Director of Health Institutions. The Chief Medical Officer and the Director of Community-based Services operate at the federal level. The Health Information Unit in Saint Kitts collects data from both islands.

The Nevis Island Administration has a great deal of autonomy in health matters at the local level. A Minister of Health heads the Health Ministry of Nevis; the Ministry also has a Chief Administrative Officer, also known as the Permanent Secretary.

Developments in Health Legislation

Legislative reform was a focus between 1996 and 2000. The Saint Kitts and Nevis Solid Waste Management Corporation Act was passed in 1996, and in 2000, an amendment to the Litter Act was passed. Drafts of the Saint Kitts and Nevis Mental Health Act and the Public Health Institutions Management Bill were prepared during the period. Preliminary work was done towards modifying the Pharmacy Act, certain aspects of the Public Health Act (particularly relating to water quality and food sanitation), and the Medical Act. The Medical Act, which establishes the Medical Board, is being reformed to widen the Board's jurisdiction to include allied health professions, such as laboratory technologists, dietitians, podiatrists, chiropractors, and nutritionists, as well as naturopaths.

Institutional Financing

A proposal to improve cost recovery based on ability to pay is under consideration. The aim of the proposal is to recover at least 20% of the expenditure on health care, rather than the 2% currently recovered.

Health Insurance

Saint Kitts and Nevis has no national health insurance scheme. The Social Security Scheme fulfills some health insurance functions, including providing injury benefits for its members. Every worker is required by law to contribute to the scheme, and benefit claims are paid upon medical certification of illness or injury. Large employers, including the Government, provide health insurance for their employees. Public sector employees receive medical coverage under the National Caribbean Insurance Company, whose benefits include drugs; preventive care screening, such as Pap smears, mammograms, and prostate examinations; psychiatric care; hospital confinement, including surgical, anesthetic,

maternity, and medical costs; diagnostic X-ray; laboratory services; eye care; dental care; and care and travel abroad. The National Caribbean Insurance Company is the major local insurer.

Organization of Regulatory Actions

Health Care Delivery

Regulatory mechanisms that have traditionally been inadequately outlined and enforced are now being revised and implemented. The Saint Kitts and Nevis Bureau of Standards was established in September 2000; among its objectives are to limit deceptive practices among businesses and protect consumers' health. Consumer education, ensuring compliance with proper labeling requirements, quality assurance, and Hazard Analysis Critical Control Point (HACCP) monitoring are some of the Bureau's responsibilities.

Certification and Professional Health Practice

Saint Kitts and Nevis' Medical Board regulates the registration and conduct of doctors, opticians/optometrists, dentists, and pharmacists, and oversees the ethical review of clinical and research practices. The Local Nursing Council regulates the nursing service.

Saint Kitts and Nevis is a member of the Caribbean Association of Medical Councils, which aims to standardize regional registration of medical professionals.

Organization of Public Health Care Services

Health Promotion

The Health Promotion Unit, established in 1996, was upgraded in 2000 to include the Nutrition Surveillance Programme, the Non-communicable Disease Programme, and the HIV/AIDS Prevention and Control Programme. The staff was augmented by the hiring of a counselor and a media communications officer.

The Unit's aims are to raise public awareness of health issues, empower individuals and communities to take responsibility for their health through information and education, and promote changes in the physical and social environment to improve public health. In February 2000, a training workshop, "Building National Capacity in Health Promotion," was conducted in Saint Kitts. The goal was to facilitate the development of concrete plans, using health promotion approaches, to address locally relevant health issues, and to develop recommendations to further the use of the health promotion approach in meeting health challenges. The Healthy Lifestyles project, which teaches proper dietary and exercise habits, is one of the Unit's health promotion efforts. The project has targeted some primary schools, with teachers and sports department staff conducting tutoring.

The Ministry of Health is assisting the Ministry of Education in refining the Health and Family Life Education Programme. The entire school population will be targeted, and the necessary modification will be made to the Teachers Training College curriculum.

The Health Promotion Unit developed extensive partnerships with local NGOs, particularly in the HIV/AIDS Prevention and Control Programme, as well as local churches, many of which have established their own health promotion committees.

Since the Survey of Living Conditions found that men utilize health facilities less than women do, a focus group study was conducted at the end of 2000 and a campaign is being developed to target men. The campaign's objectives are to increase men's awareness of preventable diseases, and to motivate men to recognize the value of periodic medical checks and to make the necessary lifestyle changes to minimize risk and vulnerability.

A focus group survey on community-based education for the elderly was conducted in 2000. Its goal was to develop a community-based program promoting practices for the control and management of diabetes and hypertension, thus leading to a more productive and improved quality of life.

Disease Prevention and Control Programs

Pap smear screening is available at no cost at all health centers. Prostate specific antigen testing and mammography are available and are actively promoted.

An *Aedes aegypti* control program is being extended countrywide. The average household index remained high, at 11% in 1999 and 8.7% in 2000; indices rise after the hurricane season. Source reduction is emphasized over chemical treatment, though the latter is utilized occasionally.

In December 1999, the Ministry of Health launched the AIDS Strategic Initiative for 2000–2004, elaborating its national priorities, including policy, program, and legislative development; risk and vulnerability reduction; establishing intersectoral and community alliances; improving health and social support through service delivery; strengthening surveillance; and resource mobilization. The initiative calls for a basic minimum package of services to be provided, including counseling, pharmacotherapy, and where necessary, home and hospital care. A situation and response analysis of the National AIDS Programme was conducted in 2000.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

In collaboration with the University of Newcastle (U.K.), the Ministry of Health conducted a chronic disease needs assessment in Saint Kitts in 2000. The survey, which involved 353 workers (average age 35 years), aimed to obtain useful information for program planning and policy development for the control of chronic diseases. The assessment included a survey of the prevalence of and risk factors for diabetes, hypertension, and cardio-

vascular disease, as well as an analysis of health care provision at health centers. The study estimated that 8% of the population surveyed had diabetes and 50% had hypertension; half of those persons had not been previously diagnosed.

Epidemiological surveillance is inadequate. A surveillance program for acute flaccid paralysis and rash/fever illness is ongoing. The Public Health Laboratory Information System (PHILIS) is a software application system that supports data reporting and analysis for diseases of public health interest. PHILIS provides a network for the weekly transmission of information from the laboratories at J.N. France and Alexandra hospitals to CAREC, via the Health Information Unit in Saint Kitts.

Laboratory work for the Bureau of Standards is conducted at a multipurpose laboratory at the Department of Agriculture. This laboratory also analyzes water quality for the Public Health Department.

Potable Water, Excreta Disposal, and Sewerage Services

The number of households with piped water increased from 66% in 1991 to approximately 94% in 2000. Standpipe utilization declined to approximately 6%.

The Public Works Department in the Ministry of Communications and Works manages the water supply system. Water is chlorinated routinely at the main source at La Guerite; however, rural areas still do not have chlorinated water.

The Public Health Department in the Ministry of Health is charged with monitoring water quality countrywide. In 2000, the mean fecal coliform density of the main source was 0.4 MF/100 ml. Despite lack of treatment, some rural sources, such as the Saint Paul's and Profit wells, actually had lower means of 0.2 MF/100 ml and 0.3 MF/100 ml, respectively. However, the Wingfield and Franklands/Stoneforth sources have had consistently high densities, with means of 29.3 MF/100 ml and 28.2 MF/100 ml, respectively, in 2000.

The water closet/septic system is the most common method of sewage disposal; pit latrines serve only 1.4% of households. Approximately 95% of households have exclusive use of their own sanitary facility (water closet/septic tank). There are 17 wastewater treatment plants in the country, situated mainly near commercial areas and hotels.

Solid Waste Services

The Saint Kitts and Nevis Solid Waste Management Corporation (SWMC) was established by an Act of Parliament in 1997. A Memorandum of Understanding signed in August 2000 allows the SWMC to operate independently of the federal corporation that operates in Saint Kitts. This project forms part of an OECS Solid Waste Management Project sponsored by the Caribbean Development Bank, the World Bank, and local governments. The goals of the SWMC are to construct landfills at Lowground, Nevis, and Conaree, Saint Kitts, and to improve the management, collection, storage, transportation, disposal, and treatment of solid and ship-generated waste. These functions were traditionally carried out by the Department of Public Health, which will undertake a monitoring role as the project continues to develop and become fully implemented. A major thrust of the SWMC is public information and education.

Discussions regarding the disposal of hazardous waste, including waste generated by hospitals and health centers, are ongoing.

Food Aid Programs

A Government-sponsored food aid program initiated in 1996 has two components: school feeding, which is administered by the Ministry of Education, and efforts targeting prenatal women, nursing mothers, and children, which are administered by the Ministry of Health. The school-feeding program in Saint Kitts is directed mainly at children age 5–12 years and includes all public primary schools. A small number of secondary school students are also included, based on need. Some 6,000 students are fed for approximately 195 days per year at an estimated cost of approximately US$ 654,955 annually.

The Maternal and Child Health (MCH) feeding program aims to reduce or eliminate undernutrition in 0–5-year-olds and to improve the nutritional status of mothers and babies. Monthly rations distributed through this program were reduced and the number of beneficiaries was cut from 1,750 to 750 during the review period. The program in Saint Kitts costs approximately US$ 42,375 per year. Nevis' MCH feeding program contracted even more drastically after 1996 and, in 2000, targeted approximately 49 persons at a cost of US$ 3,378.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

Primary and secondary care services are provided in the Federation. Primary health care is delivered through 17 health centers (11 in Saint Kitts and 6 in Nevis). Services provided on a routine basis are maternal and child health care, including school health, family planning, and mental health; care and control of chronic illnesses; and environmental health services, including food and water quality control, insect vector control, and sanitation. Community health services are provided by district medical officers, public health nurses, nurse practitioners, district nurses, environmental health officers, and community health workers. Private physicians also deliver primary care, but the number of persons accessing such services is not known.

J.N. France Hospital, in Basseterre, Saint Kitts, is the main referral hospital in the Federation and provides inpatient and outpatient care in most major specialties. The hospital suffered serious damage due to the four major hurricanes that affected Saint Kitts and Nevis in the period 1996–2000, and major reconstruction is ongoing. The number of beds fell from 150 in 1998 to 79 in 2000. Despite this, the number of persons accessing this facility was

fairly stable during 1996–2000, with 3,108 admissions in 1998, 3,141 in 1999, and 3,114 in 2000. This stability was achieved through a decrease in the average length of stay from 12 days in 1998 for surgical patients to 7 days in 2000, and from 10.2 days in 1998 for medical ward patients to 7.2 days in 2000. The bed occupancy rate was 65% in 1998, 90% in 1999, and 72% in 2000.

Alexandra Hospital, a 54-bed facility in Charlestown, Nevis, provides services in the major specialties. There were 1,344 admissions to Alexandra Hospital in 2000, for an occupancy rate of 35%; the average length of stay was 5 days.

Two rural hospitals on Saint Kitts, Pogson (22 beds) and Mary Charles (10 beds), provide obstetric, pediatric, medical, and emergency services.

Auxiliary Diagnostic Services and Blood Banks

J.N. France Hospital provides diagnostic services, including radiology, biochemistry, bacteriology, and microbiology, as well as blood banking services. Alexandra Hospital has laboratory, blood bank, and X-ray facilities (including ultrasonography). Immunology and virology services are provided on referral by CAREC.

Specialized Services

Community health promotion efforts have been extended to improve timely prenatal attendance at clinics, and in 1997, specialist obstetric care service was introduced at the community level. Weekly prenatal clinics are offered at all 17 health centers. An unknown number of pregnant women receive prenatal care exclusively from private physicians. Prenatal cards containing information pertaining to past and current pregnancies, which women are expected to present at each visit, have been introduced in order to improve communication between district clinics, private physicians, and the maternity wards. All deliveries in the Federation take place in hospitals. Breastfeeding is actively promoted among mothers in an effort to achieve exclusive breastfeeding of infants for the first 4 months of life. At the community level, district nurses visit regularly the 30 nurseries, 39 preschools, and 8 daycare centers.

Infants and young children are priority groups targeted to receive special health services. The nutritional status of children 0–5 years of age is monitored regularly at child welfare clinics. A school health program is conducted by the medical and nursing staff at the district level, and all students are examined upon school entrance at 5 years of age. Examinations focus on vision, hearing, growth and development, and ensuring that all required vaccines have been administered. Healthy lifestyle habits are taught as an integral part of the curriculum in all primary schools.

In September 1998, the Ministry of Health collaborated with WHO on a DMFT survey, mainly among primary schools in Saint Kitts. The survey recommended a preventive school dental health program, which commenced in 1999. In addition, between 1999 and 2000, one urban and one rural dental clinic were opened.

All active family planning users, including new mothers, are offered cervical cancer screening as part of their routine health care.

The elderly are exempted from user charges in the public health sector. Public institutional geriatric care is provided by the 100-bed Cardin Home, in Saint Kitts, and by Alexandra Hospital's 24-bed geriatric wing. Both facilities also provide some psychiatric care, though the Saint Kitts facility caters more to chronic cases. There are three private geriatric facilities in the Federation, with a 17-bed facility in Saint Kitts, and 2 facilities in Nevis with a total of 42 beds.

In 2000, the Department of Gender and Community Affairs in Saint Kitts implemented a community assistance program for the elderly. Under this program, 12 workers distributed throughout the island are employed to meet the needs of at least 206 elderly persons. Visits are made at least once per week, but may be more frequent, depending on the degree of disability. Workers' duties include bathing, cooking, giving prescribed medication, taking messages, cashing social security checks, and liaising with medical teams in the case of illness.

A new psychiatric wing was built at J.N. France Hospital, though due to damage sustained by the medical ward during the hurricanes, this has been shared with the medical services. In 1998, there were 10 psychiatric beds, with 54 admissions and a 55% occupancy rate. In 2000, there were seven psychiatric beds, with 51 admissions and a 31% occupancy rate.

Referrals for substance abuse treatment are made via the psychiatric unit at J.N. France Hospital, through private physicians, or the penal system. In 1998, the Outreach Center Foundation was established by a group of local NGOs. This nonprofit body later opened the Outreach Centre, with financial assistance from the Government and CIDA, in order to provide support for psychologically challenged individuals and groups and to promote community development through capacity building. Counseling is provided at the Centre on an ongoing basis.

Several new services were added at J.N. France Hospital, including emergency medical services, which began in December 1999 with a complement of two fully equipped ambulances and eight trained emergency medical technicians. A three-bed intensive care unit opened in February 2000, and asthma clinics were initiated at the outpatient department in August 1999. The Department of Physiotherapy was re-established at Alexandra Hospital during the review period.

Between 1999 and 2000, ophthalmic visits almost doubled from 2,761 to 5,281, a trend that is likely to continue due to the expansion of the eye clinic in 2000 into a fully modernized facility.

Diabetes clinics are held monthly at district health centers; hypertension clinics are also conducted at the district level.

Health Supplies

No pharmaceuticals are produced locally, and Saint Kitts and Nevis participates in the OECS Pharmaceutical Procurement Service. In 2000, the Government spent approximately US$ 444,444 on drugs and vaccines for Saint Kitts and Nevis.

This figure represents 5.3% of the total recurrent health budget for Saint Kitts and Nevis.

A national formulary establishes the type and range of drugs to be purchased by the public health services. A comprehensive list of drugs is available in the private sector, within which six registered pharmacies operate. Regulations on the importation of drugs and pharmaceuticals are in accordance with WHO standards.

Vaccines are purchased through the Government Central Drug Purchasing Unit.

Human Resources

Availability by Type of Resource

In 1998, emergency medical technicians were added to the 21 different categories of workers within the health sector. This category includes personnel ranging from the highly skilled technicians in J.N. France and Alexandra hospitals to community health workers who provide home care.

At the end of 2000, 37 medical doctors, 4 dentists, 8 dental auxiliaries, 198 nurses, 65 nursing assistants/community workers, 10 pharmacists/pharmacy technicians, 12 laboratory technologists/technicians, 5 radiographers/technicians, 21 emergency medical technicians, 3 nutritionists/dietitians, 4 health educators, 17 environmental health (public health) officers, 2 veterinary officers, and 11 veterinary assistants were working in the public sector.

Eleven pharmacists, five dentists, and nine doctors work exclusively in the private sector. In addition, seven regional medical specialists visit on a monthly basis and offer services in radiology, orthopedics, urology, otolaryngology, and neurology.

Training and Continuing Education

Human resource development has been a priority for the Ministry of Health, and as a result, an increased number of persons have accessed training overseas. In addition, a formal in-service education department was established at J.N. France Hospital in May 2000. The department hopes to ensure that nurses receive at least 30 hours of continuing medical education per year. This department is separate from the Nursing School, which is part of the local college, and which trained students during the 1996–2000 period. Continuing medical education is provided for health personnel through the telehealth collaboration with Dalhousie University, in Canada.

Three offshore medical schools, with a total of 66 students, are registered in the Federation. Each school has at least two places for students from the Federation. There is also an offshore school of veterinary medicine, with 452 students registered in 2000. This school provides four scholarships for local students.

Health Sector Expenditure and Financing

The Government's recurrent expenditure on health in the Federation has averaged 9.2% of total recurrent disbursements over the period 1996–2000. This places health as the fourth largest recipient of Government financial resources, behind finance, development, and planning (33%); communications, works, and public utilities (16%); and education (12%).

Expenditure on health represented an average of 3.1% of GDP between 1996 and 2000, which was a slight decrease from the average 3.5% of GDP during the previous five-year period. Per capita expenditure on health increased steadily, from US$ 189 in 1996 to US$ 268 in 2000.

The Social Security Scheme provides sickness and disability benefits to all workers in the Federation. Income from member contributions totaled US$ 11,738,024 in 1996 and US$ 14,858,273 in 1999, of which 19% was paid by the Treasury on behalf of public sector workers in Saint Kitts. The Social Security Board contributes US$ 100,000 per year to health financing, of which 70% goes to Saint Kitts and 30% to Nevis.

It is difficult to estimate the private sector's contribution to health financing.

External Technical and Financial Cooperation

The European Union continued to support health sector redevelopment with funding for the reconstruction and refurbishment of J.N. France and Alexandra hospitals. Additional financial assistance in connection with these and other projects, including the repair of health centers that sustained damage due to hurricanes, has come from such organizations as the World Bank, USAID, CDB, PAHO, and DFID. The World Bank and CDB have also contributed to the Solid Waste Management Project.

As the Government continues to support regional health initiatives, particularly Caribbean Cooperation in Health, close collaboration is maintained with regional and international agencies. Such agencies include CAREC, PAHO, UNDP, and UNICEF, all of which contributed significantly to the HIV/AIDS Programme during the review period. PAHO also collaborated on the community-based program to promote the control and management of diabetes and hypertension.

FIGURE 1. Gross domestic product annual growth (%), Saint Kitts and Nevis, 1996–2000.

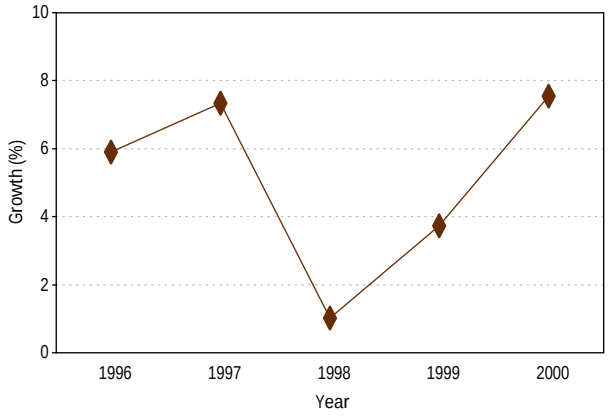


FIGURE 2. Population structure, by age and sex, Saint Kitts and Nevis, 2000.

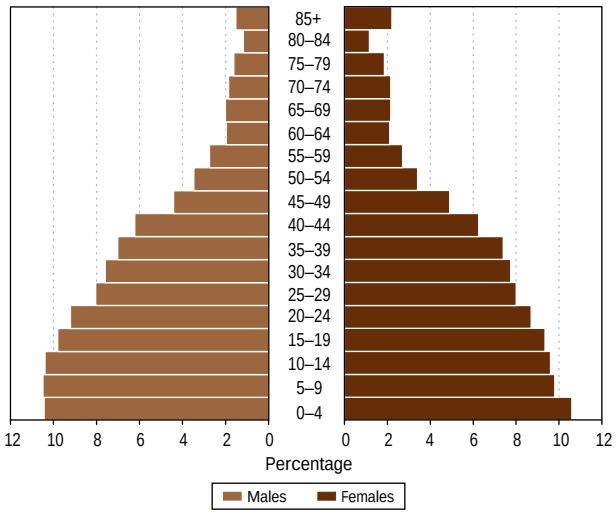
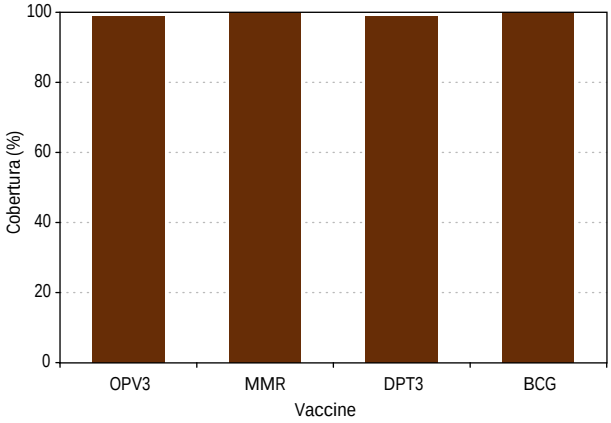


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Saint Kitts and Nevis, 2000.



SAINT LUCIA

OVERVIEW

Saint Lucia, with a total land area of 616 km^2, is a small country in the Caribbean Sea. The rainy season lasts from June to November, with a hurricane season from July to November. Hurricanes pose a continuous threat to Saint Lucia's agriculture and physical infrastructure.

Saint Lucia attained political independence from Great Britain in 1979. It is a Westminster-style democracy, and parliamentary elections are held every five years. Saint Lucia is a member of the Commonwealth of Nations, the OECS, and CARICOM. Saint Lucia's GDP grew by 2.2% from 1996 to 1999 (Figure 1); per capita GDP was US$ 2,785 in 1999. Although the official language is English, a French patois is commonly used, particularly among the rural population. Roman Catholicism is the dominant religion. According to the 1991 census, 86% of the population are of African descent, 2.6% are of East Indian descent, and 9.6% are of mixed ancestry. The southern districts of Vieux Fort and Laborie had the greatest proportion of people of mixed ancestry, with 22% and 18%, respectively. The district of Vieux Fort also had the greatest proportion of people of East Indian descent (8.7%).

Most of the population lives in the coastal areas and the less mountainous regions of the north and south. Approximately 39% live in the district of Castries, where the capital city of Castries is located. The capital is the hub of the country's economic and political life, with the main seaport, the most heavily trafficked airport, main commercial and business centers, and the seat of the Government and central administrative structures all located in or close to the city. The tourism and residential infrastructure of the northern district of Gros Islet have developed significantly over the past decade, resulting in continuous internal migration to the area. The establishment of industrial complexes in the district of Vieux Fort, where the second major town is located, has led to migration to that area as well. Most communities and villages have good road connections to the main urban centers, though a few communities do not and may be inaccessible during the rainy season.

The total mid-year population of Saint Lucia was estimated at 153,819 in 1999; the population structure by age and sex in 2000 is shown in Figure 2. The average annual population growth rate between 1980 and 1999 was 1.8%. Females account for 51% of the total population, with women of childbearing age (15–44 years) representing just over 25% of the total population. Saint Lucia has a relatively young population; some 32% of the total population is below 15 years of age, while only 7.9% is 60 years or older. Persons in the economically productive ages (15–64 years) comprise 62% of the population. The dependency ratio was 63% in 2000.

Males comprised 53% of employed population (58,190) in the first half of 1999, though in the 25–34 age group, more females than males were employed.

Between 1992–1995 and 1996–1999, the total number of live births fell from 14,741 to 12,842, and the crude birth rate dropped from 26 to 21 live births per 1,000 population. The reduction in the total number of live births was attributable in part to a decrease in the number of live births by women under 35 years old, which fell from 13,317 to 11,293. The number of births to teenagers declined from 2,750 in 1992–1995 to 2,098 in 1996–1999. With regard to high-risk pregnancies during 1996–1999, 2,049 live births (16% of total live births) were to females age 10–14 years, and 1,536 live births (12%) were to women 35 years or older. The average general fertility rate was 85 births per 1,000 females aged 15–44 and the average total fertility rate was 2.4 children per woman in 1995–1999.

Life expectancy at birth increased by two years for males (from 67 to 69 years) and for females (from 72 to 74 years) from 1996 to 1999. Life expectancy at age 60 increased by one year (from 16 to 17 years of life remaining) for males, and by three years (from 17 to 20 years of life remaining) for females.

Mortality

There were 3,837 deaths during 1996–1999, yielding an average crude death rate of 6.4 per 1,000 population. Diseases of the circulatory system (38%) were the leading cause of death among

TABLE 1. Total deaths with defined cause, by selected broad groups of causes, Saint Lucia, 1996–1999.

	Deaths with defined cause					
	Both sexes		Males		Females	
Broad group of causes	No.	%	No.	%	No.	%
Diseases of the circulatory system	1,370	37.9	671	34.6	699	41.7
Neoplasms	583	16.1	325	16.8	258	15.4
External causes	337	9.3	265	13.7	72	4.3
Communicable diseases	226	6.2	129	6.7	97	5.8
Conditions originating in the perinatal period	95	2.6	51	2.6	44	2.6
All other defined causes	1,006	27.8	498	25.7	508	30.3
Total deaths with defined cause	3,617	100.0	1,939	100.0	1,678	100.0

deaths with defined cause (3,617) during the period, followed by neoplasms (16%) and external causes (9%) (Table 1). The number of deaths was higher for males for most broad groups of causes. External causes presented the greatest disparity, with a male-female ratio of approximately 3.7:1. Deaths due to external causes were concentrated among persons 15–44 years of age (177 deaths), with a male-female ratio of 5.3:1.

HEALTH PROBLEMS

By Population Group

Children (0–4 and 5–9 years)

There were 176 reported infant deaths during the period 1996–1999, yielding an average infant mortality rate of 14 per 1,000 live births. Of these, 128 deaths occurred in the neonatal period, and 48 in the postneonatal period. Deaths due to certain conditions originating in the perinatal period (94) included 42 deaths due to slow fetal growth, fetal malnutrition, and immaturity, 30 to acute respiratory infections, and 22 to congenital anomalies. There were 50 deaths among children 1–4 years of age—10 due to congenital anomalies, 9 to accidents, and 6 to intestinal infectious diseases.

There were 31 deaths among children 5–9 years of age over the period 1996–1999; of these, 11 were due to accidents.

Adolescents (10–14 and 15–19 years)

There were 27 deaths among adolescents age 10–14 years during 1996–1999; 10 deaths were due to accidents, and of these, 7 were males. There were 47 deaths among 15–19-year-olds in the same period. Accidents caused 21 deaths in this age group, of which 20 were males; 50% of male deaths were due to land transport accidents. Seven deaths among adolescents age 10–19 years were due to accidental drowning.

Adults (20–59 years)

There were 975 deaths among adults in 1996–1999. The three leading causes of death were malignant neoplasms (197 deaths or 20% of all deaths in this age group), accidents and adverse effects (125 or 13%), and heart disease (120 or 12%). Males accounted for 593 deaths, with the leading causes being accidents (101 or 17%), malignant neoplasms (86 or 15%), and heart disease (70 or 12%). The leading causes of the 382 female deaths were malignant neoplasms (111 or 29%), heart disease (50 or 13%), and cerebrovascular disease (26 or 7%).

The Elderly (60 years and older)

There were 2,524 deaths among adults 60 years of age and older during 1996–1999. Heart disease (731 deaths) and malignant neoplasms (553) accounted for 29% and 22% of deaths in this age group, respectively. Among males, heart disease accounted for 372, malignant neoplasms for 309, and cerebrovascular disease for 220 deaths. Among females, heart disease accounted for 359, malignant neoplasms for 244, and cerebrovascular disease for 233 deaths.

The Government provided support to elderly persons in various forms, including funding home repairs, assisting in the payment of utility bills, supporting home care programs, working with charitable organizations to provide community services, and in some cases, providing free medical services and/or drugs (e.g., persons receiving public assistance). However, these persons only represent a small proportion of the elderly, and hence the majority of elderly persons are unable to afford the cost of drugs and access medical attention. Many older persons are unable to access the health services due to geographical location and/or transportation problems. Community health aides visit elderly persons in their homes and communities on a regular basis.

Formal and informal social security systems are available to elderly persons in Saint Lucia. The three types of formal social

security are social insurance, non-contributory pension, and social assistance. Social insurance is provided through the National Insurance Scheme (NIS), which provides a pension to persons over 60 years old who have contributed to it for at least 10 years. Although self-employed persons are expected to contribute to the Scheme, not many are registered with it. In addition to providing pensions to the elderly, the NIS makes annual contributions to homes for older persons.

The main forms of government support to the elderly are the operation of the Senior Citizen's Home in Soufrière District, and annual subventions to privately run homes for the elderly and to the Saint Lucia National Council for Older Persons. At the end of October 1999, the Senior Citizen's Home had 76 residents (41 males, 35 females) between the ages of 71 and 94 years. This facility houses persons from throughout Saint Lucia, including persons who are physically disabled and mentally handicapped. There are six other residential homes for older people, which are operated by church groups and private individuals with some assistance from the Government and other individuals or institutions.

Workers' Health

The Occupational Health and Safety Unit is responsible for monitoring, investigating, and enforcing legislation regarding the health of workers in Saint Lucia. Approximately 60% of workers are covered by the National Insurance Scheme. Injuries accounted for 85% of all claims submitted, trauma or fracture on the job for 11%, and burns for 3%.

The Disabled

The National Council of and for Persons with Disabilities provides services to approximately 10,000 persons with disabilities, as well as to all disability-related and senior citizen's organizations in Saint Lucia. With assistance from the United States Peace Corps, the Council provides field visits, prosthetic services, walkers (for senior citizens), wheelchairs, and other mobility aids.

By Type of Health Problem

Natural Disasters

In 2000, the Disaster Preparedness and Response Act legalized the actions of the National Emergency Management Organization (NEMO), which is responsible for national disaster preparedness, and for coordinating disaster response at the local, regional, and international levels. Disaster management in Saint Lucia is a voluntary activity, and during a disaster, NEMO is part of a larger network that comes together to respond. Saint Lucia is a member of The Caribbean Disaster Emergency Response Agency.

In June 1998, a landslide in Boguis, in the district of Castries, destroyed 12 households and displaced 49 people. In October of the same year, a tropical wave displaced three families and caused one death. The total cost of damages was estimated at US$ 230,185. A total of 120 families were relocated after a land slippage in Marchand, a suburb of the capital. Hurricane Lenny struck in November 1999, causing extensive damage estimated at US$ 6.3 million.

Vector-borne Diseases

No cases of yellow fever were reported during 1996–1999. Yellow fever vaccine is given upon request and to persons travelling to known endemic areas. Three cases of malaria were reported during 1996–1999, two in 1998 and one in 1999; all were imported. A total of 59 cases of schistosomiasis were reported for 1996–1999, for an average of about 15 cases per year.

Diseases Preventable by Immunization

Under the Expanded Program on Immunization (EPI), children under 5 years of age are immunized against diphtheria, whooping cough, tetanus, measles, mumps, rubella, poliomyelitis, and tuberculosis. No cases or deaths due to these diseases were reported among children under 5 years of age during 1996–1999.

High vaccination coverage rates (between 88% and 100% for children under 1 year of age) were maintained during 1990–1999, and no reported cases of diseases preventable by vaccination were reported among children in all age groups. During the 1990s, between 86% and 100% of the target population of infants completed the required dosages of the OPV, DPT, and BCG vaccines. Vaccination coverage rates in 2000 were 70% for DPT3, 70% for OPV3, 91% for BCG, and 89% for measles (Figure 3). Coverage rates for the BCG vaccine were higher than for the other vaccines. The high coverage for the BCG vaccine is noteworthy, as this vaccine requires special care and must be administered by trained personnel. Thus, BCG vaccination coverage may be used as an indirect measure of access to health services.

Intestinal Infectious Diseases

During 1996–1999, no cases of cholera were reported. Three cases of typhoid fever were reported, one in 1996 and two in 1999. A total of 16 cases of salmonellosis were reported, 9 of which were children under 5 years of age. Seventy cases of shigellosis were reported, with 35 cases in children under 5 years of age. New cases of diarrhea are extracted from records of routine medical clinics submitted to the Epidemiology Unit. A total of 5,969 cases of diarrhea were reported for 1996–1999, representing about 2% of total visits at medical clinics. Among children under 5 years of age, 2,950 cases were reported, which represents some 49% of total reported cases and 5% of total visits for this age group.

Chronic Communicable Diseases

The number of reported cases of tuberculosis increased from 82 in 1992–1995 to 93 in 1996–1999, with a male-female ratio of 1.7:1 in the latter period. Part of this increase is attributable

to better reporting since 1999, when active surveillance and the Directly Observed Treatment Short-course strategy were introduced.

All cases in 1992–1995 and 92% of cases in 1996–1999 were pulmonary cases; new sputum-smear positive cases accounted for 90% of all new pulmonary cases. Persons under 20 years of age accounted for 12% of cases in 1996–1999, persons 20–59 years of age for 69%, and persons 60 years and older for 14%. Approximately 49% of all reported cases for 1996–1999 were cured or had completed treatment by the end of 1999. There were 13 deaths due to tuberculosis in 1996–1999, a decrease from the 27 deaths in 1992–1995.

There were 37 reported cases of leprosy during 1996–1999.

Acute Respiratory Infections

A total of 629 cases of influenza—20% of all reported cases of acute respiratory infection (ARI)—were reported among children under 5 years of age in 1996–1999. ARIs were responsible for 80 deaths, 79 of which were due to pneumonia. Two deaths due to ARI were reported for children under 5 years and 27 among adults 20–59 years; none of these were reported as influenza. There were 50 deaths due to ARIs among persons 60 years or older, of which 22 (44%) were females.

Zoonoses

No cases of rabies have been reported in Saint Lucia for the past two decades. There were 40 reported cases and 2 deaths due to leptospirosis in 1996–1999.

HIV/AIDS

By December 1999, a cumulative total of 254 persons had tested positive for HIV infection since the first case of AIDS was reported in 1985. Fifty-three percent (135 cases, 78 males and 57 females) of all HIV cases developed AIDS, and of these, 86% (116 persons, 64 males and 52 females) died from AIDS by the end of 1999.

Over the period 1985 to 1999, the number of reported cases of AIDS increased steadily for all age groups except persons 60 years or older. Figure 4 shows Saint Lucia's AIDS incidence from 1994 to 1998. The number of cases doubled for males and tripled for females, reducing the male-female ratio from 2.2:1 in 1985–1989 to 1.4:1 in 1995–1999.

Though the mode of HIV transmission was not reported for 54% of all cases between 1985 and 1999, available data indicate that the mode was heterosexual contact for 35% of all persons testing positive for HIV infection for whom the mode of transmission was reported.

Diseases of the Circulatory System

There were 731 deaths due to cardiovascular disease from 1996 to 1999, accounting for 19% of all deaths and 53% of deaths due to diseases of the circulatory system. Cardiac arrest caused 268 cardiovascular deaths (37%), ischemic heart disease 174 (24%), pulmonary circulation and other forms of heart disease 134 (18%), and heart failure 153 (21%). Females accounted for 359 (49%) of deaths due to cardiovascular disease, and persons 60 years of age or older accounted for 588 deaths (80%).

Malignant Neoplasms

Malignant neoplasms accounted for 553 deaths (14%) of all deaths during the period 1996–1999. Of these, 309 deaths were males (56%). The overall male-female ratio of deaths was 1.3:1, though for persons 60 years of age or older, it was 1.7:1, as the most frequent malignant tumors in men become more common with age, while breast and cervical cancers in women occur at earlier ages.

Cancer of the genital organs was the leading contributor to cancer deaths for both sexes (31% for males and 27% for females), followed by cancer of the digestive organs (30% for males and 25% for females). Cancer of the breast accounted for 8% of all cancer deaths and cancer of the respiratory organs accounted for 13%. The three most common cancer sites among male deaths were the prostate (95), stomach (32), and trachea/bronchus/lung (32); for women, they were the breast (44), cervix uteri (43), and stomach (19).

Accidents and Violence

From 1996 to 1999, there were 337 deaths due to external causes (9.3% of deaths with defined cause); of these, 235 deaths were due to accidents and homicides. The overall male-female ratio of deaths due to external causes was 3.7:1. However, the ratio was 5.3:1 among 15–44-year-olds; this age group accounted for 56% of all deaths due to accidents and violence among males.

Deaths due to accidents accounted for 70% of all deaths due to external causes in 1996–1999. More males than females died due to accidents, at a ratio of 5.1:1. Deaths due to motor vehicle accidents (98) were the most common cause of deaths by accidents (42%). Approximately 60% of traffic fatalities occurred among persons 15–44 years of age.

Deaths due to accidental drowning (37) accounted for 16% of deaths due to accidents over the period. Most cases were males (32), particularly males 15–44 years old (19).

Homicides (61 deaths) were the second most important external cause of death in 1996–1999. The overall male-female ratio of deaths was 5.1:1. However, most homicides (40) occurred in the 15–44 years age group, which has a male-female ratio of 5.8:1. Twelve homicides occurred in the 45–59 years age group.

There were 34 suicides during 1996–1999, with a male-female ratio of 5.8:1. Most (21 or 62%) occurred in the 15–44 years age group, and had a male-female ratio of 9.5:1.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The main objective of the Ministry of Health's National Health Policy, as outlined in its 10-year sector plan for June 1993–July 2003, is to improve the quality and increase the number of human resources. The Policy also addresses health personnel, revenue collection, technology use, population growth, vulnerable and at-risk groups, substance abuse, workers' health, environment, HIV/AIDS, community participation, and other issues that impact upon the population's health and well-being. The health sector plan includes strategies to implement the policies formulated by the Ministry of Health.

Health Sector Reform Strategies and Programs

A Health Sector Reform Committee, responsible for the design of health sector reform, was appointed in September 1997. The Ministry of Health established a secretariat to develop health sector reform proposals for submission to the cabinet of ministers for approval. The design of the proposed reform was developed from research and through negotiations and consultations with key stakeholders and the wider community. The main issues for health sector reform include decentralization of management and functions, integration of different levels of care, improved financing, and quality assurance. The health sector reform is guided by the principles of community participation, decentralization, intersectoral collaboration, evidence-based decision-making, quality care, and institutional strengthening and sustainability.

The Ministry of Health's Planning Unit was mandated to make the necessary adjustments to the proposed implementation plan, and to develop the communication plan and strategy jointly with the Bureau of Health Education. A short-term implementation plan was developed and funds were approved for its implementation in the 2001–2002 budget. The Planning Unit, along with heads of departments and institutions within the Ministry of Health, is responsible for implementing the proposed reforms.

The Health System

Institutional Organization

Various departments within the Ministry of Health are responsible for the implementation of such programs as health education, environmental health, preventive services, and hospital and curative services. Primary health care services are mainly provided at the 34 health centers and 2 district hospitals.

Secondary and specialized care and services are provided at the three general hospitals and the psychiatric hospital. Although clients may seek care at any facility, the administration and management of health facilities are based on the catchment population.

Private Participation in the Health System

Many medical and dental practitioners work in both the public and private sectors. Nurses have recently been employed in the hotel industry and in private home nursing care.

Health Insurance

The main types of health insurance available in Saint Lucia are private health insurance for individuals and groups, and coverage by the National Insurance Scheme. The NIS pays an annual contribution to the Ministry of Health to cover inpatient hospital expenses for its contributors. Under the National Insurance Act, the NIS is obliged to provide assistance to the elderly, the disabled, and the needy, whether or not they are contributors under the Scheme.

Organization of Regulatory Actions

Certification and Professional Health Practice

The Medical and Nursing Councils are responsible for the registration and monitoring of doctors and nurses, and the Medical Board for dentists, pharmacists, and optometrists.

Basic Health Markets

The use of prescription drugs is monitored by the Chief Pharmacist of the Ministry of Health.

Environmental Quality

Responsibility for environmental health and quality is shared by various government and statutory bodies. The Environmental Health Branch, a department of the Ministry of Health, is responsible for food and water safety, vector control, and sanitation services. The Water and Sewerage Authority is responsible for the collection, storage, and distribution of potable water. The Pesticide Control Board is responsible for the registration and licensing of pesticides. Responsibility for physical development and its effects on the environment falls to the Ministry of Planning.

Organization of Public Health Care Services

Health Promotion

Within the Ministry of Health, the Bureau of Health Education is responsible for health education and promotion; other ministries and nongovernmental agencies are also involved in such activities. The Ministry often pays for media access, but some health information is publicized through the Government

Information Services. Health education and health promotion programs target the general public, with some programs particularly aimed at parents, teachers, students, and community groups.

Articles about health are published regularly in most Saint Lucian newspapers, as are special supplements about diseases of interest to certain groups of the population.

Disease Prevention and Control Programs

Disease prevention programs are in place for tuberculosis, leprosy, HIV/AIDS, dengue fever (including vector control), measles, and sexually transmitted infections (STIs). Surveillance, management and treatment of cases, and special clinics (STIs) are integral parts of these programs.

The overall goal of the National Tuberculosis Program is to identify and cure all infectious tuberculosis cases. A National Tuberculosis Register was established in 1996.

To determine the incidence of cancer in Saint Lucia, a data-entry system for a population-based cancer registry was designed and put in place at the Saint Lucia Cancer Society. Data for the system are supplied by the diagnostic laboratories of the two main general hospitals and the death registry at the Ministry of Health.

The Expanded Programme on Immunization (EPI) offers immunizations on a routine basis to children under 5 years of age and to pregnant women; among children, infants are the primary target group.

Screening for anemia and cervical cancer is provided to pregnant women at prenatal clinics. High-risk pregnancies, including first-time mothers, are monitored and given iron supplements and counseling when necessary. At primary care facilities, screening programs are offered for cervical, breast, and prostate cancer. Most preventive services are provided free of charge; contraceptives and vaccinations required for college entry or for yellow fever are available for a fee.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

The Communicable Disease Surveillance System monitors HIV/AIDS, measles, rash and fever illnesses, acute flaccid paralysis, dengue, tuberculosis, and leptospirosis, as well as other communicable diseases. The main sources of data for the system are routine medical clinics held at the 34 health centers and two district hospitals; two public and three private laboratories; the casualty departments and medical wards of the two public general hospitals; and one private physician.

Food Safety

The Food Unit of the Environmental Health Department is responsible for food protection, control, and safety. Inspections of food service establishments and wholesalers are conducted at least three times per year to monitor the quality and ensure the safety of foods for sale. Food handlers must be examined by a certified medical practitioner to obtain a health certificate, and are checked twice per year to ensure that their certificates are valid.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

Outpatient services for general morbidity are provided at medical clinics at health centers and district hospitals, and through the casualty or emergency departments of the general hospitals. Medical and pharmaceutical services are made available at least once a week at the health centers and district hospitals. Maternal and child health (MCH) services, including pre- and postnatal care and child immunization, are offered at MCH clinics held at the health centers and district hospitals. In addition to routine general medicine clinics, special services are offered in obstetrics/gynecology, pediatrics, surgery, sexual and reproductive health, and mental health. Special clinics and basic services are offered to diabetic and hypertensive clients at primary care facilities. Some primary psychiatric care is offered to outpatients through community psychiatric clinics at the psychiatric hospital and at facilities in seven other districts.

Inpatient care is offered at Saint Lucia's six hospitals (five public and one private). These include three general hospitals, two district hospitals, and one psychiatric hospital. The three general hospitals deliver secondary care to inpatients. The two district hospitals provide beds to accommodate inpatients with minor medical, surgical, and pediatric problems, and have maternity units for low-risk deliveries; some basic care is also provided to inpatients suffering from chronic diseases. Saint Lucia also has an inpatient drug and alcohol detoxification center.

Health Supplies

Drugs are obtained through the Eastern Caribbean Drug Service. All vaccines used in the public sector are procured through the PAHO Revolving Fund for Vaccine Procurement. A National Procurement Committee is in place to coordinate the procurement of biomedical equipment.

Human Resources

Availability by Type of Resource

The number of personnel employed by the public health sector has increased since 1985; the numbers of certain categories of personnel employed in 1999 are presented in Table 2. The greatest relative increases were for doctors, dentists, and health educa-

TABLE 2. Health personnel, by category, Saint Lucia, 1999.

Category	Number	Number per 10,000 population
Doctors	81	5.8
Dentists	13	0.9
Nurses	312	22.6
Pharmacists[a]	36	2.4
Environmental health workers[a]	18	1.2

[a]Data provided by the Epidemiology Unit, Ministry of Health, Saint Lucia.
Source: Basic Indicators 2001, PAHO, Special Program for Health Analysis.

tors. These increases may be a reflection of expansion in the types of services offered, increased demand, and the availability and absorption of appropriately trained health personnel.

Training

Sir Arthur Lewis Community College, which offers training in nursing, midwifery, nutrition, and dietetics, is the only institution in Saint Lucia that trains health personnel. Community health aides are trained by the Community Nursing Department. Other categories of health personnel must pursue training at regional or international institutions. Training of health personnel is constrained by lack of adequate financial resources. In-service training for health professionals is frequently organized by the Ministry of Health and other health-related organizations. Short courses on adolescent and reproductive health have been offered through the University of the West Indies Distance Learning Program. The Government of Cuba provided scholarships for training in medicine and other areas related to health. The University of the West Indies also offers training in various health-related fields, including medicine, environmental health, and health education, for health professionals in Saint Lucia.

Job Market

Most health personnel are employed in the public sector. Traditionally, doctors, dentists, and pharmacists are the health professionals most represented in the private sector, but a growing number of private companies offering diagnostic services and vision care have been established in recent years.

Health Sector Expenditure and Financing

The primary sources of funding for the Government's recurrent expenditure are taxes and user fees. The Ministry of Health is responsible for the establishment of user fees in the public health sector. Since revenues from all sources (except Saint Jude Hospital) are placed in a consolidated fund, they do not directly benefit the department or Ministry that collected the fees. The National Insurance Scheme makes an annual contribution to the consolidated fund to cover inpatient hospital expenses for its members. Saint Lucia's per capita budget for health in 1999 was approximately US$ 120; the health budget represented 4.3% of GDP.

External Technical Cooperation and Financing

During the period 1996–1999, the health sector received technical and financial assistance from several external agencies and foreign governments. The European Development Fund (EDF) provided US$ 740,741 for the rehabilitation and reconstruction of Victoria Hospital. The EU funded several projects, including major repairs to public facilities, the construction of a shelter for victims of abuse, the purchase of furniture and equipment, the Integrated Child Protection and Development Programme, and care for the elderly. These funds were made available through grants, which totaled US$ 1,290,370. DFID funded a new Women's Support Center, and the British High Commission financed a greenhouse for Golden Hope Hospital. The Government of France provided funding for the construction of the new maternity wing and equipment for the Victoria Hospital, computer software and hardware, and the services of a French epidemiologist for the Epidemiology Unit of the Ministry of Health. The Government provided US$ 92,593 to cover the cost of a feasibility study for the construction of a new psychiatric hospital. The Government of China donated US$ 14,815 to the "Golden Fund," established by the Minister of Health to raise funds for the construction of the new psychiatric hospital.

FIGURE 1. Gross domestic product, annual growth (%), Saint Lucia, 1991–1999.

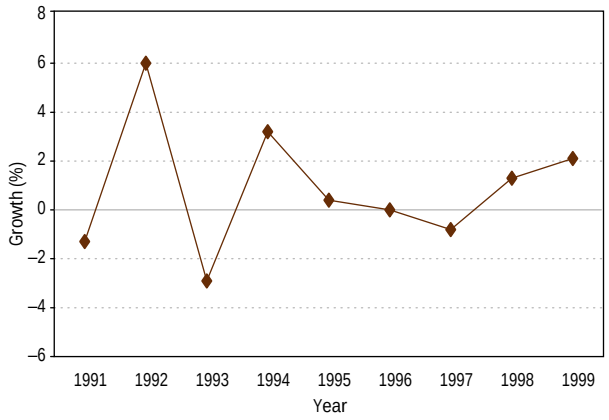


FIGURE 2. Population structure, by age and sex, Saint Lucia, 2000.

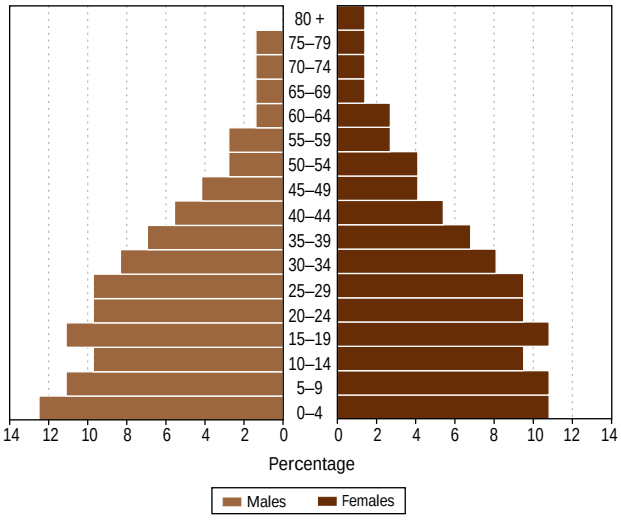


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Saint Lucia, 2000.

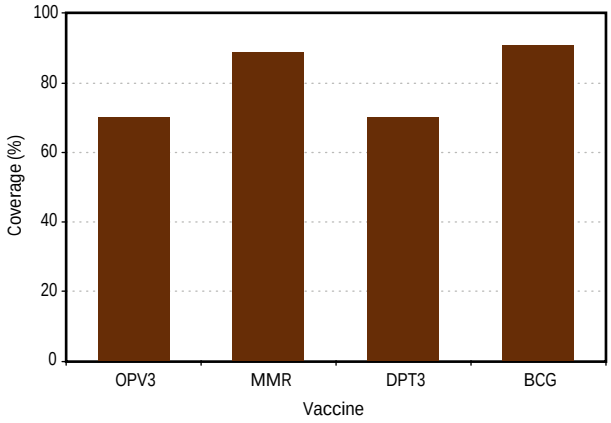
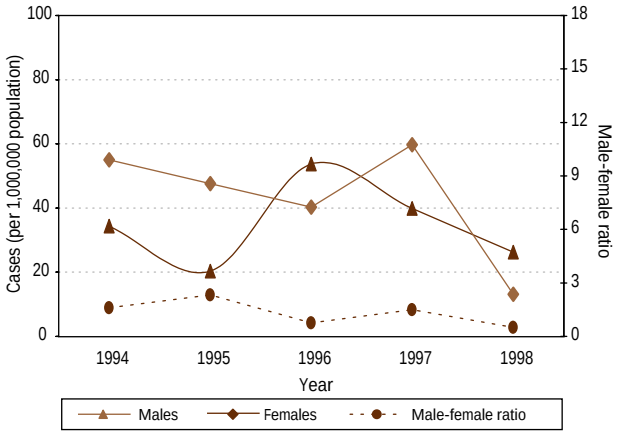


FIGURE 4. AIDS incidence, by sex, with male-female ratio, Saint Lucia, 1994–1998.



SAINT VINCENT AND THE GRENADINES

OVERVIEW

Saint Vincent and the Grenadines is a small country in the eastern Caribbean consisting of 30 islands, islets, and cays, with a total land area of 345 km^2. The islands are part of the Windward Island chain of the Lesser Antilles. Saint Vincent, where 91% of the country's 111,638 inhabitants (1999 estimate) live, is the largest island; 44% reside in urban and suburban communities. The Grenadines include the inhabited islands of Bequia, Mustique, Myreau, Canouan, Union Island, and Palm Island. Saint Vincent is linked to the Grenadines by sea and air transport, with docking facilities on all inhabited Grenadine Islands and airports on four islands.

Saint Vincent is volcanic in origin, with a central chain of mountains and ravines. The highest peak is La Soufrière volcano (1,220 m), which last erupted in 1979. The Grenadines are primarily of coral formation. The country has a tropical climate, with an average temperature of 24–33 °C, and is vulnerable to hurricanes, tropical storms, volcanic eruptions, and earthquakes.

Saint Vincent and the Grenadines attained political independence from Great Britain in 1979. It is a Westminster-style parliamentary democracy, and elections are held every five years.

Growth in real GDP averaged 3.2% per year during 1997–1999 (Figure 1). Over the same period, non-tourism services increased by over 4% on average, with major input from the wholesale and retail trade, and communications, banking, and insurance sectors. The tourism sector grew by 4.5% in 1997, shrank in 1998 by 4.2%, and grew again in 1999 by 9.1%. The agricultural sector contributed 12.5% to GDP in 1998 and 11.3% in 1999. The labor force was comprised of approximately 66,873 persons, or 63% of the population, in 1999.

There are 60 public and 6 private primary schools, and 1 school for children with special needs; average yearly primary school enrollment was 21,451 students age 5–15 years. An average of 7,931 students were enrolled in the country's 21 secondary schools during the review period.

Females accounted for 55,931 of the estimated population in 1999, and males for 55,707. The under 15 years age group accounted for 37% of the population, and the age group 65 years and over accounted for some 6.5% (Figure 2). The dependency ratio in 2000 was 54.3 per 100 population. Life expectancy averaged 68.7 years for males and 74.2 years for females over the period 1995–2000. The crude birth rate continued to decline gradually from 23.6 in 1995 to 19.5 per 1,000 population in 1999. The total fertility rate was 2.8 children per woman.

Mortality

There were 3,184 deaths over the period 1996–1999, for an annual average of 796 deaths. The average crude death rate was 7.2 per 1,000 population, as compared to 6.5 per 1,000 population in 1992–1995.

During 1996–1999, diseases of the circulatory system accounted for approximately 42% (1,333 deaths) of total deaths, neoplasms for 16% (498 deaths), external causes for 6.7% (214 deaths), and communicable diseases for 2.2% (71 deaths).

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

The average number of children in the 0–4 years age group was 12,630 (11.3% of the average total population) during 1996–1999. Of total live births over this period (8,931), 4.1% had low birthweight (<2,500 g). The infant mortality rate for that period ranged from 20.1 deaths per 1,000 live births to 24.6, for an average of 22 deaths per 1,000 live births (Table 1). Of 197 infant deaths in the period 1996–1999, 137 (70%) were neonatal deaths, of which 73 (53%) were under 1 day old.

From 1996 to 1999, the leading causes of death among infants were certain conditions originating in the perinatal period, with an average of 29 deaths per year, followed by congenital abnormalities, with an average of 10 deaths per year.

There were 45 deaths in the 1–4 years age group from 1996 to 1999 (33 males and 12 females). HIV/AIDS and pneumonia were

TABLE 1. Neonatal and infant mortality rates, Saint Vincent and the Grenadines, 1996–1999.

Year	Births	Neonatal deaths	Neonatal mortality rate (per 1,000 live births)	Infant deaths	Infant mortality rate (per 1,000 live births)
1996	2,338	31	13.3	47	20.1
1997	2,311	43	18.6	52	22.5
1998	2,112	33	15.6	52	24.6
1999	2,171	30	13.8	46	21.2

Source: Ministry of Health and the Environment.

responsible for eight deaths each, and congenital abnormalities caused six deaths.

The major diseases affecting this age group were acute respiratory infections and gastroenteritis. Immunization coverage with OPV3, BCG, and DPT3 was 100% in 2000; MMR coverage was 96% (Figure 3). No cases of diseases preventable by immunization were identified for the reporting period.

Between 85% and 88% of children under 5 years of age had adequate weight for age during 1996–1999, a decrease from 90% in 1992–1995. Obesity continued to increase, from 6.8% in 1998 to 9% in 1999; 7% of children in 1998 and 6% in 1999 suffered moderate undernutrition.

Schoolchildren (5–9 years)

There were 14,471 children age 5–9 years in 1999, accounting for 13% of the population. The common health problems identified among this age group were vision problems, dental caries, viral illnesses, asthma, and tinea corporis. There were an average of seven deaths per year among this group in 1996–1999.

Adolescents (10–14 and 15–19 years)

In 1999, there were 27,181 adolescents age 10–19 years, representing 24.3% of the total population. Of these, 14,377 were 10–14 years of age and 12,804 were 15–19 years of age. There were an average of 15 deaths each year from 1996 to 1999 among adolescents, accounting for less than 2% of deaths. Accidental drowning and submersion was an important cause of death for these age groups.

Of the 2,171 births in 1999, 12 (0.6%) were to girls between the ages of 10 and 14 years, and 450 (20.7%) to girls between the ages of 15 and 19 years. Pregnancy, accidents, and drug and alcohol abuse are important problems affecting this population.

Adults (20–59 years)

The 20–59 years age group accounts for approximately 50% of the total population. Health conditions affecting adults are mainly lifestyle related, such as HIV/AIDS and other sexually transmitted infections, hypertension, heart disease, diabetes, and cancer. In the period 1996–1999, noncommunicable diseases were the most important cause of death. Malignant neoplasms, particularly of the uterus/cervix and prostate, accounted for 491 (15%) of the 3,184 deaths during this period. Endocrine and metabolic diseases, and immune system disorders also accounted for 491 deaths (15%), while ischemic heart disease accounted for 349 deaths (11%), cerebrovascular disease for 325 deaths (10%), and hypertensive disease for 243 deaths (7.6%). These diseases accounted for a cumulative total of 1,899 deaths or 60% of all deaths.

Communicable diseases accounted for 71 deaths (2.2% of total deaths) during 1996–1999; the major contributing cause was septicemia. Accidents, including accidental drowning (53 deaths), were important contributors to deaths due to external causes, followed by homicides (45 deaths).

Of 2,887 pap smears done in 1999, 64 (2%) revealed abnormalities. There were no cases of invasive cancer or adenocarcinoma.

There were six maternal deaths during 1996–1999; the average maternal mortality rate was 67.2 deaths per 100,000 live births.

A study conducted in 2000 revealed an overall contraceptive use prevalence rate of 59%, an increase over the 11% recorded in a similar survey in 1980. The 2000 study indicated that the preferred methods were the contraceptive pill (49%), injectables (18%), condoms (75%), and female sterilization (10%).

In 1999, of the 59,899 clinic visits for noncommunicable diseases, 41,933 (70%) visits were by women and 17,966 by men (30%).

The Elderly (60 years and older)

There were 9,970 persons 60 years of age and older in 1999, accounting for 8.9% of the total population. Of total deaths in 1999, 60% were in this age group. This age group accounts for 25% of annual clinic visits. The major diseases affecting them are hypertension, diabetes, heart disease, and cancer.

The Disabled

According to the Society for Persons with Disabilities, approximately 1,274 persons, or 1.2% of the total population around

1999, were disabled or impaired. The most prevalent conditions are blindness, mental retardation, deafness/dumbness, cerebral palsy, Down syndrome, mental illness, Parkinson's disease, epilepsy, senility, and deformity from arthritic changes. Health services for individuals with disabilities or impairments are available at public primary and secondary care facilities at no cost.

The Ministry of Education is responsible for the School for Children with Special Needs, which has 118 students. In addition, several private facilities provide care and educational activities for the disabled, as well as psychological support and training for family members.

By Type of Health Problem

Vector-borne Diseases

Dengue fever is the only vector-borne disease that affects Saint Vincent and the Grenadines. A dengue outbreak in 1998 resulted in 62 laboratory-confirmed cases; in 1999, only one case was confirmed. No deaths were reported. Dengue type II was the only viral type identified among the positive samples that were serotyped.

The continuing endemicity of dengue is due to the high prevalence of the *Aedes aegypti* mosquito in the country. The average household index for 1996–1999 was estimated at 16.5%, and the average Breteau index was 26.9%, both far above accepted standards.

Diseases Preventable by Immunization

Immunization is available against measles, mumps, rubella, diphtheria, pertussis, tetanus, poliomyelitis, and tuberculosis; children must be comprehensively immunized before entering primary school.

One case of rubella was identified in 1996 and another in 1997; no cases were reported in 1998 or 1999. In 1999, a mass rubella vaccination campaign was conducted, targeting persons 20 to 40 years of age. No cases of measles or mumps were reported during the review period, and diphtheria, pertussis, and poliomyelitis have not been reported for over a decade.

The only case of tetanus reported during the review period occurred in 1997, in a 65-year-old man who subsequently died.

Systematic surveillance for *Haemophilus influenzae* meningitis began in January 1999; six cases were reported that year, all among children 5 years of age and younger. There were no deaths due to this cause. No cases of meningococcal meningitis were reported during the review period.

During 1996–1999, 8,444 blood samples were screened at the national laboratory for hepatitis B, and 220 (2.6%) were positive. An ongoing hepatitis B vaccination program to immunize all health care workers was initiated in January 1997, and approximately 80% of all health care workers have been immunized. Infants born to hepatitis B–positive mothers are also immunized.

Intestinal Infectious Diseases

The national laboratory analyzes over 4,500 stool samples per year for intestinal parasites and infectious agents. During the review period, 407 samples were positive for hookworms, 271 for *Trichuris trichiura*, and 106 for *Ascaris lumbricoides*.

Chronic Communicable Diseases

Seven new cases of tuberculosis were reported during 1996–1999; males accounted for 80% of cases. There were six deaths due to tuberculosis in 1996, none in 1997, three in 1998, and one in 1999; most were in the age group 70 years and over.

One case of leprosy was reported in 1997, one in 1998, and none in 1999.

Acute Respiratory Infections

Acute respiratory infection was the most common communicable disease in 1998 and 1999, accounting for 40% of all communicable diseases. There were 2,500 visits annually to the Accident and Emergency Department of Kingstown General Hospital for asthma; children under 10 years of age accounted for 45% of visits.

Zoonoses

No rabies cases were reported during the review period. Confirmed cases of leptospirosis have increased since the reemergence of the disease in 1995. During the period 1996–1999, 20 cases—all males—were laboratory confirmed; no deaths were reported.

HIV/AIDS

By the end of 1999, a total of 408 cases of HIV infection had been identified. Of these, 229 (56%) developed AIDS and 223 died. Persons between the ages of 15 and 49 years account for 84% of infections, with a male-female ratio of 1.8:1. The main mode of transmission is by heterosexual contact (59%). In 1998, the prevalence of HIV among pregnant women was 0.2%; the number of cases of mother-to-child transmission has increased. Figure 4 shows AIDS incidence by sex for the period 1994–1999.

Sexually Transmitted Infections

Gonorrhea, with an annual incidence of 88 cases from 1996 to 1999, is a concern. This infection is probably underreported, as many suspected cases are not submitted for laboratory investigation.

VDRL tests are done routinely to detect syphilis in pregnant women and blood donors. During the review period, an annual average of 5,141 blood samples were tested, with an annual aver-

age of 302 (5.9%) positive samples. In 1999, the prevalence of syphilis among pregnant women was 3.7%.

Nutritional and Metabolic Diseases

Nutritional disorders have increased among children age 5 years and younger. Energy-protein malnutrition among this age group rose from 4.3% in 1991 to 5.9% in 1999. A 1996 survey assessed the micronutrient status in a sample of children and pregnant women. The survey indicated that vitamin A and beta-carotene levels were within normal range, while 41% of children 1–4 years of age were iron deficient, and 21% were deficient in vitamin E. Approximately 19% of 5–19-year-olds suffered from iron deficiency, while only 2.6% suffered from vitamin E deficiency.

Diseases of the Circulatory System and Diabetes

Diabetes, hypertension, ischemic heart disease, cerebrovascular accidents, diseases of pulmonary circulation, and other forms of heart disease account for 7.9% (683 of 8,596) of average annual admissions to Kingstown General Hospital. Of 68,469 clinic visits in 1999, 14,049 (21%) were due to hypertension, 5,513 (8%) to the combination of diabetes and hypertension, and 4,858 (7%) to diabetes. Hypertension was the leading cause of clinic visits in all the health districts.

Malignant Neoplasms

The annual average number of diagnosed cases of malignant neoplasms rose from 35 in 1992–1995 to 50 in 1996–1999. Among females, the cervix was the main cancer site, accounting for 106 cases in 1996–1999 (a 77% increase over 1992–1995). The second most frequently observed site was the breast, accounting for 43 cases (14 cases more than in 1992–1995). Similarly, among males the number of cases of prostate cancer doubled from 12 in 1992–1995 to 24 in 1996–1999. The number of diagnosed cases of skin cancer (26) was greater than that of prostate cancer in 1996–1999.

Accidents and Violence

There were 214 deaths due to accidents and violence during 1996–1999. Drowning and submersion accounted for 53 deaths (25%), and homicide and injury purposely inflicted by other persons, 45 deaths (21%). Deaths due to other external causes accounted for 7% of all deaths.

Reports from the Accident and Emergency Department of Kingstown General Hospital showed that road traffic accidents are responsible for an average of 355 casualties annually.

RESPONSE OF THE HEALTH SYSTEM

The Government acknowledges the role of health in its quest for sustainable economic development. Accordingly, its goal is to ensure that the population has access to good quality primary health care services at minimal cost, and to improve the delivery of, quality of, and access to health care.

The Health System

Institutional Organization

Health services are offered at the primary and secondary levels. A network of 38 health centers spread throughout 9 health districts facilitates the delivery of primary care. Each health center has a core team consisting of a staff nurse/midwife, a nursing assistant, and a community health aide. The health team also includes a district medical officer, an environmental health officer, a family life educator, a social worker, and a pharmacist.

Secondary care is offered at Kingstown General Hospital. This is a 209-bed referral hospital offering various categories of specialist care. Specialist services for chronic care are offered through the Outpatient Department. Acute care not requiring specialist intervention is also provided by five district hospitals, which have a combined capacity of 58 beds. Acute and chronic psychiatric care is provided through the Mental Health Center, which can accommodate 120 inpatients.

Health Insurance

Health insurance coverage is provided solely by private insurers. An important aspect of the health sector is the proposed introduction of a national health insurance program, which would provide access to a well-defined comprehensive package of health care services.

Organization of Regulatory Actions

Health Care Delivery

All public health care facilities are owned and operated by the Government through the Ministry of Health, which sets standards of care and regulates practice within the health sector. The Ministry of Health, and particularly the Chief Medical Officer, guide the operation of private health care facilities.

Certification and Professional Health Practice

All medical practitioners must be accredited and registered to practice. All nurses are registered with the General Nursing Council.

Basic Health Markets

Pharmaceuticals are sold mainly by private pharmacists, who must be registered with the Ministry of Health. The public health system procures supplies through the Organization of Eastern Caribbean States Pharmaceutical Procurement Services (PPS).

Environmental Quality

Due to the country's small size and limited industrial activity, vehicular exhaust is responsible for most air pollution. In response to concerns about air quality, leaded fuel was phased out in 1999.

Topsoil erosion has become a problem due to deforestation, farming, and construction. The Central Water and Sewerage Authority and the Forestry Division regulate activities relating to soil usage and deforestation.

Saint Vincent and the Grenadines is party to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and while no legislation has been passed to implement its provisions, the country does not accept hazardous waste.

Food Quality

The Bureau of Standards, the Ministry of Agriculture, the Ministry of Fisheries, and the Veterinary Unit regulate food quality.

Organization of Public Health Care Services

Health Promotion

Health promotion services are offered mainly through the Ministry of Health's Health Education Unit. The Unit airs daily radio programs on health and produces a wide range of health promotion audiovisual and graphic materials. A network of family life educators at Youth Guidance Centers carries out school activities; health education and promotion activities are also carried out in the workplace. Community activities are geared primarily toward out-of-school youths, who are also targeted by Adolescent Health Clinics. These clinics offer a wide range of health promotion and protection services. The Unit also runs the national Parent Education Program, which aims to develop parenting and communication skills for women. Five programs are conducted each year in various communities.

The Ministry of Health and the Environment, other Government departments, the private sector, NGOs, and churches have collaborated in providing educational programs on HIV/AIDS to individuals, communities, and institutions. A National AIDS Coordinator was appointed in November 2000. Measures are in place to upgrade the knowledge of health care workers so that they can provide information and support to HIV-positive individuals, people working and living with AIDS and their families, and the general public.

Disease Prevention and Control Programs

The Vector Control Unit engages in continuous public education programs on dengue, targeting areas with high *A. aegypti* indices. It has also increased surveillance by conducting house inspections and treating breeding sources.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Most public and private care providers carry out disease surveillance. All information is forwarded to the Epidemiological Unit for collation and analysis in coordination with the Health Information Unit.

Public health laboratory services are provided by the Kingstown General Hospital laboratory.

Potable Water, Excreta Disposal, and Sewerage Services

The Central Water and Sewerage Authority (CWSA) is responsible for monitoring water resources, including potable water, and for the provision of sewerage services. The main sources of water are surface and underground sources; rain catchment is utilized on the Grenadine Islands. The Authority is responsible for monitoring water quality; the Public Health Department also plays a role in monitoring and regulation.

Over 60% of households are connected to the municipal water system; the remainder are located within one mile of a standpipe, through which they receive potable water. Over 60% of houses have septic tanks, 39% have pit latrines, and 1% have shared or no facilities.

Solid Waste Services

The main sanitary landfill is located on Saint Vincent. Sixty-four percent of households have weekly refuse collection service.

Food Safety

Food handlers clinics are conducted twice a year at district health centers, and provide education and information on food safety. All food vendors must attend in order to be certified.

Food Aid Programs

The Government's Nutrition Support Programme provided a hot meal for at-risk children in all primary schools. Some 6,700 children participate in the School Feeding Programme.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

Emergency services are offered at Kingstown General Hospital and at the 38 health centers. Inpatient services are available at the five district hospitals and at the main hospital. Each health center serves 1,200–3,000 persons, and offers acute and ambulatory care. Ambulatory services are available on a walk-in basis as well as through weekly clinics conducted by district medical officers. Three private hospitals, with a combined capacity of 24 beds, offer both ambulatory and inpatient care.

Auxiliary Diagnostic Services and Blood Banks

Auxiliary diagnostic services are offered primarily through the main referral hospital. Monthly visits to rural communities

provide opportunities to draw blood for diagnostic purposes. Blood for blood banks is only drawn at Kingstown General Hospital. There are two privately operated clinical laboratories which offer services to the public.

The country's only blood bank is operated by the Kingstown General Hospital laboratory. All blood donors are screened for hepatitis B, HIV, syphilis, and HTLV-1; screening for hepatitis C was added in 1998.

Specialized Services

Reproductive health care services are offered at all health centers. The Family Planning Unit conducts a comprehensive family planning program that provides information, education, and communication services, as well as a community outreach program, with special emphasis on reproductive health. Family planning services are offered daily, and child health services and pre- and postnatal care are offered weekly. Approximately 88% of pregnant women access government health centers for prenatal care, while the remaining 12% access care through the private sector. To interrupt mother-to-child transmission of HIV, all pregnant women are tested, and those who test positive are offered anti-retroviral drugs. Trained health care providers perform approximately 99% of all deliveries. Pap smears are routinely done in the postnatal period on all mothers. Cancer screening is given high priority, and men 35 years of age and older are targeted for prostate examination.

Mental health services are centralized, and acute care is available only at the Mental Health Center. These services are complemented by a monthly outpatient clinic in most health districts, as well as by home and community visits by Mental Health Center staff. Mental health services are being integrated in primary care, and 10 acute care beds for psychiatric patients are available at Kingstown General Hospital. The elderly receive home care through the Gerontology Services, which also offers care for the mentally and physically challenged, as well as abandoned persons.

The National School Health Programme focuses on children 5–9 years of age. Eleven family nurse practitioners are assigned to the country's 66 primary schools; services include screening for health defects, treatment, and referral for specialized services.

Community participation continues to be a priority in the delivery of health services. Active community participation in the planning, implementation, and evaluation of health programs was promoted, for example, through the creation of diabetic and hypertensive committees, health teams, and groups to promote breastfeeding. In addition, nongovernmental organizations are increasingly becoming social partners in the planning and implementation of health care services and programs.

With the appointment of a Health and Family Life Education Coordinator in the Ministry of Education, the Health and Family Life Education Programme for primary and secondary schools, which had not functioned during 1997–1999, was re-established in 2000.

Adolescent health programs aim to promote healthy development, as well as prevent and respond promptly to health problems. In 1999, adolescent clinics, adolescent groups, and Youth Guidance Centers were established in several communities throughout the country to educate adolescents about reproductive health and provide them with family and life skills training. Parenting programs have also been established for adolescent mothers. Health care for adolescents is mainly provided by the district health centers. Due to the vulnerability of this group to drug addiction, accidents, sexually transmitted infections, and emotional disorders, the Ministry of Health and the Environment delegated specific responsibilities for adolescent health to the National Family Planning Programme in 1999.

The growing elderly population stimulated the development and initiation of programs to promote and protect their health and well-being. In 1998, the Ministry of Health and the Environment initiated a program to enhance the integration of older persons into society. Activities are carried out in close collaboration with HelpAge International.

Until 1998, there were only two homes for the elderly in the country: a government-run 120-bed residential/health care institution and a private 7-bed facility. Subsequently, the latter establishment was expanded and its bed capacity increased to 20. In addition, two other private institutions were established, with a total capacity of 18 beds.

The Government Dental Service operates from the central clinic, located at Kingstown General Hospital, and five district clinics. Services include preventive and restorative dentistry, as well as minor oral surgery, and primarily target the school-age population, whose main problem was dental caries. A program was designed to educate children and parents about the common types of oral disease, as well as their prevention and control. A fluoride treatment program is in place at primary schools.

In the period under review, measures to improve the population's nutritional status focused on promoting the use of locally produced foods, improving the nutritional practices of children and adults, and providing nutrition information for relevant health workers and targeted population subsets. Dietary management programs were introduced for patients with diabetes and hypertension. Institutional standards were established for nutrition and food service operations.

Health Supplies

Saint Vincent and the Grenadines procures all drugs and equipment through the Organization of Eastern Caribbean States' Pharmaceutical Procurement Services, which is also re-

sponsible for quality control. The National Drug Formulary Committee meets annually and submits proposals for updating the Formulary. Vaccines are obtained through the PAHO Revolving Fund for Vaccine Procurement, with quality control assured through manufacturer certification.

Human Resources

The medical practitioners register included 89 doctors and 5 dental practitioners in 2000. Of these, 56 doctors work in the public sector (51 per 100,000 population) and 26 work exclusively in the private sector. Seven physicians are registered as employees of a private academic institution, Kingstown Medical College, which is part of St. George's University.

The Nursing Council's register included 398 trained nurses of various categories (362 per 100,000 population). In addition, there are 42 registered nursing aides, 45 community health aides, and 7 nursing tutors.

Health care workers receive training in the country and abroad, at Regional and international institutions. Training in nursing is available through Saint Vincent's government-run School of Nursing. Emphasis is placed on continuing medical education at all levels as a strategy to improve efficiency and productivity, and the Ministry of Health has financed the organization and hosting of such activities. Kingstown General Hospital offers continuing medical education sessions, with attendance being part of the normal duties of all medical personnel.

Health Research and Technology

Emphasis is placed on research activities at the district/community level, as well as the central level. Each health district is required to carry out one research activity per year. Studies focus on identified community health problems; progress and results are presented at monthly community staff meetings.

Health Sector Expenditure and Financing

From 1995 to 1999, Government expenditure on health averaged EC$ 31.13 million per year, which represented 3.9% of GDP. In 1999, health expenditure amounted to EC$ 37.34 million, or 13% of recurrent expenditure and 4.2% of GDP.

In 1999, the largest proportion of the health budget—32.8%—went to hospital services, 12.2% went to community health services, and 13.1% to pharmaceuticals. In 1999, revenue from user fees amounted to 2.21% of total health expenditure, less than the projected 6%.

External Technical Cooperation and Financing

Several Regional and international organizations provided financial and technical assistance to aid in the development of the health sector, including PAHO, CAREC, CFNI, CDB, CEHI, Kingstown Medical College, and the World Bank.

Technical cooperation was provided in the areas of solid waste management, public health, hospital expansion, and health education and research activities. The World Bank and CDB also provided financial support for the development of a solid waste management program. Kingstown Medical College provided assistance in the form of continuing medical education as well as assistance with research projects.

During 1997–2000, the governments of Cuba, Japan, and Taiwan offered technical assistance in training health personnel and infrastructural development.

FIGURA 1. Gross domestic product, annual growth, Saint Vincent and the Grenadines, 1991–1999.

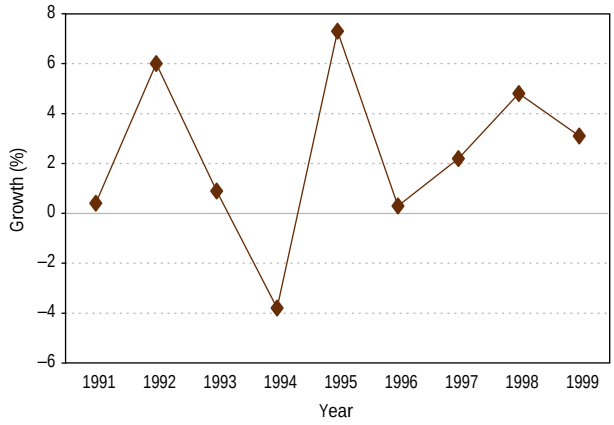


FIGURE 2. Gross domestic product, annual growth, Saint Vincent and the Grenadines, 1991–1999.

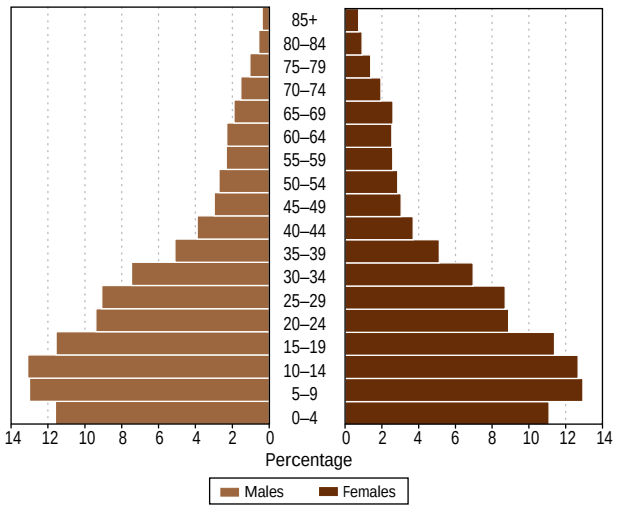


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Saint Vincent and the Grenadines, 2000.

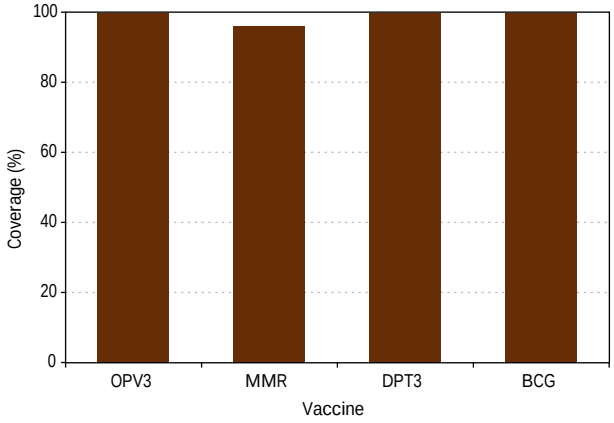
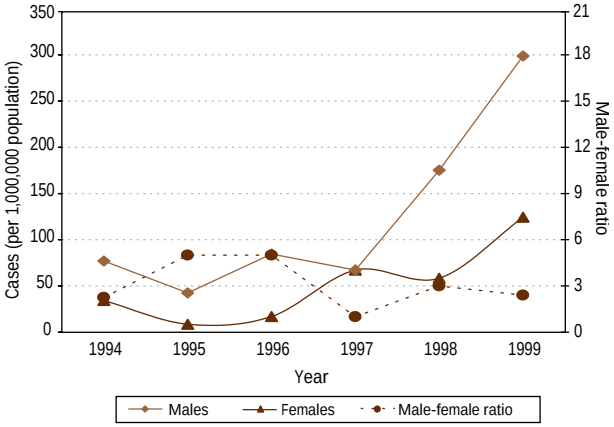


FIGURE 4. AIDS incidence, by sex, with male-female ratio, Saint Vincent and the Grenadines, 1994–1999.



SURINAME

OVERVIEW

The Republic of Suriname covers 163,820 km^2 along South America's northeast coast; it is bordered by French Guyana to the east, Guyana to the west, and Brazil to the south. The country has a tropical climate, with a mean annual temperature of 27º C and a relative humidity that hovers between 80% and 82%.

Most of the population lives along a 30-km wide coastal band that represents about 10% of the country's territory. The two most urban districts—Paramaribo and Wanica—cover 0.4% of the land, contain roughly 70% of the total population, and together have a population density of 464.3 persons per km^2. Sipaliwini District, in contrast, is by far the largest of the country's districts (130,566 km^2), but its population density is only 0.2 persons per km^2. Suriname's internal, heavily rainforested terrain is known as "the interior."

Suriname is governed as a parliamentary democracy, in which legislative power rests with the National Assembly's 51 elected members. Executive power lies with the President, who is chosen by the National Assembly. The country is divided into 10 administrative districts that are subdivided into 62 regions; each region has its own council.

The Bureau of Statistics estimated the 1998 unemployment rate in urban areas at 11%, nearly unchanged from the rates seen in 1996 and 1997.

GDP growth rates dropped from 7% in 1995 to 2% in 1998. In 1999, it was estimated that between 50% and 75% of the population lived below the poverty line.

The overall literacy rate for the population aged 15 years old and older is 86%, but in the interior, the figure reaches only 51%; the rate is 93% in urban areas and 87% in rural districts. The age group 25–34 years old has the highest rate, at 92%. Literacy rates declined with age, bottoming out at 63% in persons aged 65 years and older. Male literacy for all age groups is higher compared to that of females (82.3%).

The UN estimated Suriname's population in 1995 as 409,000 and as 417,000 in 2000. Figure 1 shows the population structure. According to 1990 census data, approximately 70% lived in urban areas. Along the coastal area, Creole and Hindustani groups accounted for approximately 70% of the population, followed by Javanese descendants of contract laborers from Indonesia, and smaller groups of Chinese, Lebanese, European, and a growing number of people of mixed ethnicity. In the interior, most of the population are Maroons (90%), who are descendants of runaway slaves, and Amerindians (10%), the indigenous population. These populations mainly live in remote areas along rivers, which are only accessible by boat or airplane. Typically, these tribal communities consist of settlements of 100 to 4,000 persons who usually have little or no basic sanitation, piped water, or electricity.

From 1996 to 1999, the average population growth rate was 1.3%, with a minimum of 1.1% in 1996 and a maximum of 1.5% in 1999. The total fertility rate in 2000 was 2.2. In Suriname, 95% of all births are registered. In 2000, the crude birth rate was 19.5 per 1,000, and the crude death rate was 6 per 1,000.

Mortality

Approximately 80% of all deaths registered at the civilian registry are certified. Between 1997–1999, there were 6,631 deaths. The ten leading causes of death account for 68% of the total deaths from defined causes. Diseases of the circulatory system accounted for 29.3% of all deaths during the period 1997–1999. Deaths from external causes during that period accounted for 10.3%, tumors for 8.4%, and diseases originating in the perinatal period for 5.2% of all deaths.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

About 80% of all births take place in a hospital. Roughly 12% of newborns have birthweights under 2,500 g. According to a 1999 study, low birthweight occurs more frequently in women

who have had fewer than three prenatal consultations, in teenage mothers, and in Hindustani mothers.

The country's Bureau of Public Health reported the infant mortality rate for 1999 at 29 deaths per 1,000 live births, and a survey estimated it at the same level for 2000. Most infant deaths are caused by conditions originating in the perinatal period (49%), followed by congenital malformations and gastrointestinal and respiratory infections. The mortality rate for children under 5 years old was 32 per 1,000 in 2000.

According to information from four major hospitals in Paramaribo, the perinatal mortality rate between 1995 and 1999 was approximately 30 deaths per 1,000 per year.

The major causes of death for children aged 1–4 years old were gastrointestinal infections (24%) and external causes (20%). The mortality rate for children under 5 years old is estimated at 37 per 1,000 live births.

Children in the interior have a higher prevalence of growth retardation (18%) than those living on the coast. Between 1997 and 2000, 125 children on the average were admitted for malnutrition.

Schoolchildren (5–14 years)

Accidents and trauma are the main cause of death in this group. Age-appropriate immunization is a requirement for entry into primary school (by age 6 years).

Adolescents (15–19 years)

Prostitution, crime, and drug use are important problems for adolescents in socially deprived areas.

Adults (20–59 years)

This age group represents 50% of the population. Accidents and trauma are the main cause of death among 20–59-year-olds, followed by HIV/AIDS and cardiovascular diseases. In 1997–1999, AIDS was the second and third leading cause of death for males and females in the age group 15–44 years old, respectively. Cancers ranked among the top three causes of death in women, while external causes and cardiovascular and cerebrovascular diseases did among men.

In 2000, oral contraceptives were the most popular method of birth control (70%). Some 40% of women with partners use contraceptives. According to a survey, contraceptive use was 51% in urban areas, 45% in rural areas, and 7% in the interior.

A maternal mortality survey for 1995–1999 reported an annual average of 73 maternal deaths per 100,000 live births. The 1999 maternal mortality rate reported by the Bureau of Public Health was 108 per 1,000 live births. For 1995–1999, the major causes of maternal mortality were hypertensive disorders complicating pregnancy and complications of delivery and puerperium.

The Elderly (60 years and older)

The elderly account for 7.6% of the total population, with slightly more females (16,239) than males (14,639). The major causes of death in this group are hypertension and heart disease, followed by cerebrovascular disease and malignant neoplasms. Most cancer deaths (27%) were cancers of the gastrointestinal tract, followed by cancer of the reproductive organs (17%), of the respiratory organs (11%), of the female breast (9%), of blood and lymphoid tissues (9%), and of the urinary system (4%).

Family Health

An estimated 40% of households consist of 3–4 members. Of children aged 0–14 years old, 62.2% live with both parents, 22% live with only their mothers, and 7% live with neither parent. In the interior, however, fewer than 50% live with both parents, 34% live only with their mother, and 12% live with neither parent.

The Disabled

The Ministry of Social Affairs coordinates special programs for the disabled. In addition, nongovernmental organizations undertake activities on behalf of such groups as the blind, the hearing-impaired, former leprosy patients, and children with physical and mental disabilities. A rehabilitation center that is part of the Academic Hospital in Paramaribo provides services to patients referred for fitting of artificial limbs, physical therapy, occupational therapy, and speech therapy.

Indigenous and Other Special Groups

The Medical Mission, a government-funded, nonprofit organization, is the sole health care provider for the more than 50,000 Maroon and Amerindian people who live in the country's nearly inaccessible interior. Curative and preventive health services are free of charge and include transportation to and treatment at the hospital in Paramaribo. There are between 800 and 1,000 referrals made each year to the hospital in Paramaribo.

There are about 20,000 to 40,000 persons who work as gold miners (*garimpeiros*) in Suriname, and this industry predisposes them to mercury poisoning and malaria transmission; gold miners also are particularly beset by HIV/AIDS and other sexually transmitted infections.

By Type of Health Problem

Vector-borne Diseases

There were between 80,000 and 90,000 cases of malaria each year, most of which occurred in the interior along the eastern border and the Marowijne River. In endemic areas, 40% of the cases are among children under 5 years old and 60% are in children under the age of 14 years. Chloroquine resistant malaria due to *Plasmodium falciparum* is widespread, but quinine resistance has not yet been established.

The number of reported dengue cases rose considerably, skyrocketing from 3 laboratory-confirmed cases in 1997 to 149 in 1998; all cases were serotype 1. There were no reported cases of

dengue hemorrhagic fever/dengue shock syndrome in 1997, but 60 cases were reported in 1998, with the peak occurring in May of that year. By the time the epidemic was over in the early months of 2000, there had been more than 406 confirmed cases. Between 1998 and 1999, there were 214 cases of serotypes 1 and 2. The dengue epidemic left one death in 1998 and 15 in 1999. A yellow fever vaccination campaign started in the second half of 2000.

Diseases Preventable by Immunization

Between 1997 and 1999, there were 6 tetanus cases, 100 rubella cases, and 3 confirmed cases of congenital rubella syndrome. In that same period, there were two nationwide MMR vaccination campaigns for children and adults. Vaccination coverage for DTP, OPV, and MMR is approximately 85%. Hepatitis B is not yet included in the immunization schedule for infants.

Intestinal Infectious Diseases

Salmonella infections increased from 14 cases in 1995 to 87 cases in 1999. Shigella infections, on the other hand, declined from an average of 20 cases each month in 1995 to 9 per month in 1999. About 4.5% of the 7,704 stools examined at the Bureau of Public Health in 2000 tested positive for helminthes, of which 96.6% were strongyloides; other identified helminthes were trichuris, ascaris, and enterobius. The Government recently launched a campaign to increase the inspection of foods for sale.

Chronic Communicable Diseases

The Bureau of Public Health's tuberculosis program reported a yearly average of 87 suspected cases in 1997–2000; 53 were confirmed. Two of the confirmed cases in 1998, 9 in 1999, and 16 in 2000 were HIV coinfections. Since 1999 all clinical tuberculosis patients are tested for HIV.

The dermatology service reported 49 cases of leprosy in 1997, 62 in 1998, and 50 in 1999; 30% of all cases between 1997 and 1999 were among children 0–14 years.

Zoonoses

Seroprevalence surveys for *Trypanosoma cruzi* conducted among blood donors in 1997 and 1998 yielded no positive cases for Chagas' disease.

In 1998, there was a localized rabies outbreak in the interior due to bat bite transmission. Six children developed the clinical picture and one was serologically confirmed; all died.

There were 1,017 suspected cases of leptospirosis between 1995–1999, of which 191 were serologically confirmed; 10 died. Of the confirmed cases, 70% were among persons 16 to 45 years old.

HIV/AIDS

HIV/AIDS was the tenth leading cause of death in 1997, the ninth in 1998, and the eighth in 1999. Between 1995 and 1999, AIDS death rates tripled, rising from 5.6 per 100,000 in 1995, to 9.3 in 1997, 16.3 in 1998, and to 17.7 in 1999. For males and females in the age group 15–44 years, AIDS has been respectively the second and third leading cause of death for the period 1997–1999. In 1997–1999, the male/female death ratio was 2:1. In 1997 there were 182 HIV-positive cases, 186 in 1998, 267 in 1999, and 285 in 2000. Commercial sex workers, with a prevalence of 20%, are at an especially high risk.

Sexually Transmitted Infections

Gonococcal infections almost doubled, rising from 327 cases in 1998 to 629 in 1999. There were 67 cases of syphilis seen in 1998 and 233 in 1999; 8 cases of congenital syphilis were reported in 1999.

In 1997, the Medical Mission began to undertake a project for strengthening services that deal with sexually transmitted infections and HIV in the interior and ultimately decrease their transmission. The project's activities, which will continue for five years, will eventually be integrated within the Medical Mission units' daily tasks.

Nutritional and Metabolic Diseases

Diabetes mellitus ranks seventh as an underlying cause of death, with 228 deaths, which represented 3.4% of all deaths between 1997 and 1999.

Diseases of the Circulatory System

Diseases of the cardiovascular system have been the leading cause of death for many years, accounting for 18.7% of all deaths in 1997–1999, 89% of which were in the age group 45 years and older. Cerebrovascular disease ranked second, accounting for 10.6% (704) of all deaths in that period.

Malignant Neoplasms

Malignant neoplasms, with 554 deaths, ranked fourth as a cause of death between 1997 and 1999; one-third were cancers of the reproductive organs (77% female and 23% male). Cervical cancers were the most common of these malignancies, followed by female breast cancers. Around 60 new cases of cervical cancer are diagnosed each year—64 in 1997, 57 in 1998, 52 in 1999, and 65 in 2000. Cases of gastrointestinal tract cancer (27%), cancer of the respiratory system (11%), and cancer of the lymphopoietic system (9%) also were seen.

Accidents and Violence

Up to 10% of registered deaths are due to external causes, mostly accidents and violence. The latter are the leading cause of death for both men and women between the ages of 5 and 44 years. Traffic accidents represent 25% of deaths from external causes (170 deaths in 1997–1999). Suicide and homicide account for 16% and 13% of deaths, respectively.

The Ministry of Justice and the Police recorded 214 fatal traffic accidents in 1997–1999. Since 1996, a yearly average of

24,000 crimes are registered, of which 20% are homicides and aggravated assaults. Approximately 2% of crimes involve sexual offenses, resulting in 500–600 reported violations each year.

Emerging and Re-emerging Diseases

In 1998, there were 2 cases of meningococcal meningitis and 5 cases of *Haemophilus influenzae* type b. In 1999, there were 3 cases of *Cryptococcus neoformans* and 6 cases of *H. influenzae* type b. There were 8 reported deaths due to meningitis in 1997, 11 in 1998, and 9 in 1999.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Government considers children, women, and the elderly as priority groups for health care. The Ministry of Health is responsible for ensuring the availability, accessibility, and affordability of health care. The Minister is responsible for the country's health services, and the Ministry's functions encompass policy making, evaluation, coordination, setting of standards and values, and inspection.

Since 1998, the country's environmental protection policy making is shared by three governmental levels, which coordinate their work in this area. The first, the National Environmental Council, is a policy making body within the Office of the President. It is charged with developing environmental policies for the president's consideration, as well as advising and guiding the National Institute for Environment and Development in Suriname to set priorities for environmental action. The Institute, in turn, functions as the Council's operational arm. Finally, line ministries that deal with sector-specific environmental issues also participate in setting environmental policy, and work through the Inter-Ministerial Advisory Commission.

The National Council on Occupational Health is in charge of the development of a national plan on occupational health and safety.

Health Sector Reform Strategies and Programs

The health sector is contemplating reforms designed to improve the population's health and overall well-being. Specifically, the sector will attempt to address health care consequences of macroeconomic problems such as the flight of qualified personnel; shortage of essential drugs; deterioration of the physical infrastructure; and huge deficits, particularly in secondary health care.

The Health System

Institutional Organization

The health care system's core institutions are the Ministry of Health's Central Office, Bureau of Public Health, and Inspectorate. The Central Office and the Inspectorate are responsible for overall health planning and they set standards, function at the level of global health planning, and are responsible for conducting inspections and carrying out monitoring; the Bureau is responsible for program development.

The Government provides primary health care for the poor and the near-poor in the coastal area through the Regional Health Service, which operates 41 clinics in all eight coastal districts. Clinics are headed by a physician and are clustered in nine geographic areas; one of the physicians works as the area coordinator. The Medical Mission, a nongovernmental organization that receives a government subsidy, is the sole primary health care provider for the more than 50,000 Amerindian and Maroon peoples living in the interior. The Medical Mission operates 46 health centers; five medical doctors working with 60 health assistants supervise the centers. Health assistants are enlisted from interior communities and receive a three-year training that is officially accredited by the Ministry of Health. The Mission identifies seven regions in their health care delivery system, each one supervised and managed by physicians.

The Government also runs vertical programs that target special populations or conditions, including programs dealing with sexually transmitted infections, leprosy, youth dental care, malaria, and immunization. The Government also recognizes some NGOs to provide specific health care services, such as the Foundation for Family Planning (Stichting Lobi), which specialized in reproductive health.

General practitioners working in private practice serve people who are covered by the state health insurance, private firm plans, or self-paying clients. Large firms, such as a bauxite company operating in the country, also run primary care clinics that provide services to employees and their families. Other companies employ general practitioners on a needs basis.

All hospitals are located in the coastal area. There are three public hospitals—two in the capital city and one in rural Nickerie District—and two private hospitals, both in the capital. Through an agreement between the Medical Mission and the private Diakonessen Hospital, patients from the interior receive care at the hospital; these patients' care is paid for by the Ministry of Social Affairs.

Health Insurance

There are three main types of health insurance. First, the State Health Insurance Fund (SZF) provides a comprehensive package of health benefits for approximately 35% of the population, including civil servants and a few voluntary enrollees. The fund is financed by wage tax contributions, subsidies from general tax revenues, and voluntary premiums. Second, the Ministry of Social Affairs covers primary and secondary care services of the poor and the near-poor free of charge. This modality covers approximately 42% of the population. Finally, private firm insurance plans and private health insurance plans cover about 20% of

the population. At the Academic Hospital, some 37% of outpatient visitors were covered by SZF insurance and 36%, by Ministry of Social Affairs insurance.

All citizens over 60 years old receive a monthly government pension through the Ministry of Social Affairs.

Organization of Regulatory Actions

Certification and Professional Health Practice

The Ministry of Health regulates and supervises the registration and certification of physicians, midwives, and pharmacists. In addition to getting their license from the Ministry, physicians must obtain permission from the Director of Health to practice medicine. Other health professions are not regulated.

Basic Health Markets

All imported drugs must be registered with the government's Committee on Drug Registration; the Pharmaceutical Inspection office inspects all pharmacies and any pharmaceutical producing industries.

Environmental Quality

The National Institute for the Environment and Development has been mandated to enforce environmental quality regulations. The Institute is relatively new and it has limited resources; as a result, its activities mostly have involved the inventory of environmental data and the enhancement of environmental awareness. The Bureau of Public Health is charged with the quality control of environmental health.

Organization of Public Health Care Services

Health Promotion

In addition to government efforts, NGOs have taken an active role in activities designed to attain certain health outcomes or to disseminate information regarding specific health issues. For example, breast-feeding promotion, which is conducted through the Baby Friendly Initiative, has increased in the reporting period, and breast-feeding support groups have been set up. Approximately 13% of all children are exclusively breast-fed and 87% are partially breast-fed for three months; there are no differences between urban and rural areas.

The Bureau of Public Health's health education department provides information to the public on prevention of malaria, dengue, leptospirosis, yellow fever, and other communicable diseases and breast-feeding practices.

Disease Prevention and Control Programs

A school health program in primary schools provides vaccination services, annual physicals, and visual screening. Suspected health problems are referred to a medical doctor.

The Malaria Control Board has put in place a "Roll Back Malaria" strategy for Suriname. The strategy relies on a multisectoral and a multifaceted approach, whereby the Bureau of Public Health and the Medical Mission promote vector control activities, spraying, and the use of impregnated tents. For example, a project to promote the use of impregnated bed nets in the interior relied on local women's groups distributing the nets in the community. To date, only 5% of the bed nets are impregnated, but considering that 72% of children under 5 sleep under bed nets, the potential impact of this effort is great.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Surveillance is the responsibility of the Bureau of Public Health's Epidemiology Unit, which also is responsible for case control and investigations. Surveillance for all reportable diseases includes a hospital surveillance system and a telephone sentinel system.

A surveillance system for maternal deaths began to function in January 2000.

Potable Water, Excreta Disposal, and Sewerage Services

The country's drinking water is provided by the Suriname Water Company and the Water Supply Service of the Ministry of Natural Resources; the Ministry of Regional Development provides logistic support.

About 78% of the country's population is connected to a piped water supply, and 13% have easy access through standpipes. In the urban region, 91% of the population has drinking water piped into their dwellings or their yards. In coastal and interior rural areas piped water supply coverage is 50%. Most water supply stations use groundwater as their source; the second most important source of drinking water is rainwater collected during the rainy season. In the coastal region 65% of the population uses piped water, but in the interior only 18% have access to piped water; about 60% of the people in the interior use river or stream water. Five private companies provide drinking water to villages near their operations.

As a rule, drinking water is not disinfected in Suriname. The only treatment public water supplies receive in urban areas is aeration and rapid filtration to remove iron and manganese. In the interior, piped drinking water is often drawn from rivers and is distributed untreated. All distribution systems are compromised through poor maintenance, water theft, and leakages. In the interior, mercury pollution from goldmining activities, as well as excessive pesticide use on agriculture lands in coastal areas, may pose a major threat to drinking water quality; such poisoning has been documented in fish.

Responsibility for sewage management and wastewater disposal is shared by the Ministry of Public Works' Sewer and Drain Division, the Bureau of Public Health's Environmental Control Division (Ministry of Health), and the Ministry of Regional Development, which provides logistical support.

About 80% of the population lives in households with sanitary excreta disposal (99% in urban areas and 76% in other coastal areas and the interior). The most common facilities are flush toilets with connection to a septic tank.

In the interior, 70% of the people do not have sanitary means of excreta disposal. Most people defecate in rivers, bush, or fields, which is a major public health threat, considering that 60% of this population also drinks from these rivers.

Solid Waste Services

The Ministry of Public Works' Department of Solid Waste is responsible for collecting and disposing of garbage and other wastes. Indiscriminate dumping sites are very common in Paramaribo and throughout coastal and rural areas.

Infectious and hazardous waste from the government hospital mainly is collected and delivered to the sanitary landfill of the national aluminum company (SURALCO). One incinerator for hospital waste has been built, but is not operational; SURALCO is providing support for the installation of a new incinerator at a private hospital. Clinics outside the city dispose of their waste by dumping or burning.

Pollution Prevention and Control

The Bureau of Public Health is charged with controling air quality. Its inspection activity targets small-scale entrepreneurs such as back yard industries and shops that paint and repair automobiles. Since 1999, all gasoline sold in Suriname is lead-free. Multinational mining companies operating in Suriname adhere to dust emission policies and guidelines set at their international headquarters.

Food Safety

The Bureau of Public Health is responsible for the protection and control of food, which includes the inspection of restaurants, food handlers, and food processing plants. A food safety program for food handling and food processing is being implemented by a working group that includes both governmental and private sectors. Suriname has a new, high-quality abattoir.

Food Aid Programs

Food aid programs are mainly handled by NGOs who raise national and international funds for specific groups living in poverty. In addition, food aid projects have been undertaken in some elementary schools located in low socioeconomic neighborhoods, where children receive bread or a warm meal as a way to help reduce malnutrition.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

Suriname has only one emergency medical care unit, located at the Academic Hospital. There were about 34,000 emergency visits in 1996, of which 50% were due to accidents.

The 402-bed Academic Hospital had an occupancy rate of 70% in 1999. The 's Lands Hospital, with 280 beds, had an occupancy rate of 65% in that same year. The 227-bed Diakonessen Hospital had an occupancy rate of 52% and Nickerie Hospital, with 75 beds, had an occupancy rate of 68%. All hospitals provide ambulatory and inpatient care. The Military Hospital, with its staff of 5 medical doctors, has been functioning as an ambulatory facility for army personnel and their families.

The private sector mainly provides curative health services, whereas the government-subsidized Regional Health Service and the Medical Mission provide curative and preventive health services.

Approximately 60% of children visit a child health clinic in their first year of life. About 80% of consultations of children under 5 years old are covered by the Regional Health Service, a primary health care organization that offers this service for free in the coastal area. The remainder of consultations in this age group are handled by NGOs in the urban areas and by the Medical Mission in the interior.

Auxiliary Diagnostic Services and Blood Banks

Each hospital has its own laboratory, and a private laboratory also offers limited testing.

The National Blood Bank had 2,302 permanent donors registered in 1999. All blood donors are screened for HIV, HTLV, hepatitis B and C, malaria, and syphilis. Quality control mechanisms for HIV and HTLV are in place through the National Reference Laboratory for HIV (at the Bureau of Public Health) and through other international reference laboratories. The Microbiology Department at the Medical Sciences Institute also participated in an effort to establish quality control for hepatitis B. The National Blood Bank supplies all blood for open heart surgery at the Academic Hospital, which started in November 1998. In 1999, two open heart surgery sessions were carried out, each one operating on 25–30 patients. The Blood Bank also supplies blood products to all five hospitals and the Foundation for Renal Dialysis. In 1998, 5,615 units of blood products were supplied, and the demand increased to 6,816 units in 1999.

Specialized Services

The Rehabilitation Center's staff of 11 paramedics handles some 7,000 patient visits each year; 30 children of the school for the handicapped also receive services at the center. Most of these children suffer from cerebral palsy, followed by encephalitis, myopathy, paraplegia, and osteogenesis imperfecta. Of the patient population visiting the center, 35% are hemiplegics, 30% have pathologies concerning the spine, and the remainder have suffered palsies, amputations, multiple trauma, and locomotoric lesions.

All five hospitals offer an array of specialist outpatient services. The public Academic Hospital employs many of the specialists and offers almost all types of specialty care. Some specialist services are offered only at the Academic Hospital: orthodontic surgery, pulmonology, and ophthalmology.

Dental services are available for all primary school children in the coastal area. Dental clinics are located in schools and at Regional Health Service clinics. As of May 2000, 50 dental nurses and 38 dental assistants were employed at the dental health service.

The 280-bed Psychiatric Center is the only institution that provides mental health care in Suriname. There are associations for Alzheimer's disease patients and their families. The NGO Ypsilon provides support to families of those affected by schizophrenia.

Stichting Lobi promotes responsible parenthood, counsels on family planning methods and fertility issues, and provides basic infertility testing and cervical cancer screening. In 2000, 20,959 women were screened for cervical cancer, of whom 112 had pathological Pap smears; of these, 8 were at invasive stages. One-third of the women were 40–50 years old, and 28% were 30–40 years old. There were 59 abnormal smears out of 8,741 women screened in 1998 and 76 abnormal smears of 19,806 women tested in 1999.

A new gerontology unit established within the Bureau of Public Health is designed to improve institutional and home care for the elderly.

Health Supplies

Drugs on the national drug list are provided through Suriname's Drug Supply Company, but these drugs are sometimes not readily available.

The national drug company imports 90% of all drugs; it manufactures the remaining 10%, and its Quality Control Department conducts quality control. The Company also handles most of the marketing to the commercial and public sector. The Company obtains all vaccines through PAHO's Revolving Fund for Vaccine Procurement and then markets them to the commercial and public sector. Nearly all reagents are imported by the Company and marketed to the commercial and public sector.

Human Resources

In 1994–1999, 64 physicians were certified by the Faculty for Medical Sciences at Anton de Kom University of Suriname. In May 2000, 194 medical doctors were working in the private and public health sectors; the male to female ratio was 2 to 1. In addition, 101 medical specialists were working in the country. The sex ratio among medical specialists was 6:1.

The Regional Health Service's 41 clinics are staffed by 50 physicians, 58 registered nurses, 64 nurse aides, and 12 midwives. The country also has 24 pharmacists, 34 physiotherapists, 35 dentists, 698 registered nurses, 440 nursing aides, and 59 midwives in professional practice. In addition, the traditional midwives attend almost 25% of women in the interior for their maternity services. It should be noted that one of the gravest human resource problems in Suriname is the flight of personnel; for example, many nursing graduates have left the country to work in the Netherlands and Netherlands Antilles, where wages are better.

Continuous medical education is available through the Skillslab at the Faculty of Medical Sciences.

Health Research and Technology

Internationally funded research projects are conducted by the Ministry of Health or other governmental institutions. Most research projects are limited to surveys, such as malnutrition or mortality surveys.

Health Sector Expenditure and Financing

Per capita health care costs have increased markedly, rising from US$ 43.60 in 1995, to US$ 74.24 in 1996, and US$ 101.70 in 1997. Public expenditure accounted for an estimated 3.5% of GDP (market price) in 1998 compared to 4.8% in 1997. The per capita health costs dropped to an estimated US$ 66.40 in 1998.

In 2000, Sf 47.5 billion (Surinamese guilders) was budgeted for health care: preventive and curative primary care together accounted for 28%, secondary care for 49%, drug procurement for 10%, and training and education for 1%.

In 1999, health care institutions received a total of Sf 8.7 billion from the Government. The largest subsidy (Sf 1.8 billion, or 21%) was allocated to the Academic Hospital, and the Medical Mission and the Regional Health Service received approximately Sf 1.5 billion, or 17% each. The Psychiatric Hospital received Sf 1.38 billion (or 16%) and the 's Lands Hospital received Sf 1.05 billion. Other institutions receiving subsidies were Nickerie Hospital, Saint Vincentius Hospital, the Foundation for Youth Dental Health, and the nursing school.

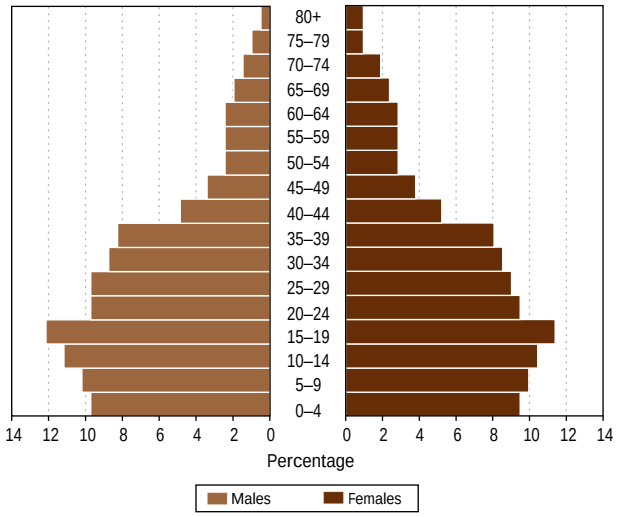
External Technical Cooperation and Financing

In November 1998 the Government of Suriname and the Inter-American Development Bank entered into a technical cooperation program to support health sector reform in Suriname, and the Bank granted the country US$ 2,750,000 to that end. This project will assist the Government of Suriname in developing and launching policy reforms to improve the efficiency, equity, quality, and financial sustainability of health care in Suriname.

The European Economic Community has provided resources for strengthening STI/HIV services in the interior of Suriname. Specialized service arrangements are in place with the Kingdom of the Netherlands through the Dutch Treaty Fund. UNFPA has financed an adolescent reproductive and sexual health project.

Suriname receives support from the International Planned Parenthood Federation for Stichting Lobi. Rotary International and the governments of France and the United States of America have provided funding for the "Roll Back Malaria" activities. PAHO, UNDP, and UNICEF all have ongoing programs and financing available to support technical cooperation in various health sector areas.

FIGURE 1. Population structure, by age and sex, Suriname, 2000.



TRINIDAD AND TOBAGO

OVERVIEW

Trinidad and Tobago is a twin island democratic republic located off the northeast coast of Venezuela, in the Caribbean Sea. It has a total area of 5,128 km^2, of which Trinidad covers 4,828 km^2.

The country gained independence from Britain in 1962 and became a republic in 1976. Executive power lies with the Prime Minister and the Cabinet; legislative power rests with the Parliament. The bicameral legislature has an elected House of Representatives and an appointed Senate. The island of Tobago has considerable autonomy under the Tobago House of Assembly Act. The local government system consists of 14 corporations made up of two cities, three boroughs, and nine regional corporations. The regional corporations are elected bodies empowered to take responsibility for government activities in their particular regions, mainly the maintenance and hygiene of the general environment and public buildings, including solid waste disposal.

The economy has been heavily dependent on the production and export of petroleum and gas, but the Government is attempting to diversify it. This dependency had grave consequences when oil prices dropped in 1998 and the Government had to adjust its budgetary allocations—including those to the social sector—and reexamine its priorities in view of the revenue shortfall. Despite this setback, the Trinidad and Tobago dollar has suffered no further decline since it was floated in 1993. In 2000, the oil and gas sectors accounted for 26% of Government revenue. Although the energy sector continues to be the engine of growth, the non-oil and gas sectors show steady growth, with some 60,000 new jobs being created over the period 1994–1999.

Trinidad and Tobago's GNP grew by 5.1% in 1999, increasing from 4% in 1998 and 2.9% in 1997 (Figure 1). The petroleum and non-petroleum sectors grew from 1997 to 1999. Inflation was 3.7% in 1997 and decreased to 3.4% in 1999.

Foreign reserves more than doubled since December 1995, from US$ 652 million to US$ 1.7 billion in July 2000. Per capita GNP in 1998 was US$ 4,520, an increase of 14% over 1996.

The labor force participation rate has not experienced major changes over the period 1997 to 1999, with 45.9% to 46.6% for females and 74.8% to 74.9% for males.

A 1996 study conducted by the Ministry of Social Development found that 35.9% of the population was poor (using a poverty line of US$ 100 per capita). Within the country's counties, poverty ranged from 8.3% in Diego Martin to 56.3% in Rio Claro/Mayaro. The highest levels of poverty were seen among the unemployed, particularly in female-headed households and those with least education.

During the period 1997–1999, females accounted for approximately 40% of the labor force, while males accounted for approximately 60%. The male unemployment rate fell from 13.2% in 1996 to 10.9% in 1999, while the female unemployment rate decreased from 19.4% in 1997 to 16.7% in 1999. Nevertheless, women have higher participation rates in the informal sector and in the public service, where they tend to occupy low-level clerical posts and earn lower salaries. Female income was lower in every income group compared to that of men.

In 1997, the official adult literacy rate (aged 15 years and over) was 97.8%. UNICEF's 1999 State of the World's Children report indicated for the period 1990–1995 that 95% of primary school entrants reached grade 5. The same report stated that the secondary school male-female enrollment ratio was 66:79 for 1990–1996, and the net primary school enrollment ratio was 83:94 for 1993–1995. The majority of students at the secondary level are females, and more than 80% of college graduates are female.

Over the period 1996–1999, the drop-out rate at the primary level decreased from 60% to 50% for males and increased from 40% to 70% for females, while at the secondary level, a decrease from 100% to 80% was seen for males and from 70% to 60% for females. A policy established in 2000 guarantees placement at the secondary level for all students who complete primary school.

Confidence in the economy has resulted in record inflows of foreign investment, particularly in the energy and gas sectors. In spite of the positive indicators of economic growth, however, variations in the poverty rate by county suggest that the benefits of economic progress are not equitably distributed.

Trinidad and Tobago's society's main ethnic roots are in Africa and India, but it also has strong historical and cultural ties to Great Britain. It is estimated that 39.6% of the population are of African descent, 40.3% are of East Indian descent, 18.4% are of mixed racial ancestry, and the rest are Caucasian, Asian, and others.

The 1997 mid-year population was estimated at 1,274,799, representing an increase of 0.9% when compared with 1996. Figure 2 shows the population distribution by age and sex in 1997. Approximately 74% of the population is urban. The clustering of ethnic groups by geographic location is notable: people of East Indian descent predominate in rural and more agriculturally oriented areas.

The slowing of the population growth rate is in part due to a decline in total fertility rates, which decreased from 2.1 in 1997 to 1.6 in 2000. The general fertility rate in 1997 was 52.2 births per 1,000 women of childbearing age. Crude birth rates per 1,000 population also decreased, from 16.6 in 1997 to 13.5 in 2000. As a result, over the last 20 years, the proportion of the population under 15 years of age has dropped below 3 0%, while the proportion over the age of 60 has increased steadily, to 6%. The dependency ratio declined steadily, from 0.58 in 1995 to 0.52 in 1998 and 0.47 in 2000. Life expectancy at birth in 1997—71.5 years for males and 76.2 years for females—increased to 72 years for males and 76.7 for females in 2000, for a combined life expectancy of 74.3 years. However, much of the gain in life expectancy at birth has been in the under 15 years age group.

Mortality

The crude death rate in 1997 was 7.2 per 1,000 population and 6.0 per 1,000 population in 2000. There were 9,157 deaths registered in 1997; of these, 55% were males. Maternal mortality was 67.5 per 100,000 women aged 15–44 years in 1995 and 70.4 in 1997. Children under 1 year accounted for 3.5% (316 deaths) of all deaths in 1997; 1–4-year-olds, for 0.6% (58 deaths); 5–9-year-olds, for 0.4% (38 deaths); 10–14-year-olds, for 0.5% (48 deaths); 15–19-year-olds, for 1% (92 deaths); 20–59-year-olds, for 30% (2,715 deaths); and persons aged 60 years and older, for 64% (5,858 deaths).

Of the total deaths in 1997, diseases of the circulatory system accounted for 3,658 (40%), neoplasms for 1,297 (14.2%), communicable diseases for 851 (9.3%), external causes for 569 (6.2%), certain conditions originating in the perinatal period for 215 (2.3%), and signs, symptoms, and ill-defined conditions for 187 (2.0%). Figure 3 shows estimated mortality rates by broad groups of causes for 1990–1994.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

The infant mortality rate remained stable during the period 1995–1997, at 17.1 deaths per 1,000 live births. The neonatal mortality rate varied from 13.9 per 1,000 live births in 1995 to 13.1 in 1997, and deaths due to conditions originating in the perinatal period ranged from 19 in 1995 to 14 in 1997. However, these decreases may be due to errors in reporting or because the number of deaths are small. Over the period 1995–1997, the leading causes of neonatal death were asphyxia (49.6%), hypoxia (28%), and birth trauma (3.2%).

The mortality rate for children under 5 years of age increased from 17.1 per 1,000 live births in 1996 to 20 per 1,000 live births in 1999. For the 1–5 years age group, the mortality rate in both 1998 and 1999 was estimated to be 3 deaths per 100,000 population.

Based on the Caribbean growth chart, 3% of children 0–4 years of age were estimated to be malnourished and 3% were overweight in 1998 and 1999.

From 1983 to 2000, 418 pediatric cases of HIV infection were reported.

Schoolchildren (5–9 years)

The mortality rate among children age 5–9 years in 1997 was 32 per 100,000 population. In that same year, the leading causes of death (38) in this age group were external causes (40%), neoplasms (21%), communicable diseases (21%), and diseases of the circulatory system (3%).

In 1999, a survey among 5–9-year-olds revealed that 24% were obese. A nationwide school feeding program that caters to students based on socioeconomic and nutritional conditions is in place.

Adolescents (10–14 and 15–19 years)

The 1997 mortality rate was 36 per 100,000 population for 10–14-year-olds and 73 per 100,000 population for 15–19-year-olds. Suicide is the second leading cause of injury-related death and is a major problem in the 15–24 years age group, especially among females. The leading causes of the 48 deaths in the 10–14 years age group in 1997 were external causes (46%), malignant neoplasms (15%), communicable diseases (10%), and diseases of the circulatory system (4%). The leading causes of the 92 deaths in the 15–19 age group were external causes (44%), communicable diseases (14%), diseases of the circulatory system (8%), and malignant neoplasms (6.5%).

Teenage girls outnumbered boys 5 to 1 for new HIV infections and 4.5 to 1 for AIDS cases reported in 1996. Among young people aged 15–24 years with HIV infection, the male-female ratio is 1:2, compared to 1:1.3 for all age groups combined.

In 1997, the age group 15–19 years accounted for 14% of all pregnancies, with an age-specific fertility rate for the group of 11.5 births per 1,000 population. During 1996–1999, some 0.5% of all pregnant women attending the community health services were under 15 years of age, and between 20% and 23% were in the 15–19 years age group.

A survey done in Tobago in 2000 by the Family Planning Association of Trinidad and Tobago indicated that onset of sexual activity occurred as early as 12 years (25%), and that 50% of

15-year-olds had engaged in sexual activity. As many as 39.4% of those already sexually active used no contraception.

A national survey done in 2000 among secondary school youths aged 13–15 years found the age of initiation of smoking to be as young as 12–13 years in Trinidad and 10–11 years in Tobago.

Adults (20–59 years)

In 1997, the mortality rate for 20–59-year-olds was 394 per 100,000 population. The major causes of death in this age group were diseases of the circulatory system (27.3%), communicable diseases (17.4%), malignant neoplasms (14.8%), external causes (13.7%), and signs, symptoms, and ill-defined conditions (1.5%). AIDS is an important contributor to deaths due to communicable diseases.

In 1999, 93% of women were attended by trained personnel during pregnancy. In 1997, 99% were covered with institutional delivery by trained personnel. From 1996 to 1999, 16.6% of women were attended by a trained person in the first trimester.

Smoking prevalence is highest in the 25–44 years age group. Preliminary figures from the Global Youth Tobacco Survey conducted in 2000 among 13–15-year-olds by the Ministry of Health showed that, in Trinidad, 31.8% responded that their fathers smoked and 2.7% that their mothers smoked. The figures for Tobago were 18.6% and 0.9%, respectively.

Statistics from the Substance Abuse and Treatment Center revealed that persons between the ages of 25 and 44 accounted for 70% of inpatient care from 1994 to 1997.

The Elderly (60 years and older)

The mortality rate for this age group was 5,058 per 100,000 population in 1997. Diseases of the circulatory system were responsible for 49.2% of deaths in this age group, followed by malignant neoplasms (14.7%), communicable diseases (4.8%), signs, symptoms, and ill-defined conditions (2.3%), and external causes (1.7%).

A small university study conducted in 1998 of households in which elderly persons were cared for suggested that hypertension, stroke, diabetes, senility, and Alzheimer's disease were the conditions that most affected the elderly. The sample also revealed that 23% of the elderly were totally dependent on their caregivers (i.e., to wash and feed them) and 55% were partially dependent.

There is one public health facility in the north of Trinidad that provides outpatient care for the elderly, and a number of private care homes. In 1998, of 710 patients who participated in a study conducted at health centers (mean age 63.1 years), almost twice as many women as men had diabetes and/or hypertension.

The Disabled

A survey in Trinidad of 7,892 persons 0–18 years of age showed that 2.1% had disabilities. The 0–4-years age group accounted for 15.5% of those with disabilities, 5–9-year-olds for 39.3%, 10–14-year-olds for 29.2%, and 15–18-year-olds for 16.1%. The most common disabilities were related to learning (25%), sight (24%), and speech and hearing (18%). Males comprise 59% of those with disabilities, and females, 41%.

By Type of Health Problem

Natural Disasters

Two earthquakes in 1997 resulted in one injury and caused US$ 3 million in property damage. In that same year, a mud volcano eruption occurred at Piparo, in south Trinidad. A flooding incident in Trinidad in December 2000 resulted in one injury.

Vector-borne Diseases

There were no reported cases of Chagas' disease, schistosomiasis, or plague during the review period, and no cases of lymphatic filariasis have been reported for over a decade. Although no human cases of sylvatic yellow fever have been reported since 1979, precautions were taken to minimize the possibility of the spread of the disease. The country implemented universal child immunization against yellow fever, as well as a "catch-up campaign" for all age groups. Yellow fever vaccination coverage from 1996 to 1999 was 88%. Reported cases of dengue fever peaked in 1997 and 1998, with 1,779 and 2,854 cases, respectively; in 2000, 211 cases were reported. There were 14 deaths due to dengue hemorrhagic fever in 1997, 13 each in 1998 and 1999, and 11 in 2000. Three circulating dengue serotypes—types I, II, and IV—were identified during 1997–2000, increasing the risk of lethal cases.

During 1998–1999, there were six cases of malaria due to *Plasmodium malariae*, six due to *P. vivax* (imported), and eight due to *P. falciparum* (imported). In 2000, there were 12 cases of malaria and 5 cases of imported malaria, with one death.

Diseases Preventable by Immunization

There were no cases of diphtheria, measles, neonatal tetanus, polio, or rubella in the period 1998–2000. There was one case of pertussis reported in 1997 and one in 1998. There were 36 cases of mumps in 1998 and 28 cases in 1999. Cases of tetanus continue to be reported—two in 1998 and seven in 1999, mainly in persons over 40 years of age. There are special surveillance systems for acute flaccid paralysis, measles, rubella, and congenital rubella syndrome. The last confirmed cases of rubella occurred in 1997, and the last case of congenital rubella syndrome was reported in 1998.

Vaccines included in the Expanded Program on Immunization (EPI) are administered free of charge at the health centers, where more than 90% of immunizations are given. In an effort to increase immunization coverage, vaccines are provided free of charge to doctors in the private sector for administration to their patients. Vaccine coverage was high and stable over the review pe-

riod; in 1999, polio coverage was 91%; DPT3, 91%; and MMR, 89% (Figure 4). There were no outbreaks of polio, diphtheria, pertussis, tetanus, measles, mumps, or rubella in the pediatric age group. *Haemophilus influenzae* vaccine (Hib) was introduced into the EPI in November 1999, and by 2000, over 70% of infants had received the third dose of the vaccine. Hepatitis B vaccine is not given to the pediatric age group. However, more and more people are seeking this vaccine both from the private and public sectors. There were 72 and 66 confirmed cases of hepatitis B infection among the general population in 1998 and 1999, respectively.

Intestinal Infectious Diseases

Gastroenteritis continues to be the second most frequently reported disease to the National Surveillance Unit. The number of cases of gastroenteritis ranged from 16,187 in 1996 to 19,796 in 1999, and reported cases increased 23.5% from 1997 to 1999. A study of stool samples referred for laboratory examination between 1992–1999 showed that rotavirus was responsible for 23.3% of gastroenteritis cases in children under 5 years of age in Trinidad.

No cases of cholera were reported during the review period.

Chronic Communicable Diseases

A retrospective cohort study conducted in 1997–1998 revealed an incidence rate for tuberculosis of 14 per 100,000 population. For 1995–1999, it is estimated that the average annual number of cases was 198. Morbidity reported between 1996 and 1997 indicates an increase of 22% for all forms of tuberculosis. Four cases of multiple drug resistance were reported and confirmed by the National Tuberculosis Program. A study by the Ministry of Health of a cohort of 61 sputum-positive patients revealed that 66% completed treatment, 51% were cured, 8% defaulted, and 26% died. In 2000, there were 198 tuberculosis cases and 22 deaths. Of these cases, 18.3% and 29.3% failed to follow the treatment regimen in the first and second phases, respectively; 57% of cases were tested for HIV and 33% of these were positive. In a cohort study of tuberculosis patients, 50% of those who died before completing treatment for the disease were co-infected with HIV. The association of HIV with tuberculosis is a concern and may overwhelm the public health system.

The prevalence of leprosy was estimated at 0.4 per 100,000 in 1999; 40 and 35 new cases were diagnosed in 1998 and 1999, respectively.

Acute Respiratory Infections

During 1997–1999, influenza, which increased 36% over that period, was the most frequently reported disease to the National Surveillance Unit. Acute respiratory infections were responsible for 25% to 31% of the complaints that medical staff at the health centers treated in children under 1 year of age during that same period. They were also the main complaint at health centers among 1–4-year-olds (30%–32%), and accounted for 19%–22% of complaints among 5–19-year-olds and 8%–9% of complaints among persons 20 years and older.

Zoonoses

There were outbreaks of rabies in cows, goats, and sheep in 1997 (63 cases), in 1999 (3 cases), and in 2000 (19 cases). There was also an outbreak of brucellosis in May 1998. The number of reported cases of leptospirosis in humans doubled from 95 in 1997 to 191 in 1999; males were more affected than females in 1998, and 15–29-year-olds were most affected in 2000.

HIV/AIDS

The rising incidence of HIV/AIDS has the potential to become a significant burden on Trinidad and Tobago's health system. The number of new HIV cases has doubled every three to four years. The AIDS incidence rate in 1996 was 32.5 per 100,000 population, based on reported cases, which is five times higher than the 1986 rate of 6.6 per 100,000 population. Approximately 14% of all reported cases between 1983 and 1999 were detected in 1999; however, the actual number of cases may be twice as high due to underreporting, according to an evaluation by the National Surveillance Unit and CAREC.

In 1999, there were an estimated 7,800 persons living with HIV/AIDS, including 2,500 women between the ages of 15 and 49 years, and 180 children under 5 years of age. The estimated number of deaths due to AIDS in 1999 was 530.

When the HIV/AIDS epidemic began in 1983, the main mode of transmission was sexual transmission, particularly among men who have sex with men. Presently, the main mode of sexual transmission is heterosexual. Over 50% of new HIV infections occur among young people aged 15–24 years. HIV prevalence among females in this age group is three to six times higher than among males of the same age, and two to four times higher than among females in all other age groups. The average age of HIV-positive males (without AIDS) is 35 years, while the average age for females is 29 years. In 1997, 7% of all new cases of HIV infection were in children. CAREC estimated that 108 infants acquired the infection via mother-to-child transmission in 1999.

Deaths due to AIDS increased steadily over the period 1990–1996. There was a 3% increase from 1996 to 1997. The majority of deaths were males (66.3%). The reported number of male AIDS cases is still greater than female cases, but the gap is closing. In 1995, the male-female rate ratio was 1.9:1, and in 1999, it had decreased to 1.3:1 (Figure 5). Seventy percent of AIDS cases occur in the age group 15–44 years, where it has become the leading cause of death.

All blood collected at the Blood Bank is screened for HIV 1 and 2. The prevalence of HIV infection among blood donors was estimated to be 0.7% in 1998 and 0.3% in 1999. For the period

1993–1996, the prevalence of HIV among attendees of STI clinics was estimated at 6.3%.

Sexually Transmitted Infections

The incidence rate for gonorrhea in 1999 was 64 per 100,000 population, which represents a decrease from the 1995 rate of 88.7 per 100,000 population. A three-month study conducted in 1999 at two STI clinics, which involved 970 attendees with a mean age of 29 years, showed that the highest prevalence of gonorrhea cases was in the 20–24 years age group. The incidence rate for syphilis in 1999 was 39 per 100,000 population; there were 423 cases in 1997, 464 in 1998, and 504 cases in 1999. The prevalence of syphilis among pregnant women ranged from 2% in 1996 to 1.3% in 1998. All blood collected for transfusion is screened for syphilis.

Nutritional and Metabolic Diseases

The Caribbean Food and Nutrition Institute (CFNI) has estimated that a family earning the minimum wage would have difficulty in meeting nutrient demand as measured by the "nutrient cost index." Several facts illustrate the situation in the country regarding nutritional and metabolic diseases. For instance, anemia in pregnant women was estimated at 21% in 1998. In that same year, a study of 1,579 patients at public health primary care centers showed that Trinidadians of Indian descent were more likely than other ethnic groups to have diabetes. In addition, 33% of Trinidadian patients of African descent with diabetes also suffered from hypertension. Diabetes mellitus was responsible for 10.6% of deaths among males and 14.2% of deaths among females in 1997, for a total of 1,120 deaths, and was the second leading cause of death in 1999.

In 1996–1999, 40% of infants attending health centers were exclusively breast fed for one month, 28% for at least two months, and 21% for at least three months. In 1999, a survey conducted in primary schools among children aged 5–9 years showed that 8.5% were overweight.

Diseases of the Circulatory System

Heart disease was the leading cause of death in Trinidad and Tobago during the review period, and was responsible for 17% of all deaths in 1997. The 13% prevalence of diabetes and 27% prevalence of hypertension among the population 35 years and over, and a 21% prevalence of smoking among the population 15 years or older are recognized as the common risk factors that contribute to cardiovascular disease. Cardiovascular diseases were responsible for 37.6% of all male deaths and 42.8% of all female deaths in 1997.

Malignant Neoplasms

Malignant neoplasms were responsible for 12% of all deaths in 1997, accounting for 21% of deaths among 5–9-year-olds, 15% among 10–14-year-olds, 6.5% among 15–19-year-olds, 15% among 20–59-year-olds, and 15% among persons 60 years of age and older. Data from the National Cancer Registry and the Central Statistical Office indicate that the most common cancer sites in males are the prostate (38%), bronchus and lung, colon, stomach, and larynx. The most common sites in women are the breast (33%), the cervix uteri, corpus uteri, ovary, and colon. The National Radiotherapy Center estimated in 1999 that there are 4,000 new cases annually. Twenty-six percent of the 321 males attending the center in 1999 had prostate cancer, 13% had cancer of the bronchus and lung, 7.2% had colon cancer, and 4.3% had rectal cancer. Though the peak incidence for prostate cancer occurs among 70–74-year-olds, cases and deaths are seen as early as age 45. Of the 484 females attending the Center that year, 40% had breast cancer, 22% cervical cancer, 5.6% uterine cancer, 4.3% ovarian cancer, and 3.0% colon cancer.

Accidents and Violence

Homicides decreased by 10% from 1997 (107) to 1999 (92). From 1996 to 1998, 73% of the victims of homicides resulting from domestic violence were females, and 82% to 88% of the perpetrators were males.

From 1997 to 1999, deaths from motor vehicle accidents increased by 43% (from 127 to 182), with children accounting for 15% of these deaths in 1997 and 8% in 1999.

Emerging and Re-emerging Diseases

There were 16 cases of meningococcal disease in 1999, 12 of which were laboratory confirmed; in 2000, there were 19 cases, 8 of which were laboratory confirmed. Most confirmed cases were among the population 19 years and younger.

Mental Health

Although clients using the public mental health services are registered, specific coding of morbidity is not done in these facilities. Available data indicate that the incidence rate for new cases admitted to the National Psychiatric Hospital in 1999 was 2.6 per 1,000 population. Schizophrenia was the leading condition for which females sought psychiatric care, while for males, it was drug abuse. Forty percent of children who are referred to the Child Guidance Clinic are suffering from the effects of separation, divorce, or emigration of their parents.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The Government's Medium Term Policy Framework (2001–2003), formulated in 2000, involves initiatives that encompass monetary, fiscal, environmental, and social policies and not

merely more or improved health services. In 2000, the Government allocated more than US$ 800 million of its US$ 2.2 billion budget to social services and national security, and placed crime, HIV/AIDS, domestic violence, poverty, and drug abuse high on the national agenda.

In 2000, approximately US$ 160 million was allocated to the public health sector. This sum represented 2.3% of GDP and 8.6% of the total national budget expenditure. In 1995, 1.8% of GDP and 6.4% of the total national budget expenditure were allocated to the public health sector.

In June 2000, the Cabinet approved the development of a National Health Insurance System, to be implemented on a pilot basis, with the aim of increasing the population's equitable access to a basic package of essential health services.

Health Sector Reform Strategies and Programs

As a result of the health sector reform, a new structure for the Ministry of Health was approved in 1999, and the number of regional health authorities was reduced from five to four in 2000. The reform program has several initiatives to improve effective coverage and access to health services, and to address problem areas. These include:

- The creation of a national health insurance system;
- The development of modern management systems within a decentralized model of health services provision based on a regionalized health structure;
- The upgrading of primary care facilities countrywide to increase the range, quantity, and quality of services offered;
- The training and retraining of all categories of staff;
- The reorganization of the health information and national surveillance systems;
- And program reorientation towards a more holistic management of disease and of the development of health promotion and prevention.

The Health System

Institutional Organization

The Government is the main provider of health services. This responsibility is undertaken through population-based health services and programs such as the Public Health Laboratory, Public Health Inspectorate, National AIDS Program, Chemistry Food and Drug Division, Insect Vector Control, Health Promotion and Education, Nutrition and Metabolism, and others.

Private Participation in the Health System

The total contribution from private sector partnerships with the Ministry of Health is not known, nor is the percentage of the population that seeks health care exclusively from the private sector. Nevertheless, in 1998, the Adolescent Health Survey indicated that 45.5% of adolescents sought medical care from a private doctor when the need arose.

Health Insurance

There is no public health insurance, but several private companies provide health service benefits. The most common form of private insurance is group medical coverage provided by employers for their employees.

Organization of Regulatory Actions

Health Care Delivery

The Ministry of Health has regulatory functions related to private hospitals as defined in the Private Hospital Act. A Directorate of Quality Management was established in the Ministry of Health to develop support systems for improving quality of care. All four regional health authorities have embarked on a quality improvement program aimed at primary and secondary level health care services. The program addresses technical quality and perceived quality, which are being monitored through customer satisfaction surveys. In addition, public board meetings are held with the community, and a complaint response system is being established.

Certification and Professional Health Practice

Regulation of health care providers in both the public and private sectors is governed by the various health professional acts, such as the Pharmacy Board Act, the Medical Board Act, the Nurses and Midwives Registration Act, and the Dental Profession Act.

Basic Health Markets

The Ministry of Health has a Drug Formulary that covers the public sector, and lists some 400 drugs. While the formulary has not been recently updated, the Vital, Essential, and Necessary list of drugs taken from the formulary is updated regularly and is used to determine drug purchases for the public sector. Drugs are available at no cost to the public through the public health services, though demand is greater than supply.

Environmental Quality

Numerous governmental ministries and agencies are responsible for environmental health protection. In 1995, the Environmental Management Authority (EMA) was established with legislative authority to coordinate and write new environmental control regulations. It has since drafted new laws, including the Certificate of Environmental Clearance Rule, which requires new developments/activities to seek approval to operate under specified environmental conditions; the Water Pollution Rule, which regulates the discharge of any water pollutants and sets permissible limits; the Noise Pollution Rule; and air emissions and ambient standards. The Ministry of Health is also responsible for

monitoring air and noise pollution, though the surveillance systems in place are inadequate.

The Environmental Management Commission was appointed at the end of 2000 to facilitate the implementation of EMA act regulations.

Food Quality

The Ministries of Health and Agriculture regulate food safety, while the Ministry of Health and local governments are responsible for monitoring it. Laboratory services for food and potable water inspection need strengthening and are under review. The Public Health Inspectorate issues permits and inspects food premises; it also monitors the environmental situation and reports to the EMA and Ministry of Health.

Evaluation of Health Technology

The health sector reform program includes a plan to develop technology assessment and management capacities and systems, including for the accreditation of health care facilities.

Organization of Public Health Care Services

Health Promotion

The Directorate of Health Promotion and Public Health spearheads national strategies for health promotion activities. In 2000, the Ministry of Health institutionalized the observance of Health Promotion Month (April) to emphasize the importance of the health promotion strategy within the framework of the health sector reform program and to enhance the participation of community-based, nongovernmental, and governmental organizations in the process of modifying such health determinants as lifestyles and living conditions and in developing healthy initiatives at the national and regional levels.

Many of the health promotion initiatives address lifestyle-related causes of mortality and morbidity. Initiatives include formulating healthy policy, reorienting health services, empowering communities to achieve well-being, creating supportive environments, developing/increasing personal health skills, and building alliances, especially with the media.

The establishment of effective mechanisms for intersectoral collaboration between the public and private sectors, NGOs, and other agencies whose activities have an impact on health is a major challenge. National councils and committees have been established to improve multisectoral coordination in areas related to alcohol and drug abuse, health promotion, health and family life education, and others. Major NGOs in the country, such as the Family Planning Association and the Diabetes Association, receive government subsidies to provide free services to the population. Towards this end, baby-friendly hospital initiatives have been established in all major hospitals and the National Breastfeeding Committee has made efforts to improve breastfeeding practices.

Disease Prevention and Control Programs

Screening for chronic noncommunicable diseases, mainly diabetes, hypertension, and cancer, is carried out at the primary care level.

Potable Water, Excreta Disposal, and Sewerage Services

Although 90% of the population has access to potable water, only 30% has a continuous, 24-hour supply. Due to low levels of distribution, about 66% of households must store water in drums, tanks, buckets, and tins. The health effects of pollution and inadequate supply of water are not yet known, but incidents related to these problems occasionally are reported to the EMA and Ministry of Health. A Government-funded water supply and distribution program is in place. Construction on a new desalination plant was begun during the review period.

Sewerage collection and treatment systems are not well developed. Central sewerage systems are lacking, except in the main urban centers, and together with smaller sewage treatment plants, are poorly maintained. Only 32% of the sewerage treatment plants in Trinidad and 19% in Tobago are functional.

Solid Waste Services

The absence of national legislation to regulate waste collection and disposal is one of the main problems inhibiting proper control of hazardous waste, including medical waste. Local governments are responsible for the daily collection and disposal of domestic solid waste. Industrial waste, as well as port waste, is collected by private contractors. There are three main landfill sites managed by a state-owned company for the collection of 85% of the country's solid waste; eight other disposal sites are managed by the regional corporations.

Pollution Prevention and Control

Industrial development and urban growth have led to increased levels of pollution and human exposure to environmental hazards. During the period 1996–1999, two schools in the southern part of the country had to be permanently closed due to the presence of poisonous gases associated with petroleum activities. Temporary school closures due to problems related to water supply and other environmental sanitation problems are not uncommon, but are dealt with accordingly.

In 1999, the blood lead levels of 200 children who lived in an area where car batteries were discarded were tested; 12 required chelation therapy for high blood lead levels. The families were relocated and the contaminated soil removed.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

The health care sector is comprised of a large public sector, including nine general hospitals, and a large network of approxi-

mately 104 primary-level health centers in communities throughout the country. However, long waiting lists, as well as staff and supply shortages, are problems.

Users of health care services can choose from a considerable range of services from both private and public providers, depending on the service and their ability to pay. Tertiary-level services are offered by a limited number of providers. A broader range of services is available in urban areas than in rural areas.

Services for individuals include emergency, ambulatory, and institutional care for mental, medical, surgical, and other special needs, such as for tuberculosis and substance abuse. Radiotherapy and geriatric care are also provided. Secondary and tertiary-level care are offered, as well as dental, medical, home nursing, and medical social care at the community level. General dental services by dental surgeons and dental nurses are provided countrywide free of cost at primary health care facilities.

Intensive care units, including neonatal care, are available only in the public sector at the three major hospitals. In 2000, the Emergency Health Service was established to make quick and free transport available to persons seeking emergency transfer to a hospital under the supervision of trained staff. Organ transplant has been limited to a few kidney transplants done in both the public and private sectors.

Private sector services include hospital, laboratory, radiological, dental, and medical services. However, a large proportion of the population faces financial barriers to access these services. The Government has embarked on private-public sector partnerships aimed at easing these barriers, for example, by making some essential drugs for hypertension, diabetes, glaucoma, and asthma available at reduced costs at private pharmacies and by providing such anti-retroviral drugs as AZT to interrupt mother-to-child transmission of HIV. Cataract surgery has also been provided at private hospitals at no cost to the patient.

Auxiliary Diagnostic Services and Blood Banks

Computerized axial tomography and hemodialysis are available in both the public and private sectors; magnetic resonance imaging is only available in the private sector.

There is one National Blood Transfusion Service, with satellite sites at the major hospitals. It is responsible for screening all blood and blood products, and for setting standards for their collection and distribution. Blood is screened for HIV 1 and 2, HbsAg, HCV, HTLV 1 and 2, and syphilis. Most blood is obtained from elective or replacement donors, and the rest from voluntary donors.

Specialized Services

Cancer screening is provided by the Family Planning Association of Trinidad and Tobago, the Trinidad and Tobago Cancer Society, and, to a limited extent, at some hospitals and health centers.

The Ministry of Health's school health program is geared towards new admissions to primary school (at age 5 years) and those who are leaving primary school (at age 11 years) and is carried out by health center staff. Emphasis is placed on early detection for hearing, vision, dental, and psychological problems identified by the clinical and teaching staff. Children who are not fully immunized are given the necessary vaccinations upon entry.

Human Resources

The distribution of human resources in health between primary and secondary care is a concern, as is the shortage of staff in general; shortages in primary care are more acute than in secondary care.

Emigration and retirement of staff have left a large void in the human resources available to the health sector and have forced the Government and Regional Health Authorities to recruit professional staff from abroad and to rehire retired nurses. Estimates suggest that there were 18.9 professional nurses per 10,000 population in 1999, compared to 16.9 in 1992, and 7.5 physicians per 10,000 population in 1997, compared to 9.0 in 1992.

In-service training programs, seminars, and workshops are held in such areas as change management and total quality management.

Health Research and Technology

Health research is carried out mainly by the University of the West Indies and the Commonwealth Caribbean Medical Research Council. Phase 2 trials for an AIDS vaccine were conducted in 2000.

Health Sector Expenditure and Financing

The public health sector is financed through general taxation and user fees. The Ministry of Health's level of expenditure increased by approximately 20% during the 1990s, from US$ 83.6 million in 1991 to US$ 105.6 million in 1997. In 1997, primary care expenditure accounted for 10.9% of total health expenditure.

External Technical Cooperation and Financing

The Ministry of Health also receives external financing from bilateral and multilateral sources for the implementation of projects, including health sector reform. External agencies providing technical cooperation and/or financing in the health sector include UNAIDS, UNDP, PAHO/WHO, and IDB, which is a principal financer of health sector reform. Bilateral development agencies, such as CIDA and GTZ, also contribute through CAREC.

FIGURE 1. Gross national product, annual growth (%), Trinidad and Tobago, 1993–1999.

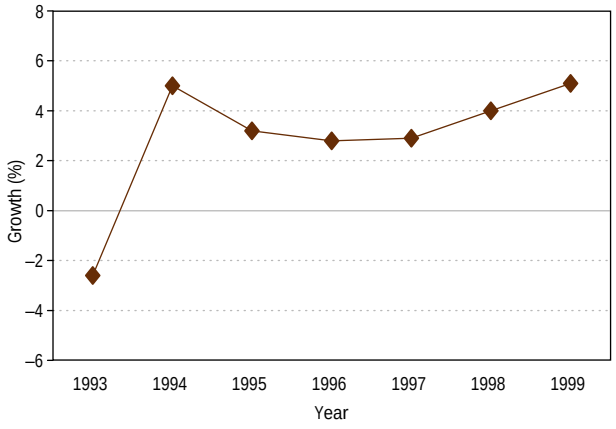


FIGURE 2. Population structure, by age and sex, Trinidad and Tobago, 1997.

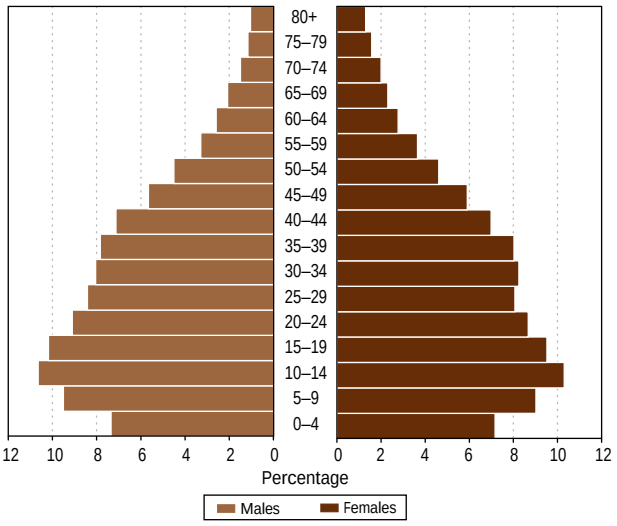


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Trinidad and Tobago, 1990–1994.

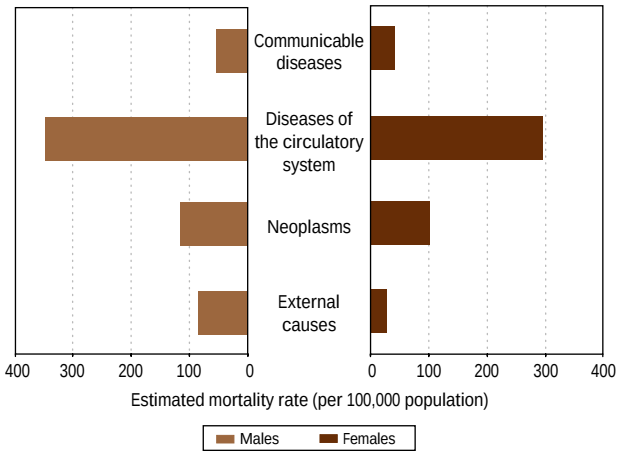


FIGURE 4. Vaccination coverage among the population aged 0–2 years, by vaccine, Trinidad and Tobago, 1999.

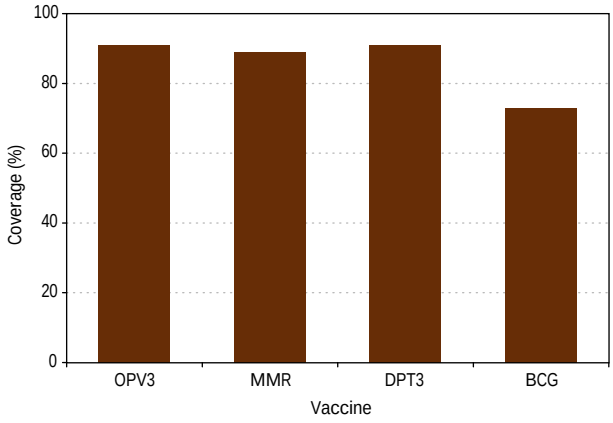
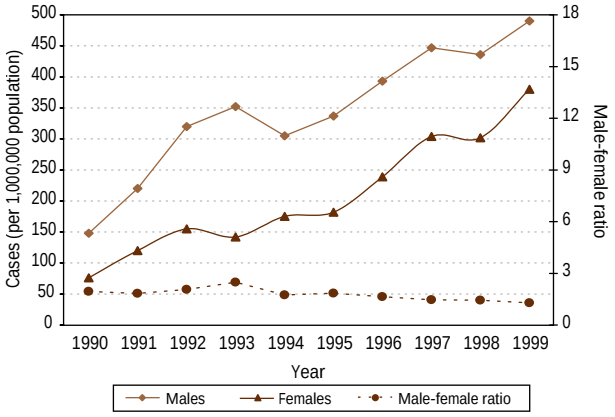


FIGURE 5. AIDS incidence, by sex, with male-female ratio, Trinidad and Tobago, 1990–1999.



TURKS AND CAICOS ISLANDS

OVERVIEW

The Turks and Caicos Islands, a British dependent territory in the West Indies, lie southeast of the Bahamas and north of Hispaniola. The territory comprises eight large islands and many smaller cays and islets, with a total landmass of 430 km^2. The Turks group includes Grand Turk, Salt Cay, and some smaller cays. The Caicos group includes East Caicos, Middle Caicos, North Caicos, Providenciales, South Caicos, West Caicos, Pine Cay, and Parrot Cay (inhabited tourists destinations). The total estimated population in 2000 was 17,502. Figure 1 shows the population structure by age and sex in 2000. More than 80% of the population lives on Providenciales, Grand Turk, and South Caicos. Providenciales, with 17,000 inhabitants (70.8% of the total population), is the only island with an urban center, where most of the territory's commercial and business activities take place.

Cockburn Town, on Grand Turk, is the capital and the seat of government. The Governor represents the Queen of England; the Chief Minister, appointed by the Governor, is the head of government. The legislature consists of a unicameral Legislative Council. Government ministries are directed by a minister (political) and a permanent secretary (administrative). Quasi-governmental institutions are often managed through an executive management team led by a general manager or director.

Tourism and tourism-related commerce are the main economic activities, accounting for 25% of GDP and more than 50% of employment. Service industries, including public sector services, tourism, banking and insurance, fishing, and agriculture, employ approximately 95% of the labor force.

The unemployment rate was 12.4% in 1999, with a higher rate for women (25.4%) than for men (17.2%). Generally, persons in the lowest socioeconomic groups, who lack skills and education, experience higher unemployment (21%) than persons in the higher socioeconomic groups (5.7%). Approximately 26% of the population are considered poor, and 3.2% are extremely poor. The poorest islands were North Caicos, Middle Caicos, and South Caicos. Nearly 31% of the poor live on Providenciales and 30% live on Grand Turk. Males accounted for 48% of the poor and females, 52%. Approximately 54% of the poor were under 25 years old, and as much as 48% of this group is under 20 years of age. Haitians comprise 30% of the population, but accounted for 38% of those living below the poverty line. The benefits of the Turks and Caicos Islands' rapid economic growth have not been equitably distributed among the population due to the segmented social structure and institutional underdevelopment.

In 1999, approximately 30% (US$ 15.8 million) of the national recurrent expenditure (approximately US$ 53 million) was allocated to the social sectors, particularly education, health, youth, and sports. However, the development program is still very dependent on external funding; some US$ 37 million in development aid was received in 1999–2000.

Per capita GDP remained fairly steady from 1996 to 1998, at an average US$ 5,973 per year. Total public spending as a percentage of GDP continued its downward trend, falling from 34.3% in 1992 to 21.4% in 1999. In contrast, total spending on health as a percentage of GDP increased, rising from 3.4% in 1996 to over 4.3% in 1998.[1]

The main problems influencing the health situation and the delivery of health services are poverty, immigration, and increased use of private health services and insurance by Turks and Caicos Islanders. Limited private outpatient services on Providenciales are available for those who can afford them, and some go abroad, particularly to the U.S., even for primary and routine services.

Mortality

There were 306 reported deaths during 1996–2000 in Turks and Caicos. Approximately 36% (101) of deaths with defined causes (282) were due to diseases of the circulatory system; 21% (59) to communicable diseases, particularly HIV/AIDS; 7.8% (24) to signs, symptoms, and ill-defined conditions; 7.8% (22) to malignant neoplasms; and 5.7% (16) to conditions originating in the perinatal period. The male-female mortality ratio

[1]Total spending on health in 1998 only includes primary care services.

was 0.97:1. The 60 years and older age group accounted for 49% of overall mortality; the 20–59 years age group accounted for 37% of overall mortality, 29% of which was due to HIV/AIDS. Figure 2 shows estimated mortality rates by broad groups of causes and sex for 1990–1994.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Conditions originating in the perinatal period, intestinal infectious diseases, acute respiratory infections, and injuries are areas of concern for this age group. There were 24 registered infant deaths during 1996–2000 (7.8% of total deaths). Conditions originating in the perinatal period accounted for 67.6% (16) of all infant deaths, to which asphyxia and slow fetal growth were the major contributors (6 deaths). There was one death due to HIV/AIDS in this age group. Intestinal infections and acute respiratory infections accounted for 54.8% (46 of 84) of hospital discharge diagnoses for infants during the period.

There were six deaths among children aged 1–4 years for 1996–2000: intestinal infectious diseases and accidental fire accounted for two each; nutritional deficiencies and anemias accounted for one; and transport accidents accounted for one. Intestinal infectious diseases and acute respiratory infections accounted for 39.7% of hospital discharge diagnoses, and injuries, for 8.7%.

Schoolchildren (5–9 years)

There were eight deaths in this age group in the period 1996–2000; three were due to transport accidents and two to HIV/AIDS. The leading causes of the 196 hospitalizations in this age group were intestinal infectious diseases (14.7%); injuries; appendicitis and hernia; and unspecified bronchitis, emphysema, and asthma.

Adolescents (10–14 and 15–19 years)

There were two deaths in the 10–14 years age group over the review period—one accidental drowning and one death due to acute respiratory infection. In the 15–19 years age group there were two homicides; both victims were females.

The 10–14 years age group accounted for 4% of all hospital discharges for 1996–2000, and the 15–19 age group, for 6%. The leading discharge diagnoses were injuries; appendicitis; diseases of the nervous system; and unspecified bronchitis, emphysema, and asthma. Complications of pregnancy accounted for 7% of all discharge diagnoses in the 15–19 years age group.

Of all births in 1999 and 2000, 7.4% and 10.1%, respectively, were to teenagers.

Adults (20–59 years)

The 20–59 years age group accounted for 37% of all deaths during the 1996–2000 period. The leading cause of death was HIV/AIDS (29%), followed by diseases of the circulatory system (24.2%). Other important causes of death were homicide (5.8%), diabetes (3.9%), and transport accidents (3.9%).

This age group accounted for 57% of all hospital discharges between 1996 and 2000, of which females accounted for 62%. The main discharge diagnoses were injuries (8.9%), hypertensive disease (7.4%), and appendicitis and hernia (7.3%). Females accounted for 65.9% of diabetes diagnoses and 65% of hypertension diagnoses. Among females in this age group, complications of pregnancy accounted for 11.2% of hospital discharge diagnoses.

The Elderly (60 years and older)

There were 137 registered deaths in this age group during the period 1996–2000 (44.8% of all deaths). Diseases of pulmonary circulation (32 deaths), cerebrovascular accidents (20 deaths), ischemic heart disease (16 deaths), and diabetes mellitus (15 deaths) were major contributors to mortality in this age group. Malignant neoplasms (12), particularly cancer of the prostate and cancer of the female breast, were also important causes of death.

Hypertensive disease accounted for 17.8% (105 of 591) of the total hospital discharge diagnoses for this age group during 1996–2000, followed by diabetes mellitus, with 15.2% (90). Other important discharge diagnoses were diseases of pulmonary circulation (36), cerebrovascular accidents (29), other diseases of the digestive system (28), injuries (27), appendicitis and hernia (24), and acute respiratory infections (20).

By Type of Health Problem

Natural Disasters

The Turks and Caicos Islands are vulnerable to hurricanes, though none affected them during 1996–2000.

Vector-borne Diseases

No cases of malaria or dengue were reported between 1998 and 2000.

Diseases Preventable by Immunization

No cases of measles or rubella were reported from 1998 to 2000. There were three cases of hepatitis B in 1998 and four in 2000. There was one case of mumps in 1999. Figure 3 shows coverage among the population under 1 year of age for selected vaccines in 2000.

Intestinal Infectious Diseases

Intestinal infectious diseases appeared among the 10 leading hospital discharge diagnoses during 1996–2000 for all age

groups. Over the period, there were four deaths due to intestinal infectious diseases, two in the 1–4 years age group and two among the elderly.

Chronic Communicable Diseases

There is no leprosy in Turks and Caicos. There was one registered death due to tuberculosis during 1996–2000, and 28 hospitalizations for tuberculosis during 1998–2000.

Acute Respiratory Infections

Acute respiratory infections accounted for less than 5% (113) of hospital discharge diagnoses during 1996–2000. The groups most affected were children 1–4 years of age, adults aged 20–59 years, and the elderly. There were 2,309 clinically diagnosed cases of influenza between 1998 and 2000.

HIV/AIDS

HIV/AIDS is a growing problem in Turks and Caicos, particularly among adolescents and young adults. During 1996–2000, there were 40 registered deaths due to HIV/AIDS (13.1% of total deaths). Approximately 78.9% of the deaths due to HIV/AIDS were among adults aged 20–59 years. From 1998 to 2000, there were 135 new cases of HIV infection. In 2000, 1.7% of persons tested for HIV (35 of 2,079) were positive.

Nutritional and Metabolic Diseases

There were two registered deaths due to nutritional deficiencies and anemia during 1996–2000, one in the age group 1–4 years and one among the elderly. There were 61 hospital discharge diagnoses of nutritional deficiencies and anemia during the same period, most (59%) in the age group 20–59 years. Diabetes mellitus accounted for 6.7% (19) of all deaths with defined cause during this period, and 3.4% (113) of all hospital discharge diagnoses.

Diseases of the Circulatory Systems

Cardiovascular disease accounted for 33% (100) of total deaths during 1996–2000 and particularly affected adults aged 20–59 and the elderly. Important contributors to mortality due to cardiovascular disease were diseases of pulmonary circulation (44 deaths), cerebrovascular disease (26 deaths), and ischemic heart disease (22 deaths). Diseases of the circulatory system accounted for 12.5% (428 of 3,428) of all hospital discharge diagnoses from 1997 to 2000; hypertension was the main contributor to this group (65%), with a male-female ratio of 0.41:1.

Malignant Neoplasms

Malignant neoplasms accounted for 7.2% (22) of all deaths during 1996–2000. Important sites were the prostate, the female breast, and the digestive system and peritoneum, which accounted for five deaths each. A similar pattern was observed in hospital discharge diagnoses.

Accidents and Violence

External causes accounted for 12.2% (37) of the total deaths during the period 1996–2000, with traffic accidents and homicides (9 each) being the major contributors.

RESPONSE OF THE HEALTH SYSTEM

Health Sector Reform Strategies and Programs

The Health Sector Adjustment Program was implemented in 1993–1997. The Health Sector Strategy Project, for which the Government received support from the U.K. Department for International Development (DFID), was completed during the review period. As part of the Project, a health sector development steering committee, chaired by the Ministry of Health, Education, and Youth, was established to oversee national health policies and plans. The reform agenda includes the transfer of the health services procurement function from the Ministry of Health to the Ministry of Finance; completion of the feasibility study for the National Health Insurance Scheme; restructuring of the Ministry of Health, including the establishment of a Health Policy and Planning Unit, greater autonomy to the Health Manager at the Myrtle Rigby Health Clinic, and the design and implementation of management and information systems; the development of a structured communications support program; implementation of an infrastructure improvement program to improve facilities both on Grand Turk and Providenciales; and the development of a national mental health program.

The Health System

Institutional Organization

The Ministry of Health is responsible for the provision of efficient and effective preventative and curative care to the entire population through the Health Department. This is carried out in partnership with the community, and with private and overseas providers.

Decision making is very centralized, and the health staff on Providenciales, where most services are offered, have limited authority. As the Ministry of Health accounting officer, the Permanent Secretary is responsible for fiscal policy, but does not have authority over staff or to change budget allocations to the various departments. These responsibilities are shared with the other ministries.

The Permanent Secretary chairs the Senior Management Team, which is comprised of the Undersecretary, the Chief Medical Officer, the Chief Nursing Officer, and senior program

managers. The team meets regularly and performs decision-making, planning, and coordination functions for the Ministry.

Private sector activity is limited to outpatient care and is focused on general practice.

Health Insurance

Turks and Caicos Islands residents have total access to health care throughout the country. At public health care facilities, clients are treated regardless of their ability to pay.

The National Insurance Board mandates that employed persons pay a premium that enables them to receive benefits and privileges according to a prescribed formula. The Board is responsible for providing sickness, injury, disability, maternity, retirement, funeral, and death benefits. Old Age Non-Contributory Pension assistance is also provided. Social Security covers the cost of medical expenses for occupational injuries; however, most employees are also enrolled in private insurance schemes. An estimated 20% of the population has private health insurance; the remainder are covered by the Ministry of Health.

Private sector services are financed by out-of-pocket payment from clients or through private health insurance. Premiums for private insurance are paid jointly by the employer and the employee. The two private health insurance providers in Turks and Caicos are British American and Caribbean Home, which are affiliated with networks in the United States.

Organization of Regulatory Actions

Health Care Delivery

The Ministry of Health is responsible for regulating the health sector, though there are no mechanisms in place to regulate private health insurance. It is also responsible for the supervision, evaluation, and control of health service delivery by public and private providers. Intersectoral activity is promoted, but there are no formal mechanisms for collaboration or community participation.

The Health Practitioners Board Ordinance is responsible for the establishment of health facilities and for the regulation and control of health professionals and allied health workers. The Board is also responsible for the accreditation of public and private sector health facilities.

Environmental Quality

The Department of Environmental Health is responsible for vector control; monitoring of food and water supplies; inspection of food establishments and other buildings; and solid waste collection and disposal. Environmental health officers are stationed throughout the islands. Most of their activities are performed in close collaboration with the Department of Primary Health.

The Public Environmental Laboratory is the main laboratory within the National Public Health Laboratory System. Its primary role is to monitor food sanitation and environmental quality.

Organization of Public Health Care Services

Disease Prevention and Control Programs

The Department of Primary Health is responsible for the prevention and control of communicable and noncommunicable diseases. It also implements various public health programs, including health education activities, through clinics.

Health Analysis, Epidemiological Surveillance, and Public Health Laboratory Systems

Health information is not available on a timely basis, and the information system in place needs improvement, as there is no coding system and data are processed manually.

Organization of Individual Health Care Services

Outpatient, Emergency, and Inpatient Services

The public hospital network is comprised of the main facility, Grand Turk Hospital (35 beds), and the Myrtle Rigby Health Clinic (10 beds), located on Providenciales. These facilities provide general acute care and specialized services, as well as mental health, geriatric, and rehabilitative care on an inpatient and outpatient basis.

Some secondary-level services are offered in county, and others may be procured abroad; all tertiary-level services must be procured abroad.

Auxiliary Diagnostic Services and Blood Banks

There are two clinical laboratories in the public sector, located on Grand Turk and Providenciales, and two private clinical laboratories on Providenciales. The National Blood Bank Service is based at Grand Turk Hospital.

Health Supplies

Drugs

The procurement of pharmaceuticals and monitoring of public sector pharmacies is conducted by the Chief Pharmacist. All persons seeking health services in public institutions have access to prescribed drugs, when available.

Equipment

Equipment distributed among the two public hospitals includes two ultrasound, two X-ray, and four dialysis machines. The private sector does not have high technology equipment.

Human Resources

The number of health staff has increased since 1995, but the sector continues to face personnel shortages. Most personnel are foreign nationals, which is particularly critical, since they often hold senior managerial positions (e.g., Chief Medical Officer), and there is a high degree of itinerancy. The Government is seeking to employ more nationals, and the Community College has begun to train clinical nurses.

Health Sector Expenditure and Financing

The total national expenditure on health in 1998 was estimated at US$ 16.5 million: public expenditure on health was estimated at US$ 7.5 million (45.4%) and private expenditure at US$ 9 million (54.6%). Annual Government spending per capita is approximately US$ 310, and individuals spend at least US$ 375 per year out-of-pocket. Therefore, the minimum per capita health expenditure was estimated at US$ 685 in 1998. Private insurance accounted for 20.9% of national health expenditure. Services provided in Turks and Caicos accounted for 47.6% of total expenditure, and services procured abroad accounted for 52.4%.

A user fee system is in place at public facilities, though those deemed unable to pay are exempt. Other excluded categories include elderly pensioners, welfare recipients, prisoners, and children under 18 years of age. The Government pays for some overseas care for individuals on a case-by-case basis. There are no public financing modalities for private health insurance.

The Institute for Health Development reported a 7% increase in the health budget in 1997 and a 39% increase in 1998. The latter increase is mainly for the strengthening of primary care, including the Myrtle Rigby Health Clinic, medical treatment overseas, and the integration of the HIV/AIDS Program in the Ministry of Health.

External Technical Cooperation and Financing

DFID and PAHO/WHO provided technical cooperation and financial assistance to the Turks and Caicos Islands during the review period.

FIGURE 1. Population structure, by age and sex, Turks and Caicos Islands, 2000.

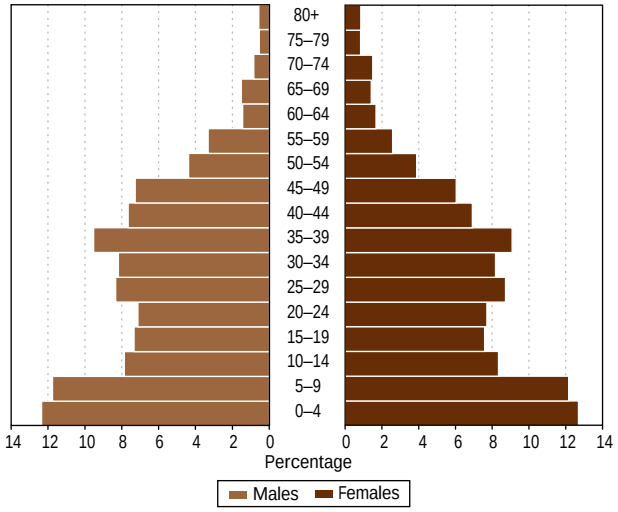


FIGURE 2. Estimated mortality, by broad groups of causes and sex, Turks and Caicos Islands, 1990–1994.

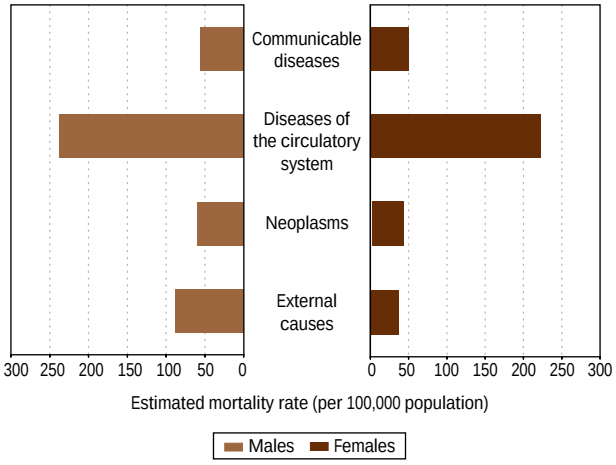
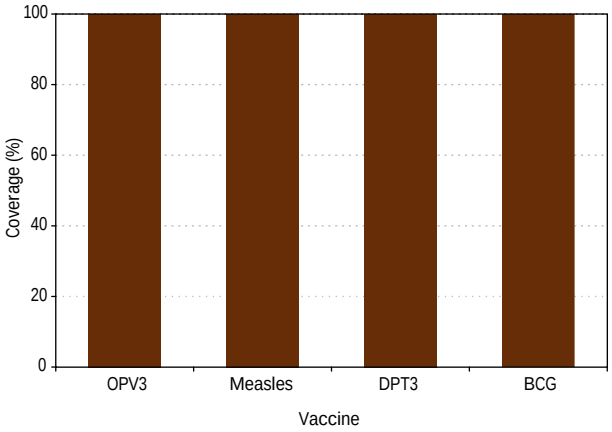


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Turks and Caicos Islands, 2000.



UNITED STATES OF AMERICA

OVERVIEW

Throughout the 1990s, the United States experienced economic growth, although earnings inequalities also widened in the decade. Summary health indicators improved, but health disparities between population groups persisted. The country underwent structural changes in these years, which shifted the population's health needs and the provision of health services (Figure 1).

The country's population grew 13% in the 1990s, rising from 249 million people in 1990 to 281 million in 2000. Some of this growth was due to immigration: in 2000, 11% of the population (about 30 million people) were foreign-born, which represents a substantial increase from the 8% figure (almost 20 million persons) in 1990. Many of these immigrants came from Latin America; in fact, throughout the 1990s the proportion of Hispanics in the country's population has been increasing, which is changing the population's ethnic makeup. For example, in fiscal year 1996, Mexico, with 163,572 immigrants, ranked first among the ten countries that provided the most immigrants. (To understand the magnitude of Mexico's contribution, consider that the next closest country on the list provided fewer than 60,000 immigrants.) Also included on the top ten list were the Dominican Republic and Cuba, providing 39,604 and 26,466 immigrants respectively; from the late 1980s to the early 1990s, Central American countries also ranked high on the list. The Hispanic population's high fertility rate helped to consolidate the Latin Americanization of the population in the United States. Hispanic women's fertility rate far exceeds that of any other ethnic group in the country; for example, in 1999 Hispanic women in the United States had a fertility rate of 95.4 live births per 1,000 women, compared to White non-Hispanic women, who had a rate of 62.4. In 2000, Latinos made up 12.5% of the population, and are now the largest minority group in the country.

In 2000, about half the population in the United States lived in large, central metropolitan counties and only some 20% lived in mostly rural counties. This distribution is far from static, however: in fiscal year 1996, for example, some 42 million persons moved, although most did so only short distances. Non-Hispanic Whites moved less (15%) than either Blacks or Hispanics (around 20%).

Some of these population shifts have been well documented. In 1998, for example, population distributions were younger in urban areas, as a result of the migration of younger adults to urban areas, coupled with higher fertility rates in inner cities; conversely, population distributions were older in more rural areas. The United States also experienced a process of suburbanization, whereby central cities lost population to suburban or metropolitan fringe areas. From March 1996 to March 1997, central cities lost about 3 million people and these cities' suburbs gained an almost equal amount. Generally, the population that flowed into the suburbs involved persons with higher economic status than those who remained in the central cities. In 1997, fringe counties surrounding large metropolitan areas in every region of the United States had the lowest levels of poverty, between 7% and 9%—these levels were less than half the poverty rates found in the central metropolitan areas. The highest rates of poverty were found in large metropolitan counties in the country's Northeast and Midwest, 18% and 14%, respectively. Rural counties in the West and South also had comparably higher levels of poverty, and only in the South's most rural counties did the poverty rate reach 19%. The surburbs also were ethnically more homogeneous than the central cities. Nationwide in 1998, the ethnic breakdown of central metropolitan county populations was 54% White non-Hispanic, 21% Hispanic, 19% Black non-Hispanic, and 6% Asian or Pacific Islander. In contrast, 80% of the population in the fringe counties were Non-Hispanic White.

In the 1990s, the country's gross domestic product (GDP) grew 37.6% (Figure 2). The percentage of the population living in poverty declined more gradually, however, decreasing from 13.5% in 1990 to 12.5% in 2000. Women heads of households with children were one of the most vulnerable groups: although overall poverty rates had declined substantially for female heads-of-households with children, these rates remained considerably higher than those of the general population, with 25% of these women living in poverty in 2000. This "feminization" of poverty has been partially linked to the differences in the number of men

and women who are employed: in 2000, about 70 million men had paid work, compared to some 61 million women. Moreover, among those working that year, women were paid considerably less than men—men 16 years old and older earned a median US$ 30,132 per year, whereas women earned only US$ 18,996, or 37% less than that of men, in part because women held occupations that paid less than those held by men. In 2000, 18% of working women held service occupations while only 7% of the men held these lower paying jobs; by the same token, 25% of working women held office and administrative support positions as compared to 7% of their male counterparts. Poverty rates also declined substantially for Hispanics and Blacks; their rates, however, remained more than double that of White non-Hispanics.

As the GDP grew over the 1990s, so did the inequalities in personal income distributions. The Gini coefficient of personal income inequality increased throughout the eighties and early nineties. From 1993 to 1998 the increase in the Gini coefficient slowed, indicating that the earnings gap was widening more slowly: the inequality seemed to stabilize, hovering at around .393 to .394, although the Gini coefficient began to climb again, rising to .399 in 1999.

This widening of the earnings gap has been linked to structural changes in the United states labor market, whereby more highly-skilled persons in the upper income percentiles experienced real gains in wages, while those less-skilled workers have experienced real wage losses. This, in turn, has been explained by an industrial shift towards technical services, on the one hand, and retail sales, on the other, as well as more frequent use of temporary workers, a proportional drop in union membership, a real-value decline of the minimum wage, and increased global competition and immigration.

In contrast to the vigorous economic growth nationwide, hospitals and other health care institutions faced economic instability. Increasing health care costs—overall health expenditures increased from an annual US$ 3,886 per capita in 1995 to US$ 4,358 per capita in 1999—and the burden of providing often unremunerated health care to the more than 40 million people without health insurance placed many health services providers in financial distress in the late 1990s. In an attempt to stem the rising costs, the number of persons and employers shifting to fixed-price contractual service provider organizations—health maintenance organizations (HMOs) or preferred provider organizations (PPOs)—rose exponentially. By 2000, 59% of the population held private health insurance through an HMO or a PPO, often through health insurance plans offered by their employers. HMOs and PPOs limit attending physicians' choices in regard to which health services, laboratory tests, and treatments are allowed for a given patient. The myriad such systems put into place in the 1990s were labeled "managed care." In the late 1990s, the viability of these systems was challenged by the elimination of liability protection, questions of patient safety, and the flight of consumers to less-managed health care systems. The quality of health care services provided by many managed care systems remains under scrutiny. With accreditation and monitoring, service indicators for HMOs have demonstrated some improvements in quality. From 1999 to 2000, members of managed care programs indicated greater satisfaction. There were improvements in indicators for vaccine coverage, screening, treatment quality, and the performance gap between the worst and the best health service providers shrank.

After decades of increases, total national expenditures on health as a percentage of the gross domestic product stabilized around 13% in the late 1990s. The Government provides health service insurance coverage to qualified populations living in poverty (primarily through Medicaid) and to those 65 years and older (primarily through Medicare), as well as to the military. In 1999, the federal government provided US$ 385 billion for expenditures in health; state and local governments spent another US$ 164 billion. The brunt of national health expenditures, however, fell on the private sector, which spent US$ 662 billion. Some 88% of persons covered by private health insurance were on some kind of employment-based plan.

From 1997 to 1999 there was a small, yet perceptible, shift towards decentralization and privatization of financial responsibilities for health—while the total costs for health services continued to rise for all sectors, the federal government reduced its share of total national health expenditures; state and local governments increased their share, and the private sector took on an even greater share. In 1997, the federal government covered 33% of all national health expenditures, and the figure declined to 32% by 1999. Meanwhile, state and local governments slightly increased their share, from 13.2% to 13.5%, and the private sector increased its, from 53.8% to 54.7%. These changes in part reflected reductions in the proportion of the population covered by federally-funded health insurance programs. For example, Medicaid coverage, which had peaked at 12% of the population in 1993, dropped to 10% in 1999, and Medicare coverage for the elderly remained relatively stable throughout the decade, at 13% in 1999. Military health care covered 4% of the population in 1990, but dropped to 3% in 1999 with reductions in military personnel.

The 1996 welfare reform eliminated federal assistance entitlements, including monthly financial support, to needy families with children, creating in its place a temporary assistance program that provides block grants to the states. According to federal guidelines, each state designs programs to move people off the welfare rolls and into the workforce. Although the reform sucessfully moved families off welfare—between 1996 and 2000, welfare rolls nearly halved, from 4.6 million families to 2.2 million—this success had its down side. Based on a national survey, 71% of those families with children who left welfare between 1995 and 1997 stayed off welfare; the remainder returned to welfare. In 1997, 61% of those leaving welfare were employed, but most held jobs at the low end of the hourly wage scale, with a median hourly wage of US$ 6.61. Medicaid, formerly the health insurance com-

ponent of welfare, was separated from the new temporary assistance program so that it would still be available to former recipient families, but many eligible families did not not apply for Medicaid and presumably were left without coverage. This was especially true of many legal immigrant families, which have high poverty rates. Though some immigrant families were still eligible for Medicaid and other public assistance, many other legal immigrants were no longer eligible under the new law. The nearly 9 million illegal immigrants living in the country, most of them from Mexico, were not eligible for Medicaid or other public assistance.

In 1998, 16% of the population, or 44.3 million people, had no health insurance coverage. Among those living in poverty, 32% had no health coverage, despite the existence of government health insurance targeting the poor, such as Medicaid. Blacks, Asian and Pacific Islanders, Hispanics, and foreign-born persons had a relatively high-risk of lacking health insurance coverage. These groups, except for Asian and Pacific Islanders, also had elevated rates of poverty. The lowest health insurance coverage was in the South and the West, both at around 20%. The Midwest and the Northeast were between 13% and 15%. Not surprisingly, the regions with the highest poverty rates also had the lowest coverage.

From 1995 to 1999 the crude birth rates and the fertility rates remained relatively unchanged. Crude birth rates varied between 4.5 live births per 1,000 population and 4.8, and fertility rates fluctuated between 65 and 66 live births per 1,000 women aged 15–45. In every ethnic group, women delayed having children until increasingly older ages as the decade progressed. From 1995 to 1999, the number of children born to women under 35 years old consistently declined.

Life expectancy continued to improve through most of the 1990s, edging up from 75.8 years in 1995 to 76.7 years in 1998, but the trend flattened out in 1999. Women's life expectancy was 5.5 years longer than men's in 1999. Although Blacks' life expectancy also improved throughout the decade, in 1999 they lagged some 6 years behind non-Hispanic Whites.

Mortality

In 1999, the crude death rate in the United States was 877 per 100,000 population, a 14% increase from the 1998 figure of 865 (Figure 3). Death rates increased for people 45–54 years old and for those older than 74 years of age. Death rates for those 85 years and older increased by 2.4%, the largest rate increase of any age group. Death rates for other age groups dropped, with the age group 5–14 years old showing the largest drop, with a reduction of 3.5%.

Cardiovascular diseases and neoplasms were the leading causes of death for both males and females in 1999. The death rate for cardiovascular disease in women was 10% higher than that for men, and this difference was primarily the result of the fact that proportionately there were more elderly women than there were elderly men. Males were 13% more likely to die of cancer than females, mainly because more males smoked tobacco, the leading cause of lung cancer and other respiratory cancers. Males also were almost twice as likely to die in accidents, more than four times as likely to commit suicide, and more than three times as likely to be a victim of homicide than females. The overall crude mortality rate for women was considerably lower than that for men throughout the 1990s.

Death rates varied substantially between rural and urban areas, and these differences also varied from one geographical region to another. From 1989–1991 to 1996–1998, overall age-adjusted death rates declined in each geographical region and in each category of urbanization. The overall age-adjusted death rates for the most urbanized, large central metropolitan counties dropped substantially, from 981 deaths per 100,000 population to 887. Rates in the most rural, non-metropolitan counties declined less, dropping from 947 per 100,000 to 923. The South, which had the highest age-adjusted death rates in the most rural counties, also had the least decrease in rates in these same counties between 1989–1991 and 1996–1998. In 1996–1998, the South's age-adjusted death rate for large central metropolitan counties settled below the rate of its most rural counties. In the Northeast and the Midwest, the 1996–1998 age-adjusted death rates for the metropolitan large central counties remained higher than their more rural counties.

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

For young children, mortality, morbidity, and access to quality health care are greatly affected by poverty rates, and explain much of the differences seen between race and ethnic groups. Almost one-fifth of all children under the age of 6 years were living in poverty in 1999.

Infant mortality rates dropped throughout the first part of the 1990s, then seemed to stabilize in the latter part of the decade. In 1995, infant mortality was 7.6 deaths per 1,000 live births, then dropped to 7.2 by 1997, and held steady in 1998. The five leading causes of infant death in 1998 were congenital anomalies (22% of all infant deaths), disorders relating to short gestation and unspecified low birthweight (15%), sudden infant death syndrome (10%), maternal complications of pregnancy (5%), and respiratory distress syndrome (4%). Blacks, who had substantially higher infant mortality rates than any other ethnic or racial group, experienced a decrease, dropping from 14.6 deaths per 1,000 live births in 1995 to 13.8 in 1998. Infant mortality rates were lowest in the surburbs of large metropolitan areas: in 1996–1998, the Northeast and the Midwest experienced their highest infant mortality rates in large central cities; in the West

and South, the highest infant mortality rates were seen in the most rural areas. The nation's capital, Washington, D.C., which has a high percentage of its population living in poverty, had a substantially higher infant mortality rate than any state and even more than many developing nations at 15.0 infant deaths per 1,000 live births.

Neonatal mortality followed a similar pattern. From 1995 to 1997 neonatal mortality rates decreased from 4.9 deaths per 1,000 live births to 4.8; as did infant mortality, this rate also remained unchanged from 1997 to 1998. Blacks, again with the highest rate of any ethnic group, dropped from 9.6 per 1,000 live births in 1995 to 9.2 in 1997, but then increased to 9.4 in 1998. For children aged 28 days to 11 months, mortality rates dropped from 2.6 deaths per 1,000 live births in 1995 to 2.4 in 1997. From 1997 to 1998 the rate remained unchanged. American Indians and Alaskan Natives shared the highest postneonatal mortality rates with Blacks, close to 5 deaths per 1,000 live births in 1995; in 1998, the rate dropped to 4.3 for American Indians and Alaskan Natives, and 4.4 for Blacks.

Death rates for children 1–4 years old consistently declined throughout the 1990s. In 1998, the death rate in this age group was 35 deaths per 100,000 population; the highest rates were among Black children, at 62 deaths per 100,000. The leading cause of death for these children in 1998 was unintentional injuries, at nearly 26 deaths per 100,000, or 37% of all deaths in this age group. More than half of these deaths were related to motor vehicle traffic accidents, many of which could have been prevented—most of the children who died in motor vehicle accidents were not restrained by children's safety seats or seat belts. The second leading cause of death for this age group was birth defects, at around 4 deaths per 100,000, and representing 11% of all deaths. Both of these two cause-specific death rates declined substantially throughout the 1990s. The next three leading causes of death for these children were homicide (8% of all deaths in 1–4 year-olds), cancer (7%) and heart disease (4%). The sixth leading cause of death was pneumonia and influenza, representing 3% of all the deaths in this age group.

Schoolchildren (5–9 years)

In 2000, children aged 5–9 years old made up a little over 7% of the country's population. Some 18% of children 5–17 years old spoke a language other than English with their families, and nearly 7 out of every 10 children in this age group spoke Spanish at home.

Children 5–9 years old had the lowest death rate of any age group, and this rate dropped slightly from 1998 to 1999. The leading cause of death for this group was external causes, with most deaths due to motor vehicle accidents.

Two of the chronic morbidities seen in these children—asthma and lead poisoning—are more likely to affect children living in poverty. In 1998 about 1 of every 6 children of all ages were estimated to suffer from asthma, a figure that is believed to have increased substantially over the nineties. Children living in poverty in the inner cities had a disproportionately higher likelihood of developing asthma, probably in part due to the poor air quality found in most urban areas. Asthma is believed to be the most common reason for school absenteeism. In 2000, about one million United States children under age 6 had high enough lead levels in their blood to adversely affect their development, behavior, and ability to learn, and a disproportionate number were children living in poverty. Lead-based paint used in older homes was the usual source for the poisoning. Problems caused by lead poisoning begin to surface by the time children enter school.

Adolescents (10–14 and 15–19 years)

Adolescents living in poverty are at greater risk for poor health; these youth are less likely than other youth to report very good or excellent health by 15 percentage points. In 1998, 17% of adolescents came from families living in poverty, and another 20% came from families living in near poverty. Moreover, 40% of all adolescents belonged to families headed by a woman, families that are at higher risk for poverty.

Smoking initiated during adolescence is a good indicator of future smoking rates and smoking-related disease trends. Based on a national survey of adolescents, the percentage of 13–14-year-old eighth graders who smoked regularly dropped from 19% to 15% between 1997 and 2000. In the same time period, the prevalence of smoking among 17–18-year-old high school seniors dropped from almost 37% to 31%. In 1999, 70% of all high school students had tried smoking prior to the survey. Rural students smoked more than their urban counterparts.

Most illicit drug use and under-age alcohol use among adolescents declined moderately between 1997 and 2000. In 2000, marijuana was the most commonly reported illicit drug used by adolescents: 64% of 17–18-year-old high school males and 53% of females reported having smoked marijuana. For 13–14-year-old eighth graders, illicit drug use reported for the 30 days prior to the survey dropped from 13% to 12%. Among 17–18-year-old high school seniors, illicit drug use dropped from 26% to 25% between 1997 and 2000. Use of MDMA, called ecstasy on the street, however, increased in both groups. Adolescent alcohol use is of particular importance because of its association with increased vehicular injuries and fatalities. Alcohol use among high school seniors surveyed dropped from 53% to 50% between 1997 and 2000. Likewise, binge drinking (defined as five or more drinks in a row in the last two weeks) by high school seniors declined slightly, from 31% to 30%. From 1997 to 2000, drug and alcohol use among eighth graders generally followed the same trends, with the prevalence of drug and alcohol use being roughly half that of high school seniors. The exception was use of inhalants, which although it also decreased, was used by eighth graders at rates twice that of high school seniors. Alcohol use by eighth graders dropped from close to 25% to 22%; binge drinking in this group dropped slightly, from about 15% to about 14%.

Consistently, throughout the late nineties to 2000, boys reportedly used drugs and alcohol at a higher prevalence than girls, and Non-Hispanic Whites reportedly used drugs and alcohol at a higher prevalence than Blacks.

Weight issues also plagued adolescents in the United States during the reporting period. Adolescents, along with the rest of the country's population, were increasingly overweight. In 1976–1980, 5% of all 12–19-year-olds were overweight. By 1988–1994, almost 11% were overweight.

In 1999, one-half of all high school students surveyed were sexually active: 16% of them had had four or more sexual partners and 42% had not used a condom in their last sexual encounter. Nationwide, 9% of high school students reported that they had had intercourse at least once against their will. Regarding sexually transmitted infections among adolescents, in 1998, chlamydia and gonorrhea were relatively common and syphilis relatively rare. Females aged 10–14 and 15–19 years old had rates of chlamydia close to 143 per 100,000 and 2,359 per 100,000, respectively. Gonorrhea rates among females in these two age groups were 58 per 100,000 and 780 per 100,000, respectively. Males in those two age groups reported chlamydia rates of 8 and 308, respectively, and gonorrhea rates of almost 9 and 355, respectively. In 1998, females 15–19 years old had the highest reported rates of both chlamydia and gonorrhea of any sex and age group in the country. Differences in reported STI rates between adolescent females and males were largely attributed to the fact that females are tested and screened more often than males, so STI detection is more common among the former. Insufficient funds for services, lack of transportation, and confidentiality concerns made access to STI prevention services more difficult for sexually active adolescents than for older age groups.

There has been a disturbing increase in new AIDS cases among females aged 13–19 years. From 1997 to 1998, new AIDS cases in 13–19-year-old females dropped by 17%, and for males of the same ages they dropped by 22%. By 1999, however, while AIDS cases in adolescent males had declined by another 11%, to 126 cases, new cases in adolescent females increased by 17%, to 168 cases.

In 1991, more than one-quarter of all high school students reported carrying a weapon. In 1999, 17% of all high school students 14–18 years old reported carrying a gun, knife, or club in the month prior to the survey, and 7% reported bringing a weapon to school. With each national survey throughout the 1990s, smaller percentages of school-aged children reported carrying a weapon. In addition, in 1999, 44% of male high school students and 27% of female students were involved in a physical fight in the twelve months prior to the survey. Adolescents also were more frequently the victims of violent crimes, including victimization by simple and aggravated assault (86% for 1992–1997), robbery (10%), and rape and sexual assault (4%). There were more adolescent males who were victims of violent crimes than females. Differences by age were more complex. Adolescent victimization rates increased with age for females, but decreased for males. From 1992 to 1997, there were 83 female victims and 137 male victims per 1,000 12–13-year-olds. In that same period, there was an annual average of 99 female victims and 130 male victims per 1,000 18–19-year-olds. Overall victimization rates were lower in 1997 (10% for both 12–15-year-olds and 16–19-year-olds) than in 1992 (12% for 12–15-year-olds and 11% for 16–19-year-olds). Females aged 12–19-years-old were four times more likely to be victims of reported sexual assault and rape than all other age groups of females. Among females 12–19 years old the risk of becoming a victim increased with age.

Many adolescents suffered from depression and many of them were suicidal. In 1999, one-fifth of all high school students surveyed reported that they had seriously contemplated suicide. Suicide was reportedly attempted by 8% of all 14–18-year-old high school students in the 12 months prior to the survey. Female high school students were more likely to seriously consider suicide than males.

Adults (20–59 years)

This age group makes up most of the country's population. Mortality patterns change drastically from one end to the other of the age range: in 1999, for example, there were 4,700 deaths due to diseases of the circulatory system among 25–34-year-olds, but there were 48,600 deaths due to this cause among 45–54-year-olds. That same year, deaths due to neoplasms totaled only 4,200 among 25–34-year-olds, but reached 90,200 among 45–54-year-olds. Cause specific death counts for such diseases as Alzheimer's and diabetes followed similar patterns.

The Elderly (60 years and older)

The rapid growth in the proportion of the elderly in the population is challenging the health services, because the elderly require more frequent and more expensive health care. In addition to the many distinctive health problems the elderly face, access to health care also complicates the provision of health services for many elderly. Disproportionate numbers of the elderly live in more rural areas where there are greater distances to travel to reach health care facilities, as well as fewer physicians.

Older adults suffer from more chronic health problems than other age groups, such as osteoporosis, arthritis, and Alzheimer's disease. Roughly half of the elderly showed reduced hip-bone density between 1988 and 1994. Mental health issues were also particularly important among the elderly: with aging, the incidence of Alzheimer's disease and other dementias increases. Compared to most other age groups, a disproportionately high percentage of the elderly fall prey to depression, and suicide also is relatively more common among them.

The leading causes of death for the elderly are cardiovascular disease and cancer, which acccount for 60% of all deaths in this population. Chronic diseases—including chronic obstructive

pulmonary disease, diabetes mellitus, and pneumonia and influenza—also are major causes of death. The importance of pneumonia and influenza as a cause of mortality indicates the crucial role vaccines can play in preventing these diseases in this population.

Roughly 1.5 million elderly live in nursing homes. In 1985, the average age of elderly persons admitted to nursing homes was 81 years, and it increased to 83 years in 1997. The elderly entering nursing homes in 1997 required more help with basic activities such as eating, dressing, and bathing than they did a decade ago.

The five leading risk factors that contribute to poor health and quality of life among the country's elderly are overweight, driving while intoxicated, diets deficient in fruits and vegetables, lack of physical activity, and smoking. All of these risk factors are modifiable, and changing them can substantially improve the lives of the elderly.

Family Health

According to a survey, in 2000, women heading households with children represented nearly one-quarter of all families in the United States. More than 2 million of these women were grandmothers who were the primary caregivers for children in their homes, and almost one-fifth of these grandmother-headed families lived in poverty at some time in the 12 months prior to the survey.

Poverty was the most important determinant for family health. Despite attempts by federal, state, and local governments, as well as non-profit organizations, to provide a safety net to protect the health of the most vulnerable families, poor health conditions persisted. Though improvements were seen in child mortality rates, other health indicators often associated with poverty worsened. For example, the proportion of low-birthweight newborns (under 2,500 g) increased from 7.4% in 1996 to 7.6% in 1999. Likewise, the percentage of births with very low birthweight (under 1,500 g) increased from 1.4% to 1.5%. Among mothers 20 years of age and older, low-birthweight rates were highest for those who had not completed high school and lowest for those who had more than a high school education. Black mothers, dealing with much higher levels of poverty, were especially vulnerable, with 13% of live births having low birthweights in 1999.

Children of families who came off the welfare rolls after the 1996 reforms faced reduced access to health care. According to a 1999 three-city study on welfare reform, the longer a family was off welfare the less likely the children had health insurance coverage. For families currently on welfare, 1% of the children had no health insurance coverage. For families who had been off welfare for fewer than two years, 15% of the children had no health insurance coverage. For families off of welfare for greater than two years, 21% of the children were not covered.

Workers' Health

From 1980 to 1995 there were 93,338 work-related deaths in the United States. Leading causes of job-related death during this period were motor vehicle accidents, homicides, machine-related accidents, falls, electrocutions, and being struck by falling objects. Risks of death varied by gender and age: men were 11 times more likely to die than women during work, probably reflecting, in part, the differences in occupation. Workers 65 years old and older had the highest work-related fatality rate of any age group.

In 1999, 60% of women 18 years old and older were employed or looking for work, and almost four million women held more than one job at the same time, probably reflecting the lower pay received by women and the increased numbers of women heads-of-household. Working women suffered more musculoskeletal disorders such as sprains, strains, carpal tunnel syndrome, and tendonitis than men. More than half of all work-related injuries and illnesses suffered by women were musculoskeletal, compared to 45% among men. Work-related stress was a rapidly growing problem for both men and women, with women identifying stress as the number one problem at work. Heavy workloads, job ambiguities, conflicts and poor relationships, job insecurity, lack of control over the job, and repetitive monotonous work were cited as stress factors; juggling family and work demands, and sexual harassment at the workplace also may add to the stress. Women also were the victims of two-thirds of nonfatal assault injuries at the workplace; most assaults occurred in service occupations.

The Disabled

Disabilities affected every segment of the population, but those living in poverty suffered disproportionately. Adults 70 years old and older also struggled with an inordinate share of disabilities and impairments. According to surveys conducted in 1993–1997, about 18% of these older adults reported vision impairments, slightly more than 30% reported hearing impairments, and close to 9% reported both hearing and vision impairments. Those reporting both vision and hearing impairments also reported having more comorbidities. Women in this age group reported more vision impairments and fewer hearing impairments than men, and Blacks were more likely to have vision impairment (20%) than Whites, but Whites were much more likely to have hearing impairment (35%) than Blacks (19%). Among this elderly population, 43% reported difficulty walking and 31% reported having fallen during the 12 months prior to the survey. More than any other factor, household income dictated how respondents reported the quality of their health. For those with an annual household income under US$ 15,000, 51% reported fair or poor health. In contrast, only 11% of those with an annual income of US$ 50,000 or greater reported fair or poor health.

About 17% of all children under age 18 years have developmental disability. Close to 2% of school-aged children have a serious developmental disability such as cerebral palsy or mental retardation. State and federal government education departments spend US$ 36 billion per year for special education programs for 3–21-year-olds with developmental disabilities.

Indigenous and Other Special Groups

In the U.S., Blacks, Latinos, Native Americans, and Asian/Pacific Islander Americans incur a disproportionate share of mortality, morbidity, disability, and adverse health conditions compared to non-Hispanic Whites. Health indicators for life expectancy and infant mortality show a trend of the health gap widening between majority and minority ethnic/racial groups, even as these health indicators improved for most groups over the nineties. These overriding health disparities between ethnic and racial populations were strongly related to socioeconomic disparities and differences in poverty levels in each group.

The Latino population, the largest and fastest growing minority in the United States, comprised 12.5% of the population in 2000 and included persons of Mexican, Puerto Rican, Cuban, and South and Central American descent among others. Health disparities within the country's Latino population—age-adjusted death rates were substantially lower for Latinos of Cuban descent than for those of Mexican or Puerto Rican descent—primarily reflected socioeconomic differences. Overall, health indicators for Latinos improved during the 1990s.

African-Americans, who made up more than 12% of the population in 2000 and participate in all socioeconomic levels, have three times the portion of their population living in poverty than do non-Hispanic Whites: one-third of all Blacks live in poverty. Half of the Black population lives in urban areas often typified by inadequate housing, poorly-funded schools, lack of living-wage employment opportunities, and violence. African-American death rates were higher than those for Whites for most leading causes of death. For African-Americans 15–24 years old, homicide was the leading cause of death for males and the second leading cause of death for females. But Blacks had lower death rates for suicide and chronic obstructive disease than non-Hispanic Whites. Overall, many health indicators improved for Black communities in the 1990s: colorectal, respiratory, and breast cancer death rates dropped, and there were gains in leading health indicators such as infant mortality and overall death rates.

Asian and Pacific Islanders, who speak more than 30 different languages and originate from very different cultures, represented almost 4% of the country's population in 2000. Overall, they had roughly the same socioeconomic and health status as the majority White population. Some in this group had been in the United States for generations, but others had come more recently. Given the diversity of this population, health challenges vary substantially from group to group. Southeast Asian men suffered more lung cancer than the majority male population, and older Filipino men living in California had greater rates of high blood pressure than other California men of the same age. Southeast Asian immigrants are 40 times more likely to have tuberculosis and hepatitis B than the general population.

In 2000, those reporting only as American Indian or Alaskan Natives made up 0.9% of the population, or 2.5 million persons, and those reporting as Native Americans or Alaskan Natives and at least another race represented 0.6% of the population, or 1.6 million persons. This minority resides primarily in urban areas or on reservations, and many receive their health care through clinics and hospitals provided by the federal government's Indian Health Service. The population is very young, partly because many of them die before reaching old age. This native population was much more likely than the general population to die from diabetes mellitus related to obesity, and liver disease due to alcohol abuse. Accidents and violence (homicides and suicides) were the leading causes of death among Native Americans and Alaska Natives. Alcoholism, which contributed to many of the major causes of death, is a leading health and social problem in this community. Smoking prevalence also is higher among them, increasing risk for smoking-related diseases.

In 2000, more than 93,000 refugees were admitted into the United States. There have been drastic changes in the origins of refugees coming to the U.S. in the late 1990s. In 1997, only 3% of all refugees came from Africa, but in 2000, one-quarter came from that continent. Refugees often had health problems that originated in conditions of the country of origin and that sometimes required extraordinary support and treatment. The federal and state governments provided health care coverage for these new arrivals through Medicaid or through a special federal government fund.

By Type of Health Problem

Natural Disasters

Natural disasters led to some loss of life, injury, substantial property damage, and major daily life disruptions. In 1999, five southern states coped with major disasters due to winter storms. California suffered severe winter freeze. Severe storms left major destruction in six states. Eight states had major declared disasters of severe flooding. Destructive tornadoes touched down in 11 states. Hurricanes Floyd, Irene, Dennis, and Bret caused major destruction in Texas and 14 states along the eastern coast of the United States. Four states issued emergency alerts due to fires.

In 2000, only five states declared major disasters due to tornadoes, and none faced a hurricane. Winter storms caused major disaster to be declared in 14 states and Washington, D.C.; 16 states also suffered other seasonal storms and 3 states suffered floods, all leading to major disaster being declared. Three states sustained major destruction due to wildfires; California dealt with a substantial earthquake. In the late 1990s, no section of the country was immune from natural disasters. West coast areas were more prone to earthquakes; southern and eastern coastal states were more vulnerable to hurricanes. Certain regions in the South and the Midwest were more prone to tornadoes. The type

of public health disaster preparation for each region varies according to these differences.

Vector-borne Diseases

Most malaria cases reported in the United States were acquired elsewhere. The few that were acquired domestically were due to infected blood products, congenital transmission, and locally-acquired mosquito transmission. Of the 1,544 cases of malaria reported in 1997, only 5 were domestically acquired: one person acquired malaria from blood transfusion, one from a needle stick, and three congenitally.

In the 1990s, apparent mosquito-borne episodes of malaria increased in dense populations in the country. Both the mosquito which is the vector for the disease and malaria-infected persons (usually with disease originating from outside the country) were present within United States borders. A warmer weather trend is believed to have increased the risk of domestically originated mosquito-borne infection. In 1999, there were 1,666 cases of malaria reported, representing an 8% increase from 1997. More than 90% of the cases reported in the United States in 1997 were due to *Plasmodium vivax*.

Most other vector-borne diseases are acquired elsewhere. Only one case of yellow fever was reported in the United States in 1999. In that same year, there were only nine cases of plague reported.

Diseases Preventable by Immunization

Between 1997 and 1999, the number of cases of poliomyelitis, diptheria, pertussis, hepatitis B, mumps, measles, and tetanus decreased. No cases of poliomyelitis and only one case of diphtheria were reported in 1999. Cases of invasive *Haemophilus influenzae* and rubella decreased. The number of rubella cases peaked in 1998, but the 1999 count was higher than in 1997.

Blood donations in the United States are screened for hepatitis B, hepatitis C, HIV, and syphilis before blood products are released for patients.

Vaccine coverage has been critical for disease prevention in the United States, especially in preventing morbidity and mortality in children. For example, before the introduction of *Haemophilus influenzae* type b vaccine, there were approximately 20,000 cases of this infection each year. In 1997, however, in a sample of 261 preschoolers with influenza, only one-third had *Haemophilus influenzae* type b (Hib); of those, nearly three-fourths had not completed the vaccine series.

Vaccination against measles also had dramatic results in the country. Epidemiological evidence showed that, as of March 2000, measles was no longer considered endemic in the United States. Moreover, a study in the early 1990s estimated that measles immunization prevented nearly four million cases and almost 1,900 deaths every year in the country. The annual savings from measles prevention were estimated at about US$ 4 billion in direct and indirect costs.

Childhood vaccine coverage rates generally improved from 1997 to 1999. In 1997, 76% of children aged 19 to 35 months had received four doses of DTP (diphtheria, tetanus, and pertussis) vaccine, three doses of polio vaccine, one dose of measles-containing vaccine (MCV), and three doses of *Haemophilus influenzae* type b (Hib) vaccine. In 1999 this combined coverage improved to 78% (Figure 4).

It is now recommended that adults should be vaccinated against influenza, pneumococcal infection, and tetanus. Although influenza and pneumonia are leading causes of death for older adults, according to results from a 1995 survey, only 5.8% of persons older than 64 years reported having received an influenza vaccine in the 12 months prior to the survey; only 34% reported having received pneumococcal vaccine.

Intestinal Infectious Diseases

During the 1990s there was between 6.5 and 33 million cases of food-borne gastrointestinal illnesses each year; roughly 9,000 died annually from these diseases. These illnesses were often misdiagnosed as influenza, and they disproportionately killed the elderly, the very young, pregnant women, and persons with compromised immune systems. Between 1995 and 1999 there were 53 laboratory-confirmed cases of *Vibrio cholerae* O1; six of these were reported in 1999. More than half of the cases were hospitalized and one died. Four had acquired cholera from eating contaminated raw oysters from the Gulf of Mexico. Of the 53 total cases, 36 had been exposed to cholera while traveling outside the United States, and one third of the latter showed resistance to many antimicrobial treatments.

There were several shigellosis outbreaks, which were typically long-lasting and community-wide. These outbreaks often were disseminated through infected children in child-care centers that had poor hygiene. There were 17,521 shigellosis cases reported in the country in 1999.

In 1999, there were 4,513 reported cases of illness due to *Escherichia coli* O157:H7, usually caused by eating undercooked, contaminated ground beef; having personal contact with an infected individual; and drinking raw milk or drinking and swimming in sewage-contaminated water.

Campylobacter caused an estimated two million illnesses a year, affecting about 1% of the population. It led to approximately 500 deaths each year, and was usually transmitted by handling raw poultry or eating raw or undercooked poultry meat.

Food- and water-borne *Cyclospora* was associated with several outbreaks of diarrhea and severe nausea in 1996 and 1997. In 1996, 1,450 cases were reported in one outbreak that included 20 states; raspberries contaminated with *Cyclospora* were probably responsible.

In 1994, the public water supply of the city of Milwaukee, Wisconsin, was contaminated with this cryptosporidium, and

there were more than 400,000 cases of diarrhea reported as a result of this contamination.

Chronic Communicable Diseases

In 1992, 26,673 new tuberculosis cases were reported, for a rate of 10.5 cases per 100,000 population. By 2000, new tuberculosis cases had dropped to 16,377, for a rate of 5.8 per 100,000. Although tuberculosis disease rates dropped 28% between 1996 and 2000, the disease continues to be an important endemic disease in the United States. Most cases were among younger and middle-aged adults: in 2000, 34% of cases were among 25–44-year-olds and 28%, among 45–64-year-olds; only 10% were in children under 15 years old. Moreover, between 1992 and 2000 the number of cases among those born in the United States decreased 55%, while the number of cases among the foreign-born population increased 5%. Because the the U.S.-born and the foreign-born population both increased, new tuberculosis cases had a net decrease from 1992 to 2000 among both populations, from 8 to 4 new cases per 100,000 for the U.S.-born population and from 34 to 26 per 100,000 among the foreign-born. Only about half the states saw consistent substantive declines in new tuberculosis case rates over the nine years, while the other half saw little change or fluctuation. In 2000, Alaska, the District of Columbia, Hawaii, California, and New York had the highest rates, followed by southern states. As did tuberculosis incidence rates, tuberculosis deaths rates also declined through the 1990s. In 1992 the tuberculosis-specific death rate was .6 per 100,000 population; by 1999 this rate had dropped to .3 per 100,000.

The decline in tuberculosis rates has been attributed to increased efforts to identify and promptly treat cases and ensure treatment compliance, improved infection controls in institutional settings, a decrease in the incidence of AIDS, and the declining frequency of multi-drug resistant cases.

Leprosy was relatively uncommon in the United States: in 1999, the incidence of leprosy was .04 per 100,000 population, or a total of 108 reported cases, slightly down from the 1997 rate of .05 per 100,000. In 1997, there were two deaths due to leprosy and none in 1998.

Acute Respiratory Infections

Pneumonia and influenza were two of the leading causes of death in the United States in the 1990s. Pneumonia's death rate was 23.4 per 100,000 population in 1999, with the young, the old, and those with compromised immunity being at highest risk. In that same year, the death rate due to influenza was 0.6 per 100,000 population. Influenza vaccine is provided widely to the public during the flu season.

Zoonoses

In the 1990s, human cases of rabies were rare in the United States, although there was a much larger number of reported rabies cases among animals. In 1996 there were only three human cases reported, and none in 1999. There is continued surveillance of this disease because of its high fatality and because animal reservoirs remain. In 1999 there were 6,730 animals reported with rabies, down from a peak of 8,105 in 1997.

HIV/AIDS

In the 1980s and 1990s there were more than 750,000 cumulative AIDS cases and 450,000 AIDS deaths in the country. In 1993, AIDS rates appeared to suddenly rise, because a new AIDS definition was used that year that included more persons infected with HIV. Later on in the 1990s, AIDS incidence and mortality rates in the United States in fact decreased, as new combinations of anti-HIV drug treatments were introduced. Between 1996 and 1998, the number of AIDS cases dropped 30% and AIDS death rates dropped more than half. HIV drug resistance among recently infected persons is increasing, however: according to a study conducted during 1995–1999 among recently infected persons, 15% had strains resistant to at least one anti-retroviral drug used against HIV.

Approximately 320,000 persons were living with AIDS in 2000. AIDS incidence and mortality rates were both higher in men, although gaps between men and women for both incidence and mortality rates continued to narrow, nearing parity between the sexes (Figure 5). This convergence is due to increases in rates of HIV transmission through heterosexual sex and through injection drug use. Women were especially at risk of acquiring HIV infection through heterosexual sex and subsequently developing AIDS, since it is easier for women to sexually acquire HIV from male partners than for males to acquire it from female partners. Some 12,000 women became newly infected with HIV each year; 64% of them were Black and 18% were Latinas. An estimated three-quarters of all the infected women were infected with HIV through heterosexual contact and the remaining women were infected through intravenous drug use. Among men and women who inject heroin and cocaine, sharing HIV-infected needles is the primary means of transmission. HIV-infected women who inject drugs are more likely to develop AIDS from their infection than are their male counterparts with the same HIV concentration in their blood.

AIDS is not uniformly distributed geographically: the highest AIDS rates were in the largest metropolitan areas in the country's Northeast. This also reflected the differential distribution between urban and rural areas—northeastern cities lie within the major drug-trade corridor that follows Interstate 95 and have disproportionately higher percentages of injection drug users. AIDS rates also were relatively higher in those areas with the greater concentrations of poverty, such as inner cities and the rural South (see Table 1).

Sexually Transmitted Infections

Sexually transmitted infections take an especially heavy toll on women's health. Each year an estimated one million women in

TABLE 1. Adult and adolescent AIDS rates per 100,000 population, by region and degree of urbanization, United States of America, 2000.

Region	No. of cases	Rates (per 100,000 population)		
		Metropolitan areas (> 500,000 pop.)	Metropolitan areas (50,000–500,000 pop.)	Non-metropolitan areas
Northeast	11,791	31	14	6
South	17,038	28	15	10
West	6,969	17	7	5
Midwest	4,670	13	5	3

the United States suffer a symptomatic episode of pelvic inflammatory disease.

Every 7–10 years, drops in syphilis in the country have been followed by epidemics. In 1999, the syphilis rate hit a new record low, at 2.5 cases per 100,000 population, and rates for all forms of syphilis dropped 34% between 1996 and 1999. Congenital syphilis alone declined by 51% from 1997 to 2000. The South had substantially higher rates of syphilis than the Northeast, the West, and the Midwest.

In contrast, chlamydia rates increased 32% and gonorrhea rates increased 8% during 1996–1999. These trends are probably due to expansion of screening programs for chlamydia and gonorrhea, the use of improved diagnostic tests that have greater sensitivity, and improved surveillance systems for these diseases. Chlamydia was the most common of these three sexually transmitted infections, with rates of 254 cases per 100,000 in 1999; gonorrhea ranked second, with 133 per 100,000; and syphilis was a distant third, with 13 per 100,000.

Most genital human papillomavirus infections are subclinical or not recognized; some studies, however, have found that up to 15% of sexually active teenagers were infected with human papillomavirus. In 1997, adjusted rates for cervical cancer related to human papillomavirus were 8 new cases per 100,000.

Sexually transmitted infection rates are disproportionately high among ethnic minorities, a disparity that is associated with these groups' higher levels of poverty and lack of access to health services.

Nutritional and Metabolic Diseases

In the 1990s, the country faced an obesity epidemic. In 1990, the median percent of the adult population that was obese (body mass index ≥30), by state, was 12%, but by 2000, this figure had spiked to 20%. In 2000, most U.S. residents were overweight and about 1-in-5 were obese (see Figure 6). A reported 27% of adults did not engage in any physical activity and one-quarter consumed the recommended fruits and vegetables five or more times daily. Excessively overweight persons have higher mortality rates than those not overweight, being at higher risk for diabetes, cardiovascular disease, and certain cancers. Each year an estimated 300,000 U.S. adults prematurely die of causes related to obesity. The direct and indirect costs of obesity and physical inactivity account for just under 10% of all health care expenditures in the country.

From 1991 to 2000, there was a 49% increase in persons with diabetes, which corresponded to an increase of 61% in persons suffering obesity. It is estimated that almost 10% of all adults in the country have diabetes. Direct and indirect costs of health care associated with diabetes in 1997 were estimated at US$ 98 billion.

Diseases of the Circulatory System

Cardiovascular disease, mainly ischemic heart disease and stroke, is the leading cause of death in the country, accounting for about 40% of all deaths each year. More than 58 million people in the United States are estimated to have some form of cardiovascular disease. In 1999, it was estimated that total costs of health care and loss-of-productivity due to cardiovascular morbidity and mortality came to about US$ 287 billion.

Disease rates are not uniform across the United States. After adjusting for age, cardiovascular disease rates were highest in the South in the 1990s. Because cardiovascular disease rates increase with age and proportionately there are more elderly women than elderly men, the mortality rate from this disease was higher among women.

Malignant Neoplasms

One-quarter of all deaths in the country are due to cancer. The annual health care and loss-of-productivity costs of cancer morbidity and mortality are estimated at US$ 107 billion. Roughly one-third of all cancer deaths in 1999 were associated with poor nutrition.

In 2000 it was estimated that 1.2 million new cases of invasive cancer, excluding skin cancer and carcinoma in situ, were diagnosed in the United States. An additional 1.3 million cases of new skin cancer as well as many in situ cancers were estimated for the same year. Among men, the most common cancers diagnosed in 2000 were prostate, lung and bronchus, and colon and rectum. Prostate cancers represented 29% of all new cancers in men. Among women, the most common cancers diagnosed were breast, lung and bronchus, and colon and rectum; these cancer sites combined represented more than half of all cancers diag-

nosed in women. On average, there was a 1 in 2 chance that a male would develop invasive cancer over his lifetime, and a 1 in 3 chance for a woman.

On average, the overall incidence of cancer rates has declined more than 2% each year between 1992 and 1996. Breast cancer incidence rates have remained relatively level throughout the 1990s. Rates for colon and rectum declined over most of the decade for both men and women and all ethnic groups. Lung and bronchus cancer incidence rates declined for men over the decade and stabilized for women. Prostate cancer incidence also declined.

Lung cancer was the leading cause of cancer deaths among men and women, and is strongly associated with smoking tobacco. In 2000, an estimated 89,300 men and 67,600 women died of lung cancer. Breast cancer deaths were second for women, at 40,800, and prostate cancer was second for men, at 31,900 deaths. There was an estimated total of 552,200 cancer deaths in the United States in 2000, 284,100 males and 268,100 females.

Accidents and Violence

In the United States more injuries occur in the home than any other place. According to a 1997 survey, almost one-quarter of the 41 million injuries resulting from 31 million accidents occurred in the home. Women were twice as likely as men to be injured at home, although men were more likely to be injured at sports facilities, industrial and construction sites, and school. Overall, men had a 21% higher injury rate compared to women. Persons 65 years old and older and those 12–44 years old were the most injury-prone. Elderly women were more likely to have accidents than elderly men, but among younger adults, men were much more likely to be involved in accidents.

Victims of the most severe accidents were typically admitted to hospital trauma centers. During 1994–1999, almost 30% of all patients in hospital trauma wards had been involved in motor vehicle accidents. Motor vehicle accidents led to death almost 6% of the time, and many victims also suffered longer-term disabilities. Falls, the next most common accident seen at trauma centers, represented just over 28% of all trauma patients; more than 3% of the patients died from their falls. Gunshot ranked as the third most frequent reason for admission to a trauma center, making up 7% of all trauma patients; followed by stab wounds, at more than 6%. Gunshot wound patients had the poorest prognosis, with 5.5% of these patients dying from their injuries. A little more than 2% of stabbing patients died. During 1994–1999, an inordinately high number of 20-year-olds and 80-year-olds were admitted into trauma centers: the 80-year-olds were predominantly women who suffered from falls or motor vehicle accidents; the 20-year-olds were mostly male victims of violence.

In 2000, there were 506 violent crimes (murders, forcible rapes, robberies, and aggravated assault) committed per 100,000 population, the lowest rate of violent crime since 1985. From 1999 to 2000, the violent crime rate dropped only 0.1%, essentially remaining statistically unchanged; in the year 2000, however, the violent crime rate was down close to 16% from 1996 and down almost 21% from 1991. Of all violent crimes in 2000, aggravated assault accounted for 64%, robbery for 29%, forcible rape for 6%, and murder for 1%. From 1999 to 2000, only forcible rape showed an increase, of close to 1%. Firearms were used in nearly 26% of murders, robberies, and aggravated assaults, body parts such as hands and feet were used almost 32% of the time, and knives or cutting weapons were used in 15%.

Among the 15,517 murders in 2000, more than three-quarters of the victims were male; about half of all victims were White, and the other half mostly Black. More than 86% of all White victims were murdered by Whites and 94% of all Black victims were murdered by Blacks. Husbands or boyfriends killed one-third of all female victims, whereas wives and girlfriends killed only 3% of all male victims. Two-thirds of all murders were committed with firearms and more than 29% of them were triggered by an argument.

More than 90,000 forcible rapes of females were reported to enforcement agencies in 2000, probably an underestimate. Nationwide, almost 63 per 100,000 females reported being raped in 2000. Metropolitan areas had rates of 65 forcible rapes per 100,000, while rural counties had rates of 43. Cities saw an increase in reported rapes of 1.5% between 1999 and 2000, while suburban areas saw a decline of almost 1%. Rural counties were virtually unchanged. Of all forcible rapes, 12% were perpetrated by juveniles.

Rural counties had the lowest rate of aggravated assaults, at 171 offenses per 100,000 inhabitants; the highest rate was in the cities, with 395, and suburbs ranked in the middle, with 262. From 1999 to 2000, there was nearly a 4% reduction in aggravated assault in rural areas and 0.2% increases in suburbs and cities.

Oral Health

Dental caries is the leading dental disease in the United States, directly affecting nutritional status and social integration. Males and females of all ages were similarly likely to have at least one untreated carie, and for both sexes the likelihood of untreated dental caries increases with age until age 65 years. People living in poverty or near poverty were more likely to suffer untreated caries. Moreover, persons living in poverty had less access to appropriate dental care and most lacked dental health insurance. According to a 1999 national survey, 46% of those living in poverty reported having visited a dentist in the year prior to the survey, compared to almost 49% of the near poor and 72% of the non-poor. In the United States, the South had the lowest percentage of residents visiting the dentist within the year prior to the survey, close to 61% in 1999. These figures changed little in the late 1990s, with only slight decreases seen from 1998 to 1999.

Caries and periodontal disease, the most common oral diseases in the United States, sometimes lead to the total loss of

one's teeth, and reflect both previous disease and lack of access to adequate dental care. Total tooth loss is most common in persons older than 64 years, and rural residents and those living in poverty also were more likely to suffer tooth loss. Rural areas had the lowest number of dentists per population, and the average distance from home to the nearest dentist was much farther than for more urban areas. In 1997–1998, 34% of low-income persons older than 64 years who lived in central large metropolitan areas suffered total tooth loss; in rural areas, 47% of this group did.

Emerging and Re-emerging Diseases

The first outbreak of hantavirus pulmonary syndrome was seen in 1993, and affected primarily Native Americans in New Mexico and Arizona. In 1999, there was an epidemic of 42 probable cases; of those that were laboratory-confirmed, 30% died. There also were infected persons who never developed the pulmonary symptoms. In the country, the hantavirus usually responsible for the syndrome is the Sin Nombre virus.

The tick-borne pathogen that causes North American Lyme disease was identified in 1982 in Lyme, Connecticut, and the disease continues to occur in the country's north-central and northeastern areas. In 1999, there were 16,273 reported cases of Lyme disease. The West Nile virus, a mosquito-borne virus that causes encephalitis in humans, birds, and horses, has newly entered into the United States; in 1999, there was an epidemic with 62 laboratory-confirmed human cases and 7 deaths. Thousands of birds, including at least 26 different species, and 29 horses were confirmed as having West Nile virus, and many died. Based on viral nucleotides, the West Nile virus responsible for this outbreak was the same as a virus identified in geese in Israel in 1998.

RESPONSE OF THE HEALTH SYSTEM

The United States' health system is actually a cluster of health systems of diverse complexity. There were no fundamental health reforms to these systems in the late 1990s, but adjustments were made to meet some evolving needs.

Federal, state, and local governments have defined, often in concert with one another, their roles in protecting the public's health. State public health departments are not under the jurisdiction of federal government health agencies and administrations, and in many states, city and county local public health departments are not under the jurisdiction of state public health departments. As a rule, direct health care services are provided by the private sector, not by the government. Public funds, technical advice, regulatory standards, and health research provided by federal, state, and local governments are common to many of these governmental and nongovernmental services.

Most funding for health from federal and state governments provides health insurance for vulnerable populations and covers specific public health programs. Universally available services such as potable water and municipal solid waste disposal are generally managed or regulated by local and state governments. Health issues that crossed local and state boundaries—such as air pollution, food safety, and food supplementation for vulnerable populations—are typically regulated by federal and state governments. Quality of health care and credentialing of health professionals is generally the responsibility of nongovernmental, nonprofit organizations and state governments.

Among many other regulatory, administrative, and advisory roles, the individual governments have adopted responsibility for disease surveillance, drug safety regulations, device safety, workplace safety, air and water contamination standards, and safety behaviors such as seatbelt use and speed limits. The federal, state, and local governments also respond to disease outbreaks and other health emergencies such as hurricanes, floods, earthquakes, and human-caused disasters.

The federal government manages various programs, oversees research, and provides technical advice and direction, training, funding, and other public health resources mainly through the Department of Health and Human Services. The Department often works through state and local government programs and with other partners. Many other federal government organizations outside the Department's jurisdiction, such as the Environmental Protection Agency, the Social Security Administration, the Department of Agriculture, and the Federal Emergency Management Agency, also are active in securing the population's safety and health.

Responsibility for individual health care issues is much more decentralized. The Government provides health insurance to highly vulnerable groups, such as some families in poverty, the disabled, and the elderly. Most persons, however, acquire private health insurance coverage through their employers or on their own, and it is left up to the individual or the employer's responsibility to find coverage in the marketplace.

Direct health care services, including primary, secondary, and tertiary care, are provided primarily by thousands of private-sector hospitals and clinics throughout the country. The federal government directly funds additional hospitals and clinics that care for military personnel and veterans and for American Indians and Alaskan Natives.

The Department of Health and Human Services is flexible enough to respond to the population's changing health needs and to absorb new responsibilities. For example, as families began to move off the welfare rolls after the reforms, Medicaid was separated from the new welfare program to ensure that children in those families would continue to have access to health insurance coverage; in addition, a new program—the Children's Health Insurance Program (CHIP)—was created. Responsibility for administering the new independent Medicaid program, which covered 18 million children, as well as many adults, and CHIP, which covered an additional 2.2 million children, fell to a Department agency.

The federal government continues to pursue its ambitious health promotion and disease prevention campaign. "Healthy People 2010" sets a comprehensive, nationwide agenda designed to improve the health of everyone in the United States during the first decade of the 21st century. As did its predecessor, "Healthy People 2010" is committed to promoting health and preventing illness, disability, and premature death. The initiative has two overarching goals: to help persons of all ages increase the quality and the number of years of healthy life, and to eliminate health disparities, be they differences by gender, race or ethnicity, education or income, disability, geographic location, or sexual orientation.

The development of "Healthy People 2010" was highly participatory: in the late 1990s, 350 national organizations and 250 state public health, mental health, substance abuse, and environmental agencies met to flesh out the campaign; in addition, in 1997 and 1998, the American public was invited to comment on the initiative by mail or through the Internet—more than 11,000 comments were received. Finally, nearly 500 objectives clustered in 28 focus areas were established by a panel of experts under the direction of the Secretary of Health and Human Services, and each objective was assigned a target for specific improvements to be achieved by 2010. Many objectives focus on specific interventions designed to reduce or eliminate illness, disability, or premature death; others deal with broader issues such as improving access to quality health care, strengthening the public health services, and improving the availability of health-related information. The campaign enlists communities, the nonprofit and for-profit private sectors, and every government level to reduce identified risk factors and enhance protective factors to reduce the incidence of unhealthy conditions and disease.

The single most important health-related event in the late 1990s was the litigation against the tobacco industry that led to the 1997 landmark agreement between attorneys general from 46 states and 5 territories and the tobacco industry. The agreement mandated the tobacco industry to pay US$ 368 billion in health-related damages from tobacco use, to eliminate tobacco advertising billboards, and to retire the advertising cartoon character Joe Camel that was popular among youth. The settlement funds mainly finance programs and research to reduce tobacco use in the country's population, especially economically disadvantaged populations and youth.

Some of the federal programs launched in the late 1990s focused on the needs of specific risk groups such as adolescents and the elderly. For example, the Adolescent Family Life Program, which had a budget of US$ 24 million allocated in fiscal year 2001, was designed to support community-based projects to develop and test abstinence-based programs to delay the onset of sexual activity and reduce teenage pregnancy rates and sexually transmitted diseases. The program also focuses on risk behaviors related to alcohol, drugs, tobacco, and violence. Through amendments passed in 2000 to the Older Americans Act, a national caregivers support program was established: with US$ 125 million in funds allocated in fiscal year 2001, the program works through the states to address major difficulties facing the elderly population, such as providing information about available services, assisting the elderly to gain access to services, providing individual counseling, organizing support groups, training caregivers, and supplementing care services.

Regarding annual expenditures in health, the private sector contributes by far the largest share, with 54% of the total in 1997 and 55% in 1999, followed by the federal government, at 33% and 32%, respectively, and state and local governments, at 33% and 32%, respectively.

In the United States, health lessons learned in the past have served to chart the future in health through such wide-ranging initiatives as "Healthy People 2010" carried out under the leadership of the Department of Health and Human Services, working through its agencies such as the Centers for Disease Control and Prevention and the National Institutes of Health. Critical to the success of this effort is the broad partnership of federal, state, and local governments; private for-profit and nonprofit organizations; community organizations; and individuals who work together to improve and sustain the health of citizens and future generations in the country.

FIGURE 1. Population structure, by age and sex, United States of America, 1999.

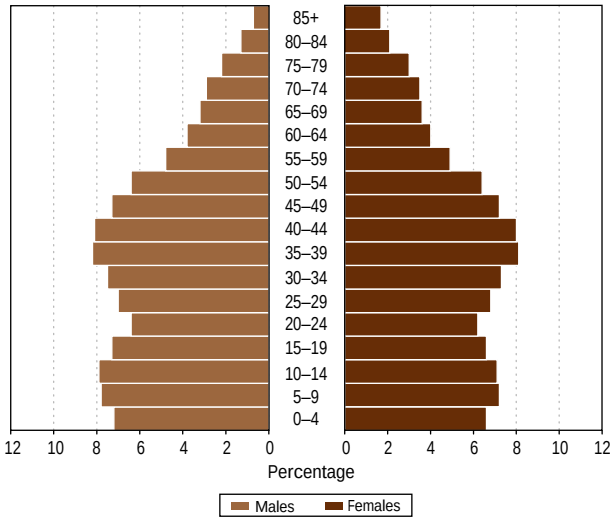


FIGURE 2. Gross domestic product, annual growth (%), United States of America, 1990–2000.

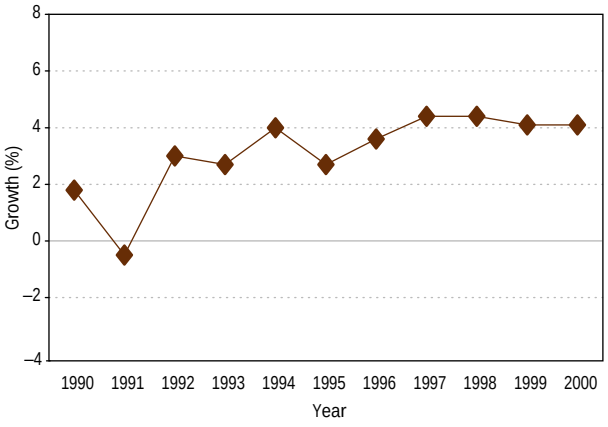


FIGURE 3. Estimated mortality, by broad groups of causes and sex, United States of America, 1999.

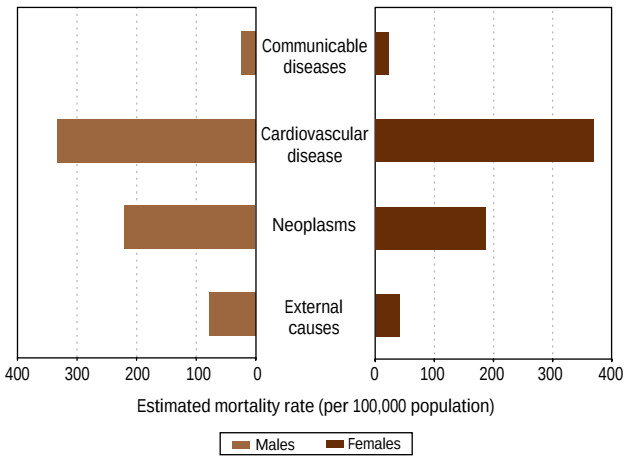


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, United States of America, 1999.

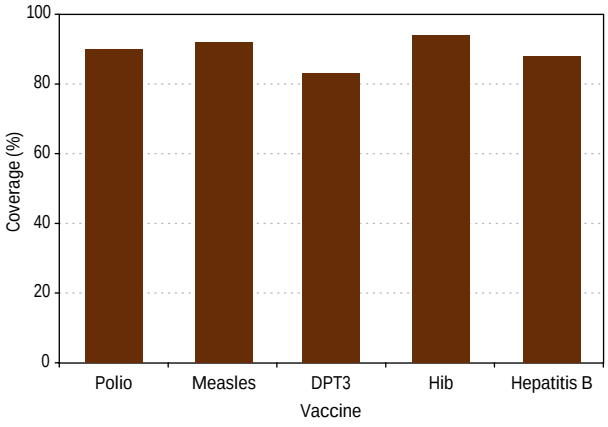


FIGURE 5. AIDS incidence, by sex, with male-female ratio, United States of America, 1990–2000.

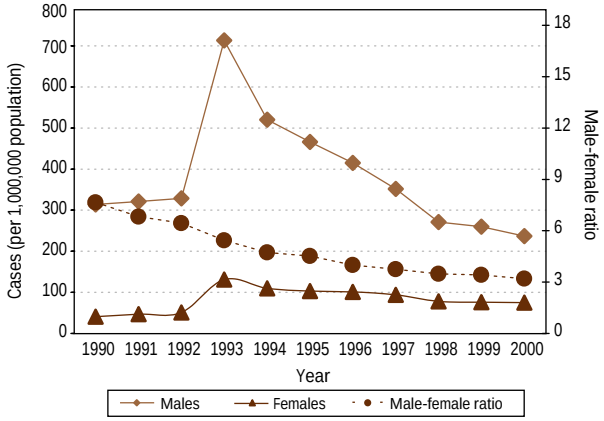
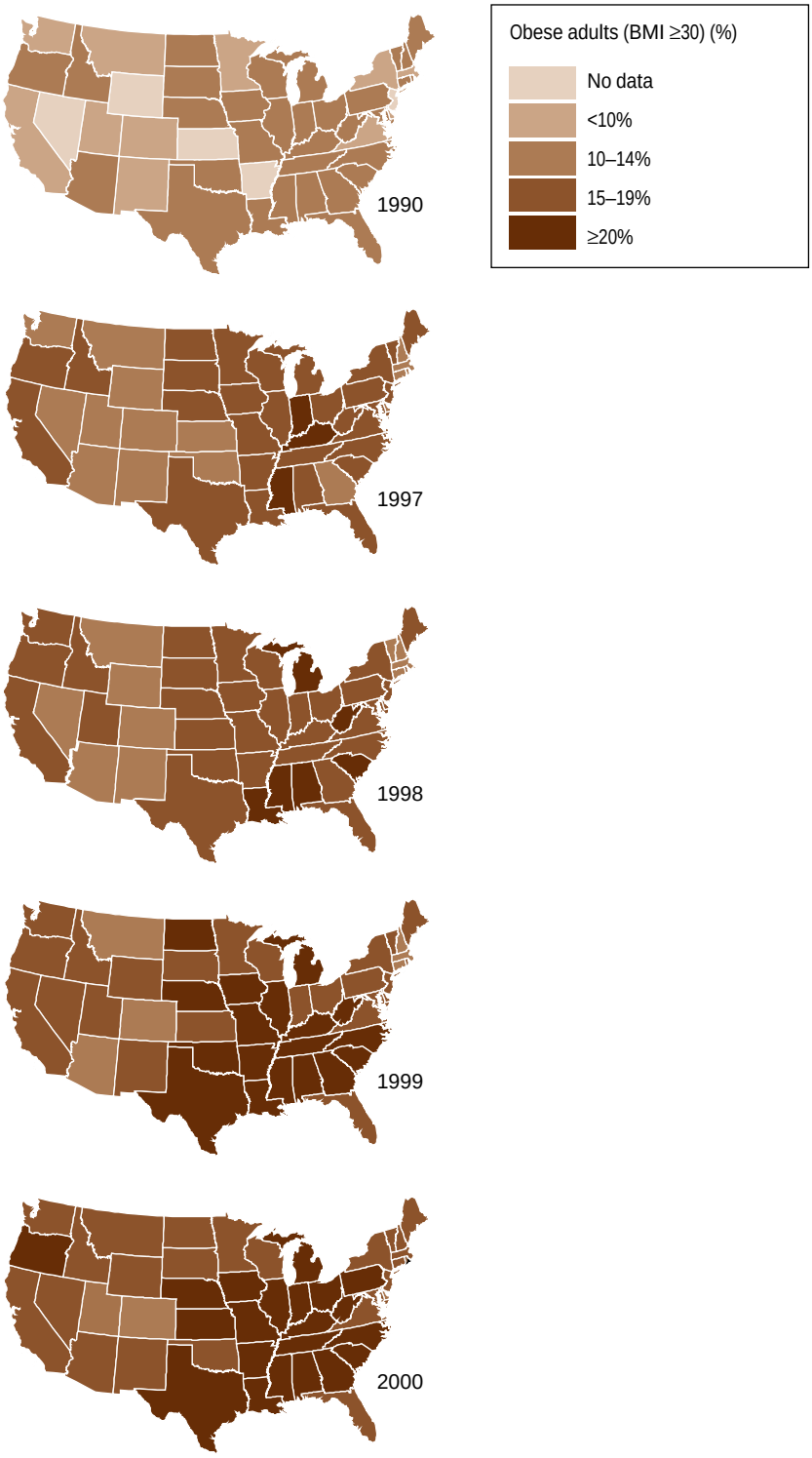


FIGURE 6. Trends in adult obesity, by state, United States of America, 1990–2000.



Source: Based on U.S. Obesity Trends 1985 to 2000. National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention; http://cdc.gov/nccdphp/dnpa/obesity/trend/maps/slide; 10/24/2001.

URUGUAY

OVERVIEW

The Eastern Republic of Uruguay is bordered on the west by Argentina, on the north and northeast by the Federative Republic of Brazil, and on the east and south by the Atlantic Ocean and the River Plate. It has a land area of 176,215 km^2 and a maritime area of 125,057 km^2. It has an uneven terrain, with an average elevation of 117 m and a maximum of 514 m, and fertile lowlands along the coast. The climate is temperate, with four seasons during which there is occasional frost and hail, strong winds, drought, and flooding. The average annual minimum and maximum temperatures are 12 °C and 21.8 °C; the all-time high and low are 40.1 °C and –4.4 °C. The average annual rainfall in the country is 1,320 mm/m2.

Uruguay is a representative democracy, with elections every five years. The national government is made up of the Executive Branch, consisting of the President and 13 ministers; the Legislative Branch, which has two houses—the Senate and the Chamber of Deputies; and the Judicial Branch, consisting of the Supreme Court of Justice and the other courts. Administratively, Uruguay is divided into 19 departments, governed by Departmental Councils (31 members) and intendants. The Department of Montevideo is the smallest in area but the largest in population (it is home to approximately 40% of the country's population).

Among the most noteworthy political developments during 1997–2000 were the national elections in October and November 1999 and the municipal elections in May 2000, which were governed by the Constitution that was approved in a mandatory plebiscite in 1996; for the first time in the country's history the ballot system of voting was used for the presidential election. Four political parties are represented in Congress, and the distribution of seats has forced the ruling party (the Colorado Party) and the National Party to form coalitions in order to achieve congressional majorities. In 2000, for the second straight year, the Uruguayan economy was in recession. In 1999–2000, national income fell significantly more (6%) than GDP (4%). The annual changes in GDP growth between 1990 and 2000 are shown in Figure 1. In addition to these developments, the impact of bad weather on several agricultural sectors is noteworthy.

Several Executive Branch decrees and laws enacted in 1995 and 1996 created and regulated the Executive Committee for State Reform (CEPRE), which is made up of the Director of the Office of Planning and Budget, the Ministry of Economy and Finance, and the Director of the National Office of Civil Service. The mission of CEPRE is to implement and lend continuity to the program for the modernization of the State and to verify compliance with the goals set in this regard. The committee regards as indispensable the appropriate formulation of five-year budgets and follow-up thereon as a tool for State reform.

The economically active population represents 61% (some 2 million people) of the population. The urban unemployment rate in 2000 was 13.6%, one of the highest in decades.

Annual inflation (as measured by the consumer price index) in March 2001 was 4.7%. In 1998, inflation was reduced to under 10% (8.69%) for the first time since 1956. Inflation in 1999 was 4.17% and in 2000, 5.05%. The Government has repeatedly expressed its intention to keep inflation at this level in spite of the economic situation overseas.

The country has a total population of 3,322,141 (year 2000 estimate), with a sex ratio of 93.9. Some 91% of the population lives in urban centers, ranging from a minimum of 80% in the department of Tacuarembó to a maximum of 97% in Montevideo and 94% in Maldonado. Forty-two percent of the total population resides in the department of Montevideo. The remaining 58% lives in the other 18 departments, of which Canelones is the most populated (14% of the total) and Flores the least populated (less than 1% of the total); the other departments each account for between 2% and 4% of the country's population.

Life expectancy at birth in 2000 was 74.5 years for both sexes, with a sex difference of 8 years: 70.4 for males and 78.4 for females. At least one person 60 years of age or older lives in almost half of urban households in the country (49%). Over half (54%) of the elderly live in households consisting exclusively of individuals 60 years of age and older. Women account for three-fourths of the single-person households consisting of an older individual.

The crude birth rate is 16.3 live births per 1,000 population, and the crude death rate is 9.5 per 1,000 population. The average

annual population growth rate is 0.6%, while the total fertility rate is 2.3 children per woman.

The age distribution in the country shows an aging population with a bell-shaped population curve (Figure 2). There are differences among departments, however; Salto and Artigas, for example, have a younger population than the rest of the country.

The breakdown by age groups was as follows in 2000: 0–14 years of age, 25% of the total population; 15–24 years, 16%; 25–60 years, 42%; 60 years and older, 17%. Persons aged 80 years and older account for 3%, and 67% of this group are females. The illiteracy rate among the population 10 years of age and older is 3.1% (3.6% among males and 2.6% among females, and 2.8% in urban areas and 6.2% in rural areas).

Nine years of education are compulsory in Uruguay (six years of primary school and three years of secondary school or technical education). Preschool education for children aged 3–5 years is not yet compulsory, but the authorities are considering the possibility. In 1998, 8.6% of the economically active population 15 years and older had between 0 and 5 years of schooling, 75.8% between 6 and 12 years, and 15.2% had 13 years of schooling or more, whereas in 1981 the proportions were 21.3%, 69.2%, and 9.5%, respectively.

Mortality

In 1999, the infant mortality rate was 14.4 per 1,000 live births, with a neonatal mortality rate of 8.5 per 1,000 and a postneonatal mortality rate of 5.9 per 1,000.

There were 32,430 deaths in 1999. The leading causes of death among the population were diseases of the circulatory system (36%), malignant neoplasms (23.1%), and accidents and adverse effects (5.2%). Next in importance were chronic obstructive pulmonary disease (3.1%), respiratory infections and pneumonia (3%), diabetes mellitus (2%), infectious diseases (1.8%), suicide and self-inflicted injuries (1.3%), disorders in the neonatal period (1.3%), and other causes (9.6%).

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

In 1999, there were 56,006 births in Uruguay. Forty-seven percent of these births took place in public establishments and 53% in private institutions; 37% took place in Montevideo. Of the total births, 7.6% had low birthweight (<2,500 g). In 2000, there were 52,720 births, of which 7.5% had low birthweight.

Infant mortality rates (neonatal and postneonatal) between 1997 and 2000 were 16.5 (8.9 and 7.6) per 1,000 live births in 1997, 16.4 (8.7 and 7.7) in 1998, 14.4 (8.5 and 5.9) in 1999, and 14.1 (7.9 and 6.2) in 2000. In 2000, the infant mortality rate was 14.6 per 1,000 live births in Montevideo and 13.7 in the rest of the country.

The leading cause of death in 1999 among children under 1 year of age was congenital malformations. The second leading cause was intrauterine hypoxia and other respiratory disorders and ailments of newborns.

The three leading causes of death in the population aged 1–4 years were accidents and adverse effects (17.6 per 100,000), congenital anomalies (7.9 per 100,000), and acute respiratory infections and pneumonia (7.1 per 100,000). Acute respiratory infections (36.6%) and intestinal infections (10.1%) were the leading hospital discharge diagnoses among children under age 5 in Ministry of Public Health hospitals in the interior.

Schoolchildren (5–9 years)

In 1999, accidents (with a mortality rate of 11.7 per 100,000), malignant neoplasms (4.7 per 100,000), and certain infectious and parasitic diseases (1.8 per 100,000) accounted for 68.4% of the deaths among children in this age group. The leading hospital discharge diagnoses were acute respiratory infection (20.2%) and injuries (9.1%).

Adolescents (10–14 years)

In 1999, accidents were the leading cause of death in the 10–14 years age group (12.2 per 100,000), accounting for 45.2% of all deaths in this group. The second leading cause was malignant neoplasms (4.1 per 100,000), followed by suicide and self-inflicted injuries (1.5 per 100,000). The leading hospital discharge diagnoses were injuries (14.7%) and diseases of the respiratory system (13.7%).

Adults (15–64 years)

Of the 32,430 deaths in 1999, 22.9% were in the group aged 15–64 years. The leading causes of death among those aged 15–34 were accidents and adverse effects (39.2 per 100,000). Between 35 and 64 years of age, malignant neoplasms (196.6 per 100,000) were the leading cause of death, followed by diseases of the circulatory system (140.26 per 100,000).

There were six maternal deaths in Uruguay in 1999. It is believed that there is underreporting, but its exact extent is unknown.

Among the adult population, 60% of the discharges from Ministry of Public Health inpatient facilities were for complications of pregnancy, childbirth, and puerperium, followed by injuries (13.8% of discharges).

The Elderly (65 years and older)

The leading causes of death in this age group were diseases of the circulatory system (2,139 per 100,000 population), neoplasms (1,174 per 100,000), and chronic diseases of the lower respiratory tract, acute respiratory infections, and pneumonia

(491 per 100,000). These same causes accounted for 69% of all diseases in this age group.

The leading hospital discharge diagnoses were diseases of the respiratory system (14%) and diseases of the circulatory system (13%).

The Disabled

Uruguay has no complete, centralized registry of disabled persons, and the National Honorary Commission of the Disabled has begun the process of improving data collection and analysis. The Commission was created by Law 16,095 of September 1989, which also sets standards for architecture, urban development, transportation, and education in order to provide equal opportunities for disabled persons. The country uses the internationally accepted estimate that 10% of the total population has some form of disability; this figure includes 4% who are physically disabled.

BY TYPE OF HEALTH PROBLEM

Natural Disasters

Floods and droughts are the natural disasters that occur in Uruguay, but there are no official data on mortality or morbidity figures stemming from them.

Vector-borne Diseases

Uruguay to a large extent has controlled Chagas' disease. Its main vector, *Triatoma infestans*, was present in two-thirds of the national territory, but by 1997, the specific vector control program—established in 1972, restructured in 1983, and incorporated into the Southern Cone Chagas Control Initiative—had managed to eliminate or minimize household infestation. Successive international evaluations in 1998, 1999, and 2000 have certified Uruguay's accomplishment; it is the first endemic country to interrupt transmission. Surveillance and controls continue at present in an effort to completely eradicate *T. infestans*.

One potential problem for the country is the reintroduction of the *Aedes aegypti* mosquito with possible cases of dengue, since it was detected again in 1997 after having been eradicated in the country in 1958. A rigorous control program has succeeded in keeping infestation to a minimum, restricting it to pockets in eight cities or towns, of the more than 70 in the country, in spite of the heavy, widespread infestation of *A. aegypti* and the active transmission of dengue that is taking place in neighboring countries. There is no autochthonous transmission of dengue in Uruguay.

Diseases Preventable by Immunization

Cases of poliomyelitis, neonatal tetanus, or diphtheria have not been reported since the early 1980s. Thirty-four cases of measles, 2 of acute flaccid paralysis, 3 of pertussis, 3 of rubella, 24 of mumps, and none of non-neonatal tetanus were reported in 1999.

In 2000, vaccination coverage in the population under 1 year of age was 99% for BCG, 88% for DPT3, 88% for OPV3, and 90% for the measles vaccine (Figure 3).

Chronic Communicable Diseases

There were 708 cases of tuberculosis reported in 1997, 668 in 1998, and 627 in 1999. The rate of HIV infection among tuberculosis patients was 1.3% in 1999.

Acute Respiratory Infections

Pneumonia ranked seventh as a cause of infant mortality, the second leading cause of postneonatal mortality, and the third leading cause of death among children aged 1–4 years. An anatomical/pathological study of sudden infant deaths in Montevideo showed through 115 autopsies that 65% of the deaths had an explanation and that in 33% of these explainable deaths the cause had been an infection of the lower respiratory system.

Between 1998 and 2000, acute infections of the lower respiratory system were the leading cause of hospitalization in the Pediatric Hospital of the Pereira Rossell Hospital Center, accounting for 25% of discharge diagnoses. This facility is the only pediatric referral center in the country and is under the Ministry of Public Health. In 2000, there were 11,489 hospital discharges, of which 2,907 were diagnoses of pneumonia and bronchiolitis.

A study of antibiotics prescriptions for acute respiratory infections among children under 5 years of age who were treated in public and private outpatient services showed in 1,425 cases that 74% of the visits were for acute infections of the upper respiratory system and that pharyngitis was the leading cause of the overuse of antibiotics.

Bacterial pneumonia is not limited to children; rather, it is common at both the beginning and end of life. *Streptococcus pneumoniae* is the main etiological agent.

Zoonoses

Autochthonous transmission of urban rabies has not been reported since 1966. No cases of bovine tuberculosis or brucellosis have been reported either. In 2000, there were no reported cases of swine brucellosis, a disease that was reintroduced in the country in the mid-1990s.

Leptospirosis is an endemic occupational disease and an epizootic in areas of the country in which dairy cattle are raised and rice or sugar cane is grown. Thirteen cases of leptospirosis were reported (3 deaths) in 1998, 8 in 1999 (no deaths), and 23 in 2000 (5 deaths).

HIV/AIDS

Since 1983, when the first case was reported to the Ministry of Public Health's AIDS Program, to 31 December 2000, 1,583 cases of AIDS were reported (a cumulative rate of 50 per 100,000 population). The cases involved individuals from 0 to 87 years of age,

with the 20–34 years age group predominating (55.3% of all AIDS cases); males accounted for 78.1% of cases and females for 21.9%. About 80% of the cases were in Montevideo. Figure 4 shows the incidence of the AIDS by sex and the male-female ratio for the period 1994–1999.

Of the total number of cases, 67.5% infections were sexually transmitted, 28.6% were bloodborne, and 3.9% were mother-to-child. Of the total number of bloodborne infections, 95.3% were due to injectable drugs and 2.9% to blood transfusions, with 1.8% occurring in hemophiliacs. Of the total cumulative cases from 1983 to February 2001, 40.4% were among heterosexuals, 33.3% among homosexuals, 22.6% among bisexuals, and 3.7% among sex workers (males and females).

Pursuant to a resolution from the General Health Directorate (1991), all private health care institutions are obliged provide physician-indicated antiretroviral treatment to all HIV/AIDS patients affiliated with them. The Ministry of Public Health was already providing such treatment at all its facilities.

Nutritional and Metabolic Diseases

The major nutritional problems in Uruguay are obesity and protein-energy malnutrition. The prevalence of nutritional anemia and vitamin A deficiency is not known.

Several studies showed similar findings with regard to the prevalence of obesity: 51% of people are overweight, 17% are obese, and 5% are at high risk of becoming overweight.

Clinical findings indicate that vitamin A deficiency could be considerable among children under 2 years of age and among pregnant women. The National Institute of Statistics, along with ECLAC and the IDB, conducted a study in 1996 which clearly showed adequate food supply in households, although it also acknowledged that there were segments of the population in which there were inadequacies. At the same time, apparent consumption in the households with the highest purchasing power was far above their needs.

Fortification of salt with iodine began 1953 in the country's northern departments, then spread southward. The iodizing of fine and coarse salt for human, animal, and industrial use was made compulsory in 1999, and iodine content is checked periodically.

In Montevideo, the rate of exclusive breast-feeding during the first four months of life was 49% (1989) and 45% (1997) and during the first six months, 39% (1989) and 37% (1997). In the rest of the country, the rates of exclusive breast-feeding during the first four months were 22% (1992) and 40% (1997), and the first six months, 15% (1992) and 32% (1997). This means that the extent of breast-feeding has not changed greatly in Montevideo but seems to have improved in the interior.

Diseases of the Circulatory System

For 45 years, diseases of the circulatory system have been the leading cause of death, accounting for 34% of all deaths in 1999. The rate of mortality from these diseases was 357 per 100,000 in 1995 and 330 per 100,000 in 1999; these numbers indicate a mild but steady decline over the past 10 years.

The most common diseases are cerebrovascular diseases, with the rate of 110 per 100,000 population (3,626 deaths), and ischemic diseases, with the rate of 101 per 100,000 population (3,327 deaths). Cerebrovascular and ischemic diseases together account for 64% of total deaths from diseases of the circulatory system. Of the deaths due to diseases of the circulatory system, 91% are among persons over the age of 60. During 1991–1995, hypertension was one of the leading causes of visits to the health services. Approximately 20% of the adult population suffers from hypertension. According to studies conducted among special population groups, the rates ranged from 10% to 28%.

Malignant Neoplasms

A mortality study that covered the entire 20th century found that up to age 29 years, rates of mortality due to neoplasms among both sexes increased with age but were always lower than in comparison to other age groups. This study found that rates of mortality from neoplasms declined among males aged 30–59 years and then rose again after age 60, particularly after age 75. Among females, the rates declined up to 79 years of age and then increased as of age 80. In general, rates of mortality from neoplasms were lower among females than males, except among persons under age 50.

In 1996 and 1997, there were 13,506 deaths from neoplasms among males, with an age-standardized rate of 325 per 100,000. The most common sites were the lung, prostate, colon and rectum, skin, and stomach, in that order. Among females, deaths due to neoplasms numbered 12,482, with an age-standardized rate of 251 per 100,000 women. The most common sites were the breast, colon and rectum, uterine cervix, skin, and lung. Around half of the deaths due to neoplasms occurred in Montevideo.

Accidents and Violence

Between March 2000 and March 2001, 322 persons died as result of traffic accidents. The number is appreciably lower than that registered between March 1999 and March 2000 (521 persons). The decline seems to be due to the widespread use of seat belts, to new automobile designs, to repeated public service messages—aimed especially at young people—, to breathalyzer tests among motorists, and to the use of designated drivers.

The Ministry of Public Health has established a National Registry of Traffic Accidents, to which all health care institutions must report injuries due to and sequelae of traffic accidents.

Oral Health

Pursuant to an Executive decree, the production and sale of fluoridated salt was made obligatory throughout the country in late 1999. In 1992 and 1999, two surveys that employed the same methodology were conducted among students in public schools,

which 83% of Uruguay's schoolchildren attend. They found a DMFT index of 4.1 among 12-year-olds in 1992 and of 2.47 in 1999.

Emerging and Re-emerging Diseases

The country has a few cases of hantavirus pulmonary syndrome each year, mainly among the rural population engaged in farm work, the cleaning of storehouses, and the stockpiling of goods. The wild rodent involved is presumably *Oligoryzomys flavescens*.

RESPONSE OF THE HEALTH SYSTEM

National Health Plans and Policies

The following six main health-related objectives have been established for the 2000–2005 period: strengthen the management of public and private health care institutions; adapt the supply available services to the epidemiological characteristics and needs of the population; make health care coverage universal by facilitating access and care at the four levels of complexity; enhance the quality of services at the four levels of complexity; rationalize the use of services at the Institutes of Highly Specialized Medicine; and promote the participation of service users and health care institutions in order to solve problems in a climate of trust and respect for the rights of citizens.

The Ministry of Public Health has established a program, under an agreement with the principal health care institutions, to overcome the crisis affecting the Collective Health Care Institutions (CHCI) and to maintain job opportunities. The document, signed in April 2001, envisages a mechanism for absorbing and protecting job opportunities and for redistributing members. The model presented by the Ministry seeks to attune administrative and structural procedures to the need for services, to address the epidemiological situation of the beneficiary population (most of them older adults), and to underscore the need for a comprehensive approach to health care. It also points out the need to prepare guides for clinical practices and for the drafting of contracts to govern relations between each CHCI and its members, with a view towards improving management. Among other things, it notes that there is a conflict of interest when those deciding the fate of an institution also sign contracts with it.

Reducing the prices that the public pays for drugs is one of the priorities established by the Ministry of Public Health. Prices could drop significantly, as much as 40%, if an agreement were reached between the Ministry and the chambers representing domestic and foreign laboratories.

Health Sector Reform Strategies and Programs

The Government's main concern is the coverage and maintenance of the mutual assistance system, which means reorganizing the management of the mutual assistance associations and their health care models. To this end, the Minister of Public Health convened the Intersectoral Commission for the Strengthening of the Mutual Assistance System.

In 2000 and early 2001, the Ministry conducted a number of CHCI management audits to analyze the financial status of the institutions from 1991 to 2000, their liabilities as of 30 July 2000, the characteristics of the membership of each, the debt profile, and expenditures and revenues from 1991 to 2002. The audits reflected the debt situation of the CHCIs.

The Health System

The public health system in Uruguay consists of two sectors: public and private. The public sector is made up of the institutions under the Ministry of Public Health, through the State Health Services Administration (ASSE); the University of the Republic (University Hospital); the Armed Forces Health Service; the Police Health Service; the Social Welfare Bank; the health services of autonomous and decentralized agencies; and the services delivered by the 19 departments.

The ASSE, created in 1987 (Law 15,903), is an agency under the Ministry of Public Health that administers the delivery of medical care to impoverished Uruguayans. It can use its own resources or contract out for them. As a health care provider, the ASSE has the largest installed capacity in the country through a wide-ranging network of facilities of all levels of complexity. It has 7,250 hospital beds available (1,890 for chronic patients) and handles more than 5 million office visits a year.

The University Hospital, which is devoted to the teaching of medicine, has a maximum capacity of 650 beds, but because of financial problems, this has been reduced to some 450 beds. It provides secondary and tertiary care to users of the ASSE and to the rest of the population that pay the corresponding fee. The Armed Forces Health Service, which is under the Defense Ministry, provides medical care to active-duty and retired military personnel and to their immediate family members. It has a 450-bed hospital in Montevideo and infirmaries at military units in the rest of the country.

The Police Health Service, under the Ministry of the Interior, provides care to current and former police personnel and their family members. It has a 132-bed hospital in Montevideo and contracts ASSE and private services in the interior of the country.

The Social Welfare Bank is a government agency that centralizes social security. Besides providing a monetary subsidy in the event of illness or temporary disability, it guarantees medical care to the active affiliates in the private sector by contracting for prepaid services. It has a maternal and child health care unit (for the spouses and children of affiliates without private coverage) that operates out of its own facilities in Montevideo and Canelones (one perinatology unit and five polyclinics).

The State Insurance Fund covers occupational illness and work-related accidents. It provides direct care at its own 160-bed hospital and contracts for services in the interior of the country.

The autonomous agencies and decentralized services are state-run and quasigovernmental agencies that offer their own medical services to their current and former employees.

The 19 municipal departments in the country provide outpatient services to the general population.

The private health sector consists mainly of the collective health care institutions, which are private nonprofit organizations that are formed and operate under the provisions of Law 15,181 and its regulatory decrees.

There are some 48 CHCIs that provide medical care to almost half of the population through prepaid comprehensive health insurance. There are three types of such institutions: (1) mutual assistance associations, which are based on the principle of solidarity and use a system of mutual insurance to provide medical care to their members; (2) professional cooperatives, which provide medical care to their members and associates and in which social capital is provided by the respective professionals; and (3) health services created and financed by private companies or quasigovernmental entities to provide not-for-profit medical care to their personnel and family members.

The CHCIs are independent institutions that compete with each other. The State exercises some legal and technical control over them, but they have a high degree of autonomy. Their memberships range from 10,000 to 270,000. In order to improve their efficiency, at present several of the smaller ones are undergoing mergers or takeovers or are undertaking efforts at complementarity, either among themselves or with larger CHCIs.

There are also several private sanatoriums, which provide private medical care to high-income groups; most of them lease their services to the CHCIs and offer partial insurance coverage.

In terms of coverage, the ASSE serves 33.7% of the population, the CHCIs 46.6%, the Armed Forces Health Service 4.2%, the Police Health Service 1.8%, and other institutions 1.2%. Some 11.7% of the population does not have formal coverage, and there are no data for 0.9%.

Partial medical insurance has been expanding rapidly since the early 1980s. There are several types of specific coverages, such as for transportation in the event of an emergency, diagnostic procedures, surgery and hospitalization, medical care and hospitalization, and dental care.

More complex procedures, which are generally more costly, are provided by the Institutes of Highly Specialized Medicine, which were created in 1979 by Law 14,897. These can be either public or private institutes, and they are financed through the National Resources Fund, which is funded by the State, the CHCIs, individuals, and specific taxes. This system covers 100% of Uruguay's population, and the institution that covers the patient must pay for the service. The Fund covers the following procedures: cardiac catheterization, cardiac surgery, pacemakers, angioplasty, hip replacement, knee replacement, kidney transplant, renal dialysis, bone marrow transplant, treatment of severe burns, percutaneous lithotripsy, and extracorporeal lithotripsy.

The honorary commissions are public, not state, institutions and are financed through tax revenues. They are made up of representatives from public and private institutions, including trade associations and nongovernmental organizations. The primary duties of the Honorary Commission to Combat Tuberculosis and Prevalent Diseases are to combat tuberculosis throughout the country, to take charge of all vaccination activities, and to ensure the selective detection of congenital hypothyroidism. Other honorary commissions deal with cardiovascular health, the struggle against cancer, and the struggle against hydatidosis.

Organization of Regulatory Actions

Certification and Professional Health Practice

All professional university graduates must obtain a professional degree from an officially recognized institution, register with the Ministry of Public Health, which authorizes professional health practice in the country, and register with the Professionals' Pension Fund, which is also the most reliable source of current data.

In order to practice a health profession in Uruguay, foreign professionals must have an accredited degree awarded by a university or institution recognized by the Ministry of Education and Culture.

Evaluation of Health Technology

Although the field of medical technology is heavily regulated, compliance with regulations is very limited.

In 1999, Resolution 182/99 provided that the manufacture, registry, importation, marketing, use, and oversight of reagents for diagnosis, medical equipment, and therapeutic devices are the exclusive province of the Medical Technology Department of the Planning Office. For its part, the Ministry of Industry and Energy, through the National Directorate of Nuclear Technology, has jurisdiction over equipment that emits ionizing radiation.

Except for a brief period in the 1980s, and in spite of the ample existing legislation, the Ministry of Public Health has not conducted an evaluation of health technology. The analysis of the applications submitted has focused mainly on the purchasing institution's ability to pay, with no reference to national or regional health care plans or strategies, the effectiveness of the technology in question, or its impact on health care costs.

The concepts of technology covered by existing legislation deal primarily with medical equipment; in 1999, medical devices and drugs were included, but not procedures. One major shortcoming of the current law is that it does not include the pubic health care sector.

The Ministry is engaged in defining the organization and structure of a health technology evaluation unit. The unit's mission will be to provide advisory services to the General Directorate of Health in its area of competence and to support the decision-making processes of the Quality Control Division as regards compulsory coverage, the development of clinical practice guidelines, and the registration of health products.

Organization of Public Health Care Services

Health Promotion and Disease Prevention and Control Programs

In the area of maternal and child health, the Ministry of Public Health has promoted activities aimed at newborns weighing less than 1,500 g and at sudden infant death, especially at home. It was anticipated that starting in 2001, professional assistance would be provided free of charge to all women receiving care in the public sector.

Potable Water, Excreta Disposal, and Sewerage Services

The coverage of potable water services is high in Uruguay (98% of the total population). There is a broad program for technical reconditioning and expansion of coverage; it is carried out by the State Sanitation Works Administration (OSE) and involves the installation of mobile potable water plants of its own design, even in rural villages of 200 inhabitants.

Sewerage service coverage is 80% in the urban area of Montevideo. In urban areas in the provinces, such services are provided to half of the population, and the OSE has set in motion plans for the treatment of effluents in large cities and has proposed other solutions appropriate for small towns. Forty-six percent of the country's population is connected to the sanitation system, and 48% eliminates wastewater "in situ." In Montevideo, the operation of the underwater outlet has led to an improvement in the quality of the waters at urban beaches around the River Plate, and Sanitation Plan III, which will connect major areas currently without service to the system, is now under way. This project is expected to bring major improvements in the health of the beneficiary population.

Solid Waste Services

The issue of urban solid waste is generating growing interest nationwide. The National Directorate of the Environment provides technical, material, and financial support to municipal departments that are having operational and management problems, chiefly as regards proper final disposal.

Food Safety

Uruguay has traditionally had a high level of food hygiene. The year 1994 saw the start of intersectoral coordination and structuring of institutional and technical resources for food safety. The National Advisory Commission for Foodstuffs was formed; it operates within the orbit of the Ministry of Public Health and consists of representatives of the national and municipal public sector, chambers of industry and the food trade, and consumer organizations. The commission is the highest integrated coordinating body in the area. The National Congress of Municipal Intendants, which represents the 19 departments, has begun through its Food Science Directorates a process of modernization and quality management in the areas of regulation, laboratories, inspection, and consumer protection, with PAHO providing technical cooperation. The System for the Epidemiological Surveillance of Foodborne Diseases, which is coordinated by the Ministry of Public Health, provides nationwide coverage. There have been improvements in clinical identification, reporting, study, and actions to prevent and control outbreaks of the foodborne diseases that have been reported in recent years.

Organization of Individual Health Care Services

There are 76 blood collection centers in Uruguay, and 51 of them process blood. Transfusions are regulated by a number of laws and decrees; No. 81/99 of 1999 is the one that currently governs the operations of blood banks and hemotherapy services.

Compulsory serological tests are conducted for syphilis, Chagas' disease, hepatitis B, hepatitis C, HIV-1, and HIV-2. Pursuant to MERCOSUR regulations, these tests will be expanded soon to include anti-HBc, anti–HTLV-1, and anti–HTLV-2, and there will also be a second, different test for HIV-1 and HIV-2.

Health Supplies

A broad legal framework regulates the importation, production, distribution, sale, and advertising of drugs. The Ministry of Public Health controls the requirements and demands for registering drugs that are regarded as necessary, effective, safe, and produced under conditions that ensure their quality. It also monitors the standards for the inspection of production laboratories, points of distribution and sale, and production processes. To perform this task, the Ministry has units for evaluation and registration, inspection (of manufacturers, importers, distributors, and sale and disbursement sites), and laboratory analysis for drug quality control.

Drug monitoring includes production (manufacturing license, product registration, and proper manufacturing practices) and distribution (authorization and inspection of the establishment, and compliance with proper practices). The basic inspection activities focus on production laboratories or marketing and on products, including labeling and advertising.

Several factors impede the Ministry of Public Health's performance of these functions to varying degrees, among them

shortages of human resources, delays in administrative processes, and the interests at work around the pharmaceutical industry.

Human Resources

As of 31 December 1999, there were 12,486 physicians (39.5 per 10,000 population), 2,613 professional nurses (8.2 per 10,000 population), and 4,050 dentists (12.8 per 10,000 population) in Uruguay.

The training of human resources for health is not planned. In addition to the University of the Republic, private universities and institutes for the training of physicians, professional nurses, dentists, and nursing auxiliaries have been established in recent years. In general, there is a surplus of physicians and a shortage of professional nurses.

Health Research and Technology

Very little research in health technology is conducted in Uruguay, and it is done outside the Ministry of Public Health. Records are not available to estimate the number of clinical trials for evaluating the efficacy and safety of new procedures. The Center for Information and Social Studies of Uruguay and the Preventive Medicine Department of the School of Medicine have conducted some studies to evaluate health care technology, but these are isolated lines of research and are not ongoing.

Health Sector Expenditure and Financing

Per capita health expenditure in 1998 was US$ 697, and total spending on health was equivalent to 10% of GDP. Public spending (46%) and private spending (54%) were relatively proportional. Public spending on health accounted for 14% of overall government outlays. The public sector accounts for all spending on health promotion, disease prevention, and epidemiological surveillance. In 1998, the private sector spent around four times more on drugs (US$ 266 million) than the public sector (US$ 70 million). In addition, the private sector spent US$ 975 million on personnel costs, while the public sector spent US$ 223 million.

External Technical Cooperation and Financing

Both the World Bank and the IDB cooperate with the Ministry of Public Health and other institutions in the area of social services. Cooperation focuses on such areas as the decentralization of the Ministry's health care services, improvements in the identification of beneficiaries, and the training of human resources to manage the services.

The Ministry of Public Health, in coordination with PAHO, continues the activities indicated in the Agreement between Uruguay and the Province of Emilia-Romagna, Italy, in the area of mental health. On several occasions in the 1998–1999 period, the PAHO/WHO Country Office in Uruguay provided advisory services in the area of health services management with a view towards strengthening the Dr. Manuel Quintela University Hospital.

FIGURE 1. Gross domestic product, annual growth (%), Uruguay, 1990–2000.

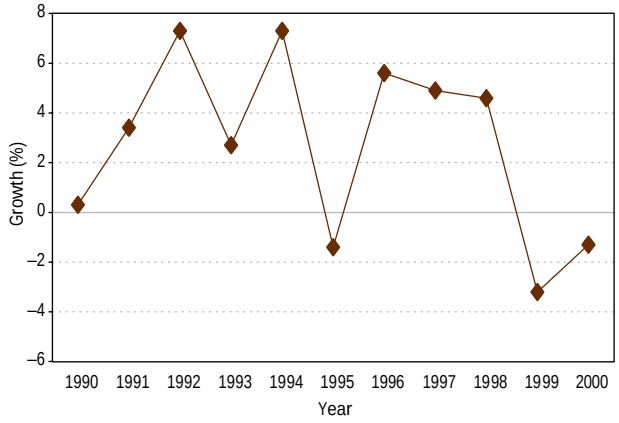


FIGURE 2. Population structure, by age and sex, Uruguay, 2000.

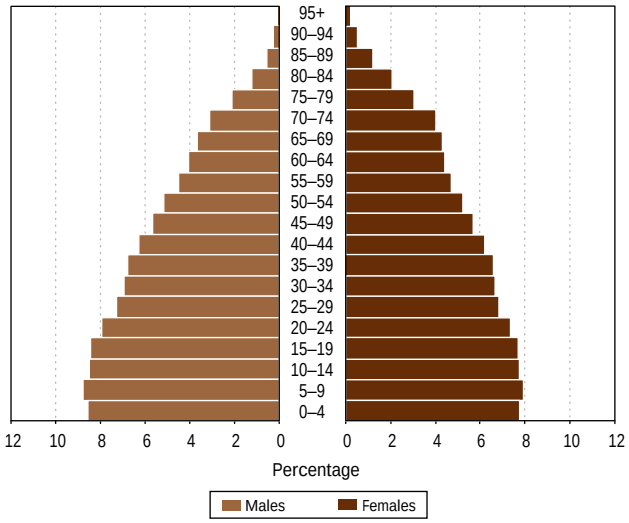


FIGURE 3. Vaccination coverage among the population under 1 year of age, by vaccine, Uruguay, 2000.

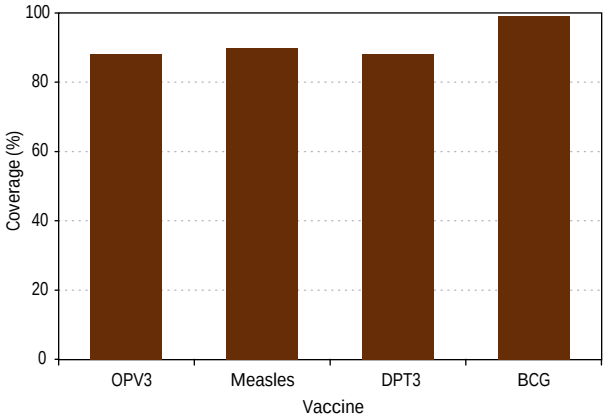
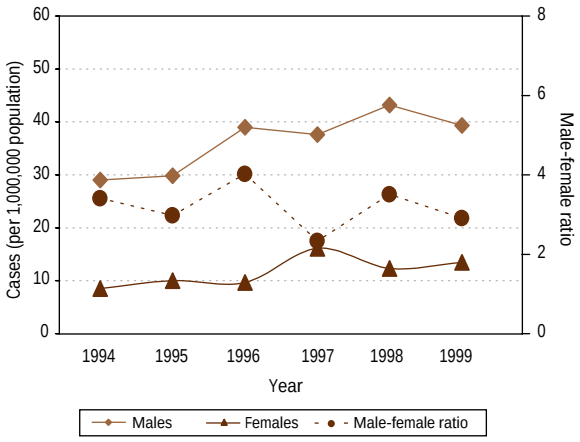


FIGURE 4. AIDS incidence, by sex, with male-female ratio, Uruguay, 1994–1999.



VENEZUELA

OVERVIEW

The Bolivarian Republic of Venezuela is a federal republic comprised of 23 states, a capital district and federal dependencies. It has a land area of 916,446 km^2, a population estimated at 24,896,379 inhabitants in 2000, and a demographic density of 27.2 inhabitants per km^2; 33.2% of the population is under the age of 15 and 6.5% is over 60 (Figure 1). The annual demographic growth rate was 2% in 1996–1999. According to the 1990 General Population Census, 53% of the population lives on the north coast, 24% in the border zone and 23% in the central region; 85.1% of the population lives in urban areas.

In 1999, the general mortality rate was 4.7 per 1,000 population. The birth rate dropped gradually from 25.6 per 1,000 population in 1996 to 24.3 per 1,000 in 1999. The total fertility rate fell slightly, from 3 children per woman in 1996 to 2.8 in 1999. Between 1994 and 1999, women aged 20–24 had the highest fertility rate (163.9 live births per 1,000 women), followed by the 25–29 years age group (139.6 live births per 1,000 women). During that period, the fertility rate dropped in all age groups, with the exception of the 15–19 years group, the figures for which varied. Net migration was positive in 1996 (74,099), and negative the following two years, with figures of –306,574 and –730,107, respectively.

Life expectancy was 74.7 for women and 68.9 for men in 1990–1995, and in 1995–2000, it was 75.7 and 69.9, respectively. Life expectancy for both sexes was 71.8 and 72.8 in the respective five-year periods. In 1998, there was a difference of nearly 10 years between the most developed and the least developed states (73.6 in the Federal District and 63.9 in Amazonas).

According to the last census of the indigenous population (1992) and forecasts for 2000, the indigenous population numbered 371,815 people (1.5% of the total population), broken down among the states as follows: Zulia (62.4%), Amazonas (14.4%), Bolívar (11.0%), Delta Amacuro (6.6%), Anzoátegui (2.2%), and Apure (1.9%). The Wayuu ethnic group accounted for 53.4% of the indigenous population, the Warao for 7.6%, and the Pemon for 6.0%.

Economic performance in Venezuela over the last decade has been slow in terms of growth, marked by a recurrence of inflationary recessive episodes (Figure 2). GDP was estimated at US$ 2,647 per capita in 1998 (adjusted for purchasing power parity); 30% of the national budget was earmarked to pay the foreign debt. The population living in poverty, according to the index of unmet basic needs, stood at 49% between 1996 and 2000, and the percentage of the population living in extreme poverty, at 21.7%. In 2000, the states with the largest proportion of people living below the poverty line were Delta Amacuro (71.6%), Apure (70.4%), Portuguesa (60.8%) and Sucre (60,5%), while the Federal District (33.6%) and Miranda (38.2%) had a smaller proportion of poor people.

The inflation rate fell from 103% in 1996 to 13.4% in 2000. The economically active population (EAP) in 1998 was 15,152,846, of which 9,727,275 (64.2%) had some kind of job. The global unemployment rate fell from 14.5% in the second semester of 1999 to 13.2% during the same period of 2000; male unemployment in the same semester and years fell from 16.1% to 14.4%, while female unemployment rose from 13.6% to 12.5%. Formal employment slid from 50.1% in the second semester of 1998 to 47.0% in the same semester of 2000, while informal employment crept up from 49.9% to 53.0% over that same period.

Only 25% of the eligible population is enrolled in intermediate, diversified, and professional education. Illiteracy among people over 10 years of age in 1998 was 6.2% (5.5% for males and 7.0% for females). Lack of security for citizens and petty crime are priority problems for the Government and society alike. In 2000, 7,908 people died due to assaults. In 1997, Venezuela ranked 48th on the human development index, and 61st in 1999.

A political, legal, economic, and social transition was initiated in 1999, aimed at implementing a new development model intended to strengthen the democratic system, create a fairer society, and consolidate an efficient economy within the framework of globalization. The political transition led to a new Constitution and efforts to restructure the State, which included the creation of a new branch of government, called the Moral branch. This branch will comprise the offices of the Attorney General, the Comptroller

of the Nation, and the Public Defender's Office, and will be charged with overseeing the other branches. The new model implies a government committed to the formulation and management of rational and equitable public policies, the active involvement of society, and a public administration able to provide efficient services aimed at reducing the accumulated social debt.

In the field of social spending, the National Executive, through the 2001 Budget Bill, defined central administration's budget allocations for economic and social policy, with emphasis on the promotion of social strategies and addressing resources specifically towards health, education, and social security. With the introduction of the 1999 Constitution, the country faced a new challenge of embarking on a process of legislative and institutional adjustment and designing new strategies to bring about the changes needed.

Mortality

In 1995–1999, the mortality rate by broad groups of causes was 162.3 per 100,000 population for diseases of the circulatory system, 63.8 per 100,000 for malignant neoplasms, 55.3 per 100,000 for external causes, 53.6 per 100,000 for communicable diseases, and 22.4 per 100,000 for certain conditions originating in the perinatal period. Mortality rates for external causes had the most notable sex difference: 86.8 per 100,000 males and 26.1 per 100,000 females (Figure 3). An analysis of mortality according to the potential years of life lost in 1999, put accidents (all types) in first place (15.8%), followed by malignant neoplasms (8.1%), suicide and homicide (6.8%), and heart disease (5.1%). Chronic diseases and accidents are the leading causes of death, but communicable diseases continued to be a major public health issue.

Signs, symptoms, and ill-defined conditions accounted for 1.4% of the total number of deaths recorded in 1999, down slightly from the 1995 figure of 1.5%. In 1990–1997, estimated underregistration of mortality was 2.4%; underregistration of morbidity is greater still and varies by event. In 1999, communicable diseases accounted for 6.3% of mortality from all causes, and was weighted more towards children under 5 (30%).

HEALTH PROBLEMS

By Population Group

Children (0–4 years)

Infant mortality is on a downward trend: it fell from 121.7 per 1,000 live births in 1940 to 17.3 per 1,000 in 2000, though the rate of decrease was slower in the 1990s. Differences in infant mortality exist among states: in 1996–1998, Monagas had the highest rate (29.9 per 1,000 live births), followed by Trujillo and Delta Amacuro (29.8 and 27.9 per 1,000, respectively), while Anzoátegui had the lowest (7.0 per 1,000 live births, although underregistration is acknowledged). In that same period, the national rate was 20.9 per 1,000 live births. In 1999, the states with the highest infant mortality rates were Delta Amacuro (30.5 per 1,000 live births), Amazonas (29.0), and Trujillo (27.7). The leading causes of mortality recorded in 1999 were perinatal conditions (57%), congenital anomalies (15%), and intestinal conditions (12%). Mortality from diarrhea in children under 5 dropped by 59% between 1990 and 1996 (217.5 to 89.1 per 100,000 live births) and mortality from acute respiratory infections fell by 36%.

In 1998 and 1999, diarrheal and respiratory diseases were the leading causes of morbidity and the most affected states were Sucre and Zulia. In 1999, 12% of children had low birthweight. In children under age 3, a high prevalence of anemia (around 50%) was recorded, while in children under 2, according to the weight-for-age indicator, the nutritional deficit was 13% in 1999. In Delta Amacuro, this deficit rose from 15.2% to 26.6% between 1998 and 1999, a 11.4% increase.

Schoolchildren (5–9 years)

Basic education in Venezuela comprises the first six grades of primary school and the first three of secondary school. In 1999, age-specific mortality in the 5–14 years age group was 37.6 per 100,000 population. External causes was the leading cause, with a rate of 16.8 per 100,000 population, followed by malignant neoplasms (5.3 per 100,000) and communicable diseases (4.3 per 100,000). Accidents accounted for 88% of mortality due to external causes; accidents and homicides were more frequent among males than females, with a 2:1 ratio for accidents and 1.9:1 for homicides. Suicide is as frequent among males as among females.

Adolescents (10–14 years and 15–19 years)

In 2000, approximately 32% of the population was under 15 years of age; 7 in 10 were from poor homes and nearly 40% of all adolescents aged 15–17 were excluded from the formal education system. The fertility rate among adolescents aged 15–19 dropped over the last few years from 97 to 87 live births per 1,000 women, but their contribution to total fertility increased. The average age of initiation of sexual relations is 14 years for males and 15 for females. Adolescent pregnancy is a major problem for society and the health services alike. The leading reasons for consultations by adolescents are psychosocial and family problems, and the most frequent diagnoses are family dysfunction, depressive behavior, poor performance at school, attempted suicide, alcoholism and drug addiction, mistreatment and abuse. The leading causes of mortality are accidents, violence, suicide, and homicide; maternity-related causes rank seventh.

Adults (20–59 years)

Maternal mortality declined between 1940 and 2000, dropping from 172.4 per 100,000 live births to 59.0 per 100,000.

Nevertheless, the 1980s saw a reversal in the maternal mortality trend, which increased slightly and then declined again in the 1990s. In 1999, maternal mortality was 59 per 100,000 live births. The states with the highest rates were Delta Amacuro (242 per 100,000 live births), Trujillo (171) and Nueva Esparta (114). The most important causes of death were complications of pregnancy, childbirth, and the puerperium (50%); edema, proteinuria, and hypertensive disorders (35%), and pregnancy ending in abortion (14%). Most of these causes are avoidable, considering that over 90% of deliveries in Venezuela occur in institutional settings. Sixteen percent of women of childbearing age have anemia, and the rate is as high as 22% among the poorest women. Only 25.5% of women received prenatal care in 1997.

The Elderly (60 years and older)

This population accounted for 6.5% (46% men) of the total population in 2000. The population in this group is expected to triple by 2025. In 1998, the leading causes of mortality in this group were heart disease (32%), malignant neoplasms (18%), cerebrovascular diseases (12%), and diabetes (8%). The risk of death due to these causes is higher in men, except in the case of diabetes. The leading causes of morbidity that year were hypertension, followed by influenza-like syndromes, diabetes, urinary infections, and rheumatoid arthritis.

Workers' Health

Occupational hazards in the 1990s have increased as a direct result of informal employment, the use of inadequate premises, and because homes are used as centers of production. Even with underregistration, the most frequent occupational diseases are industrial deafness (work-related hypoacusis) and other conditions associated with noise and vibrations, chemical poisoning, and musculoskeletal disorders.

Under-age workers are protected by Articles 247 to 273 of the Labor Act, which guarantees them the same salary as adults. Children under 14 are not allowed to work and legal authorization is required from parents or legal guardians for young people aged 14–16 years of age to carry out an economic activity; in any event, they cannot work more than 6 hours a day and 30 hours a week or work nights. According to a journal published by the Institute for Higher Management Studies (IESA), the number of working women has increased and the differential between the average income of women and men has narrowed. The presence of children aged 10–14 in the labor market has also increased. Though illegal, most of these young people are self-employed.

The Disabled

It is estimated that 10% of the population has some degree of physical or mental disability or handicap. Article 81 of the National Constitution refers to care for this special group, and based on that, a national plan for the prevention of disabilities and for the care and rehabilitation of the disabled was drawn up, with emphasis on community care. However, despite being the pioneer in the community-based rehabilitation model, Venezuela has not managed to consolidate it in the comprehensive health care system.

Indigenous Groups

According to the most recent census of the indigenous population (1992), there were 371,815 inhabitants (1.5% of the total population) belonging to 38 ethnic groups, including the Wayuu (53.4%), Warao (7.6%), Pemon (6%), Añú (5.5%), Yanomami (4.7%), Guajibo (3.6%), and Piaroa (3.6%). These ethnic groups make up 84.4% of the indigenous population; they are concentrated in the states of Zulia (62.4%), Amazonas (14%), Bolívar (11%), and Delta Amacuro (6.6%). The indigenous peoples live in conditions of vulnerability, social exclusion, and extreme poverty; the Government has not regulated their system of property ownership and they receive few social services. In 1992, more than 50% of these communities lacked potable water and excreta disposal services; 65% lacked access to schools; and 72.8% of the rural outpatient services in the indigenous villages had no doctor. More current information is not available, except that these communities are served by medical auxiliaries in basic medicine and visited periodically by physicians. Their leading conditions, according to partial data from research on certain ethnic groups, are tuberculosis, malaria, parasitosis, malnutrition, and diarrheal and respiratory disorders. Limitations in geographic, cultural, and economic access exacerbate the problems these diseases pose. The National Assembly has three seats reserved for aboriginal representatives and there is a standing committee on indigenous affairs.

By Type of Health Problem

Natural Disasters

The disasters with the greatest impact (earthquakes, floods, mudslides) have occurred mainly in the northern coastal region, which is the most densely populated. There have also been technological disasters of chemical origin, mainly in the petroleum and petrochemical sector. In 1999, torrential rain and mudslides caused a national tragedy that revealed the inadequacies of the country's urban planning and the limitations of its institutional response capacity. Approximately 17% of the Venezuelan territory is made up of what is known as the system of areas under a special management regime (ABRAE), which safeguards the environment. The Criminal Environmental Law and a series of environmental standards and regulations are in the process of being updated.

Vector-borne Diseases

The malaria transmission zone covers 23% of the country's surface area. It is less than 600 m above sea level and inhabited by

some 720,000 people. Since 1996, the malaria zone includes 45 municipalities, most of them located in Sucre, Bolívar, Amazonas, Barinas, Delta Amacuro, Apure, and Táchira states. In 2000, 30,234 autochthonous cases of malaria were reported, 38.3% more than in 1996 (21,852). They were primarily concentrated in Sucre, Bolívar, and Amazonas states, which accounted for 91.5% of the cases, and were associated with migratory, sociocultural, geographic, and technical factors as well as resistance to some insecticides in Sucre and Barinas. This trend, which has been increasing since 1996, particularly in Sucre, coincides with the adjustments made when the disease control program was decentralized, which were characterized by deficient integration at the local level, inadequate coordination, non-prioritized resources and activities, difficulties in the diagnosis and treatment of cases, and insufficient supervision, monitoring, and evaluation. Young adult males have always been the hardest hit. In 2000, cases of malaria due to *Plasmodium vivax* accounted for 84% of the cases reported and those caused by *P. falciparum* accounted for 15.6%, with predominance in Bolívar and Amazonas. These two states accounted for 75% of the 24 deaths from malaria registered; the remaining 25% were registered in other states, though it is highly likely that they originated in Bolivar and Amazonas.

Classic and hemorrhagic dengue behaved endemo-epidemically nationwide. Serotypes 1, 2, and 4, have circulated simultaneously in recent years; serotype 3 has circulated since 2000. The highest incidence was recorded in 1998: 37,586 cases reported (31,863 of classic dengue and 5,723 of hemorrhagic dengue); in the following years, the number of cases gradually declined, reaching 21,101 cases in 2000 (18,915 classic and 2,186 hemorrhagic). In 1999, 31 deaths were registered, and in 2000, indices of infestation by *Aedes aegypti* in dwellings and warehouses remained high (20.7% and 10.3%, respectively). Insufficient and improper use of resources, lack of evaluation of vector-control activities, limited community participation in the elimination of breeding sites, and inadequate environmental sanitation have hindered the prevention of dengue.

No cases of yellow fever were reported between 1980 and 1997; however, in 1998, there was an outbreak in a Yanomami village in the Parima region of Amazonas that led to 15 cases and 4 deaths. In 1999, one foreign tourist, probably infected in the region of Canaima, Bolívar state, died from yellow fever. The national system for surveillance and control of this disease has become stronger and is now stricter in applying International Health Regulations, particularly regarding compulsory vaccination against yellow fever for travelers from infected countries.

Chagas' disease is considered a risk for some 6 million people living in 198 municipalities in 14 federal entities, in a territory of 101,488 km^2. Trujillo, Lara, Portuguesa, and Barinas have historically been the states most affected due to their geographic characteristics: foothills, coffee-producing zones, and dwellings made with adobe and straw walls that are conducive to infestation by *Rhodnius prolixus*, the main household vector. Pesticide application and improved housing conditions reduced the prevalence of Chagas' disease, which was around 45% in the 1950s, to less than 10% in the 1990s. The states with the highest prevalence rates for 1992–2000 were Carabobo (35.7%), Lara (15.8%), Anzoátegui (9.9%), Portuguesa (9.7%), Táchira (9.5%), and Cojedes (8.9%). In 2000, the seroprevalence rate was 8.3%, predominantly in the western and central regions, and the seroprevalence rate in children under 10 years of age was 1%, while in 1996–1999, it was below that figure. This means that transmission is increasing in the population that had not yet been born when the prevalence of the disease was high. The *R. prolixus* household index rose from 0.7% in 1990 to a high of 5.2% in 2000. Parasite indexes also increased notably during this period, from a household infestation index for *Trypanosoma cruzi* of 0.04% to 0.5%, with a higher seroprevalence rate in children under 10. The Chagas Program must be made a priority in order to control the country's disease areas effectively.

Schistosomiasis is concentrated in an area of the central-northern region of the country approximately 15,000 km^2 (1.6% of the national territory), with a population of 1,690,970 inhabitants at risk who live in Aragua, Carabobo, Miranda, northern Guárico, and the Federal District. Outside this endemic area, the snail (*Biomphalaria glabrata*) that acts as the intermediate host has been identified in Monagas (Caripe), Cojedes (Tinaquillo), Lara (Valle Anzoátegui), and Portuguesa (Biscucuy and Chabasquén) states. In 1995–2000, there were fewer control activities as compared with 1990–1994 due to the administrative and budgetary difficulties of the Schistosomiasis Control Program, which affected screening and treatment in the susceptible host (man), as well as in the elimination of the intermediate host (snail). In these same periods, an increase of 3.9% was observed in the rates of people testing positive by coprologic methods, 34.1% by enzyme-linked immunosorbent assay, and 20.3% by the circumoval precipitin test.

Some 18.3% of the population at risk of contracting onchocercosis in the Region lives in Venezuela, which is the country with the third highest incidence of this disease. There are three foci of this disease: northeast, north-central, and south, where 609 endemic communities have been identified; 76.3% are in the northeast focus. Some 84,492 people are eligible for mass treatment with ivermectin in two annual rounds over a 10-year period. In 2000, 10.3% had completed the two rounds of treatment and by the first semester of 2001, 7.3% had completed the first round, which indicates that however great the effort made, coverage by the end of 2001 will be lower than for the previous year. This is because the program was implemented by the Institute of Biomedicine, funded by a World Bank loan, and had very little participation from other departments of the Ministry of Health and Social Development; also, once the funds were depleted, treatment efforts decreased.

Cutaneous leishmaniasis is endemic throughout the country, except in Nueva Esparta, and is more frequent in male agricultural workers aged 15–44 years. In 2000, 92% of the 2,528 cases recorded were the localized cutaneous form. The states with incidence rates above the national average (10.5 per 100,000 population) were Mérida, Trujillo, Lara, Sucre, Táchira, Cojedes, and Anzoátegui.

Diseases Preventable by Immunization

In 1999 and 2000, the measles elimination program's surveillance quality indicators were met. However, although no cases of the disease had been recorded since 1997, in 2000, an outbreak was reported in Zulia state (three parishes in Maracaibo and one in Mara) with 22 confirmed cases. It was combated by a house-to-house vaccination campaign in the affected municipalities, as well as an active search for the foci. In 1998, 30,353 cases of rubella were reported, 11,394 in 1999, and 12,609 in 2000. In 1998, 17,981 cases of mumps were reported, 6,582 in 1999, and 6,044 in 2000. In 1998, a national vaccination day was held during which the MMR (measles, mumps, rubella) vaccine was administered to 92% of children aged 1–4 nationwide. In 1999, 80% coverage was attained in children under 1 year of age, and coverage rose to 84% in 2000.

Seven cases of neonatal tetanus were reported in 1998, four in 1999, and two in 2000 (Zulia state accounted for 50% of cases up to 1998). Thanks to vaccination of women of childbearing age in the municipalities at greatest risk, no case of neonatal tetanus was recorded in 1998, while one case each was reported in 1999 and 2000. In 2000, 95.7% of women of childbearing age were vaccinated against tetanus in the 43 municipalities at risk (Figure 4). In 1998, 46 cases of tetanus were reported, 45 in 1999, and 51 in 2000. No cases of diphtheria have been reported since 1992. The incidence of pertussis is stable, with 502 cases in 1999 and 499 in 2000. The last case of diphtheria was reported in 1992. Due to problems involving product availability, coverage with the DPT (diphtheria, pertussis, tetanus) vaccine was only 38% in 1998, but the situation improved, with coverage reaching 78% in 1999 and 77% in 2000.

In 1998, 684 cases of hepatitis B were reported, 709 in 1999, and 985 in 2000. BCG vaccination coverage nationwide averaged over 95% in 1999 and 2000, rising from 86.2% in 1994 to 99.5% in 2000 (Figure 4). There was a change in the basic vaccination scheme in 1998 when the measles vaccine was replaced by the MMR vaccine. In 2000, the Pneumonia and Meningitis Surveillance System in children under 5 years was implemented within the National Immunization Program, with nine sentinel centers. That year, new biologicals were included in the Program, such as the vaccines against *Haemophilus influenzae* type b (Hib), hepatitis B, and against yellow fever in children aged 1 year or younger, although the respective coverages were below 50%, partly due to delays in distribution. New surveillance and control strategies have been applied for rubella and meningitis and pneumonia caused by Hib infection.

Immunization activities against poliomyelitis include routine vaccination and an annual vaccination day; 87% coverage was achieved in 1999 and 86% in 2000. The last confirmed cases of poliomyelitis was reported in 1989. That year, the PAHO Revolving Fund for Vaccine Procurement was used for the first time to purchase measles and rubella vaccines. This mechanism will be extended to other biologicals and syringes, which will guarantee quality at a lower cost. Deficiencies in the cold chain—a fundamental component of effective immunization—have been detected. The immunization program lacks sufficient human resources and training is needed at the local level. Technical standards must also be brought up to date.

Intestinal Infectious Diseases

Cases of cholera appeared in 1991 and continued to be reported until 1993, with a steady incidence rate. In 1994 and 1995, no cases were reported, but in 1996, 268 cases were registered. In 1997, there was an epidemic with 2,551 cases, for a rate of 11.2 per 100,000 population. In 1998, the incidence dropped to 1.3 per 100,000 population and, in 1999, it was 1.6 per 100,000 population. In 1999, 64% of cholera cases occurred in Sucre, 14.2% in Delta Amacuro, 13.8% in Nueva Esparta, and 2.6% in Miranda and Anzoátegui. Most of the cholera cases in 2000 were in Sucre state (annual incidence = 80.7%). Delta Amacuro accounted for 9.3% of the incidence that year, Nueva Esparta for 4.3%, and Monagas and Anzoátegui together for 2.1%. In 1999, there were seven deaths (1.8% case fatality)—four in Sucre, one in Delta Amacuro, and two in Monagas. In 2000, four people died from cholera, all in Sucre state, which has been the most affected in the last two years, followed by Delta Amacuro and Nueva Esparta.

Chronic Communicable Diseases

Bacillary pulmonary tuberculosis and the other forms of tuberculosis have varied little in recent years. The respective rates recorded were 15.6 and 26.1 per 100,000 population in 1991, and 15.0 and 25.2, per 100,000 in 2000. In 1999 and 2000, eight cases of tubercular meningitis were recorded in children under age 5 (5 in Zulia state), as well as one death in that age group from miliary tuberculosis in 1999. In Zulia state, vaccination coverage was 84.7% in 1999 and 107.0% in 2000. This indicator must be more discriminating in order to ascertain which are the higher-risk municipalities and communities that account for the high incidence of tubercular meningitis and of the miliary form of the disease in children under 5 years in that state. Between 1994 and 2000, the percentage of persons aged 15 years and older with respiratory symptoms fell from 6.9% to 3.6% (below the 5% expected detection value), while the sputum smears collected in this age group increased from 29.1% to 53.2%. The proportion of cases that tested positive from the first sputum smear samples from persons with respiratory symptoms dropped from 5.9% to 3.9%, a figure that is still above the 2% expected by the National Program. The proportion of positive sputum smears in 1999 was

1.5%, which is considered acceptable. When the treatment was evaluated in 1999, 81.8% cured cases, 9.0% abandoned cases, 0.2% failed cases, 4.6% transferred cases, and 4.4% deaths (729) were reported. In addition to demographic growth and migration, co-infection with HIV/AIDS is influencing the appearance of tuberculosis. The 15–49 years age group had an average of seven deaths for each age, a figure that closely resembles the average of eight deaths per year for all ages. This reflects the influence that HIV/AIDS has on mortality in young people and adults under 50 years of age.

Leprosy ceased to be a public health problem in 1997. Its prevalence in 2000 was 0.6 per 10,000 population. The problem persists in Cojedes, Portuguesa, Barinas, Apure, and Trujillo states. Detection of new cases increases with age and is higher in males and in rural and unincorporated residential areas. The multibacillary form is the most prevalent.

Zoonoses

Actions to prevent, control, and eradicate zoonoses must be carried out in a coordinated manner by the health and agricultural sectors. This has not yet been possible in Venezuela and is preventing some objectives from being met.

The number of states reporting cases of canine rabies fell from 11 in 1991 to 2 (Táchira and Zulia) in 2000, but the average annual number of cases remained close to 100. Between 1991 and 2000, the annual average of human rabies cases dropped from three to one. The cases recorded in those years occurred in the metropolitan area of Maracaibo, practically the last area in the country where the disease has been found. This demands that greater attention be paid to the foci of sylvatic rabies. The foci of sylvatic rabies, which are found mostly in the central region of the country, have dropped from an average of 160 a year in the first three years of the 1990s, to an average of 30 a year for the last three years of the decade. This may be attributed above all to the high proportion of cattle vaccinated—some 40% of the 11.8 million head each year.

The last large epizootic of Venezuelan equine encephalitis occurred in 1995, when 99 affected herds of horses were registered and around 12,500 people fell ill. Vaccination coverage of animals in 2000 was around 60% of the equine population in areas at risk, which, in the event of an epizootic, would be insufficient to prevent human cases. The imprecise definition of responsibilities, especially of animal vaccination, hampers achievement of the coverage necessary.

The problem of leptospirosis increased and affected more areas than before. There were 46 cases of human leptospirosis in 11 states in 1991 and 411 cases in the entire country in 2000. Cattle continued to be affected by the disease (300 cases in 16 states in 2000).

The teniasis/cysticercosis complex is only identified as a public health problem in Lara, the only state with a program to control the disease and where an increasing number of cases were registered between 1996 (3 cases) and 2000 (138 cases). It is likely that the situation is similar in states that do not have control programs and where it is common for pigs and other animals to range freely. Bovine spongiform encephalopathy (BSE or mad cow disease) is not present in Venezuela, and the characteristics of the country's cattle-raising activities render the level of risk practically insignificant.

The annual foci of foot-and-mouth disease are gradually diminishing, from 20 in 1991 and 1992 to four in 1999 and 2000. This is likely the result of the effectiveness of the disease control program. Foci of vesicular stomatitis, however, rose from 11 a year to an average of 29 over the same period.

HIV/AIDS

During 1983–1999, 8,047 cases and 4,726 deaths were reported, and underregistration was estimated at around 80%. According to information from UNAIDS, 62,000 persons throughout the country were HIV carriers in 1999. In analyzing the accumulated incidence, clearly the most frequent mode of transmission is sexual, which accounts for 90.3% of the cases (homosexuals, 41.5%; heterosexuals, 31.7%; and bisexuals, 17.1%), followed by transmission by blood, accounting for 4.3% (intravenous drug users, 2.0%; hemophiliacs, 1.3%; and blood transfusions, 1.0%), vertical (3.1%), and mixed (2.3%). There is a marked predominance of HIV/AIDS cases among males, although the proportion of female cases is rising. The male-female ratio was 10:1 in 1990 and 5:1 in 1999. In 50% of cases, the disease was contracted between the ages of 15 and 24. The age group most affected by AIDS is 25–34 years. The states with the highest morbidity rates are the Federal District (167.8 per 100,000 population) and Nueva Esparta (37.5 per 100,000). In 1999, 1,243 deaths were recorded, for an annual average of deaths 2.4 times higher in the 15–49 years age group than in any other age group.

An epidemiological surveillance system that acts in coordination with the Ministry of Health and Social Development's information system network is essential for achieving more effective integration between the local level and the national program. The Ministry has earmarked funds to meet the demand for medication by people with HIV/AIDS.

Sexually Transmitted Infections

The estimated incidence of sexually transmitted infections in 1999, by causal agent, was: *Chlamydia trachomatis*, 2,215.5 per 100,000 population (2,424.3 for females and 2,009.2 for males), with a prevalence for both sexes of 1,840.6 per 100,000 population (2,450.3 for females and 1,238.3 for males, a ratio of 2:1); *Neisseria gonorrhoeae*, with an incidence of 1,404.6 per 100,000 population (1,271.2 for males and 1,539.6 for females) and a prevalence in both sexes of 424.7 per 100,000 population (285.7 for males and 565.4 for females, with a female-male ratio of 2:1).

The incidence of syphilis for both sexes was 816.1 per 100,000 population (728.4 for males and 904.9 for females). Total preva-

lence of this disease was 1,022.0 per 100,000 population (1,130.9 for females and 914.3 for males). The incidence rate of acquired syphilis registered by the Ministry of Health and Social Development in 1999 was 33.7 per 100,000 population. One hundred percent of the blood for transfusion in blood banks is screened, and in 1999, a syphilis infection rate of 1.03% was found. In 1999, the Ministry reported 24 deaths from congenital syphilis nationwide, for a rate of 0.04 per 1,000 live births.

Nutritional and Metabolic Diseases

The groups most affected by general malnutrition in 2000 were children under 2 years of age (11.7%), 2–6 years (22.4%), and 7–14 years (24.4%). Twenty-four percent of preschool-age children attending public schools have a nutritional deficit and the highest values were recorded in Barinas (33.5%), Monagas (32.1%), Apure (32%), Portuguesa (31%), and Guárico (30.1%). The mortality rate from nutritional deficiencies in children under 1 year rose from 39.7 per 100,000 live births in 1989 to 60.3 per 100,000 in 1999. The prevalence of overweight in the population under 15 years of age rose from 8.5% in 1990 to 11.3% in 2000. As for micronutrients, 16.5% of women of childbearing age were anemic and 34.7% had iron deficiency, with values of 22% and 39%, respectively, among the poorest women. The incidence of iron deficiency anemia in pregnant women was 41% and in children under 3 years it was 51%. Mortality due to nutritional deficiencies affected the age group under 1 year the most, at a rate of 60.3 per 100,000 live births. According to the data available, there is no evidence of vitamin A deficiency. In 2000, Venezuela was certified as virtually free of iodine deficiency disorders. In 1999, foodstuffs containing protein, iron, vitamins A and C, thiamine, and niacin were fully available on the market (higher than 110%); however, the availability of calories, riboflavin, and calcium was critically insufficient (lower than 90%).

In 1999, diabetes mellitus was the fifth leading cause of death overall (5.5%), but fourth for women (7.4%). The mortality rate that year was 23.8 per 100,000 population (22.9 for males and 26.9 for females). The highest risk of death from this cause was in women aged 60 and older (282.3 per 100,000) compared with men of that age (222.1 per 100,000). In 1999, the incidence of type 2 diabetes mellitus was 87.9%; type 1, 10.6%; and the other types, 1.5%. The most frequent chronic complications in 2000 were peripheral neuropathy (38%), nephropathy (25.7%), diabetic foot (23%), retinopathy (19%), peripheral vascular insufficiency (13.2%), and urinary infection (6.9%). In the different federal health entities, the prevalence of diabetes mellitus registered by the Ministry of Health and Social Development ranged from 0.18% in Mérida to 16.8% in Zulia, which indicates the inconsistency in registration and, consequently, in the development of the program.

Diseases of the Circulatory System

Diseases of the circulatory system were the leading cause of death in 1999 (21%); over half were due to acute myocardial infarction. One in 10 deaths was due to hypertensive diseases. Ischemic diseases have been increasing, but not hypertensive diseases, which may indicate underregistration of that cause. The highest-risk age group is 40–60 years. Males and postmenopausal women continue to be the most affected.

Malignant Neoplasms

Malignant neoplasms were the second leading cause of death in 1999 (14.3%), with malignant neoplasms of the digestive system, mainly the stomach, predominating in both sexes. In women, cervical cancer is the second leading cause (13.1 per 100,000 females), and the highest risk is in women aged 25–64 years (202.6 per 100,000 women). The second leading cause is breast cancer (8.8 per 100,000), above all after the age of 30, with the highest proportion occurring in women aged 45–59 years. In men, cancer of the bronchus and lung ranked second (11.4 per 100,000), followed by prostate cancer (11.0 per 100,000); the highest-risk age group is 50 years and older, with a rate of 74.9 per 100,000. It is estimated that over 80% of cancer patients do not receive treatment for pain, or adequate palliative care. The main problem with the cervical cancer prevention and control program is the quality of cytological diagnoses.

Accidents and Violence

In 1999, accidents and violence accounted for 12.5% of total deaths. Accidents (all kinds) were the fourth leading cause of death (7.5%) that year, with a rate of 32.8 per 100,000 population (51.0 for males and 16.1 for females). Mortality from this cause fell 17% over the period 1989–1998. However, in young people under 15, it is the leading cause of death for both sexes. Mortality from transport accidents accounts for 60% of mortality from all accidents and ranks third for men and sixth for women; the largest proportion of accidents was registered in Zulia (15%), Carabobo (8.9%), and the Federal District (8.5%). In 1999, 5% of deaths were due to suicides and homicides, making them seventh in general mortality and fourth for men. Mortality due to these causes is increasing, mostly due to homicides (11.7 per 100,000 population in 1998 and 16.9 in 2000). In 1999, the highest-risk group was males aged 15–44 years (430.2 per 100,000) and the highest mortality from these causes was recorded in Zulia (17%), Carabobo (15.9%), Aragua (11.8%), and the Federal District (7.0%). Mortality from suicides and homicides rose from seventh place in 1999 to fifth place in the first semester of 2000. In 2000, mortality from homicide accounted for 83% (8,022) of deaths due to suicide and homicide, whereas in 1999, it only accounted for 76% (5,974), which represents a 34.3% increase.

Between 1998 and 2000, an annual average of 4,000 complaints of domestic violence were filed, and by the end of 2001, this figure was expected to triple. In the 800MUJER telephone service, 57.7% of the total number of calls received between 2000 and 2001 corresponded to violence against women and the family. Rape accounted for 47% of the total number of known cases

of this type of crime in 1997, an important fact given that rape is highly underreported. The Government has afforded high priority to this problem and INAMUJER, a national organization of Venezuelan women, allocates more than 70% of its budget to it.

Oral Health

According to data published in 1998, the prevalence of dental caries in temporary or primary teeth before the age of 6 was three; in permanent teeth, the average DMFT index between 6 and 8 years of age was under one; however, at age 15 years and older, values of three were attained, and towards the end of adolescence, five or more (northeastern region and Guayana). Fifteen percent of children aged 6–15 years have some degree of dental fluorosis, and rural values are double those of urban areas.

Tobacco Use

The prevalence of adult smokers, according to national studies carried out by the Ministry of Health and Social Development and the Venezuelan Anti-Tobacco Foundation, fell from 39.8% in 1984 to 30% in 1996, but in young people under 15 years it almost tripled over that period, rising from 2.7% to 7%; the increase is most significant among females. Per capita consumption of cigarettes, according to official data from the Ministry of Finance, fell from 1,893 cigarettes in 1984 to 897 cigarettes in 1996. Although the tobacco control policies approved in 1981 have reduced the level of consumption, legislation affecting young people under 15 needs to be strengthened, particularly by enacting a total ban on advertising. According to the World Health Organization's Global Youth Tobacco Survey (1999), 40% of students aged 13–15 years are exposed to second-hand tobacco smoke at home.

Foodborne Diseases

Despite underregistration, which prevents the true extent of the problem from being known, between 1996 and 2000, a 63% increase could be seen in the number of outbreaks, and foodborne cases of diseases quadrupled. In 56.4% of cases, the contaminating agent was identified (*Staphylococcus aureus* in 72.8% of cases and high levels of histamine in 14.7% of cases). In 2000, half the cases occurred in homes and 22.8% in schools; 48.4% occurred in Vargas and Miranda states and in the Federal District.

RESPONSE OF THE HEALTH SYSTEM

National Health Policies and Plans

The legal framework established by the Constitution has led to the drafting of a Health Bill, which is awaiting approval by the National Assembly. It contains policy guidelines and establishes the standards for their institutionalization. Government policy, and health policy in particular, is implemented by the specific government agencies and the Federal Council of Government, the entity in charge of planning and coordinating policies and actions aimed at decentralizing and transferring the competencies of the central government to the states and municipalities. This Council is chaired by an executive vice-president and made up of ministers, governors, mayors of each state, and representatives of civil society.

A process was initiated in 1990 to decentralize the then Ministry of Health and Social Welfare to the states; at the end of 2001, 17 federal entities had been decentralized, leaving only Apure, Barinas, Cojedes, Guárico, Amazonas, Delta Amacuro, and Vargas states. In 1999, the Ministry of Health and Social Welfare was merged with the Ministry of Family Services, and the Ministry of Health and Social Development was created. This new Ministry is the body governing the health sector and its functions include regulation, formulation, design, control, evaluation, and monitoring of health and social development policies, programs, and plans; integration of sources of financing and allocation of the resources of the National Public Health System; comprehensive health care for all sectors of the population, particularly low-income groups, and promotion of citizen participation.

The Ministry of Health and Social Development has assigned high priority to the restructuring of the central level of care, application of a comprehensive model of care, and the creation of a National Public Health System. At the same time, it seeks to transcend the medical focus of health to include social development.

The Strategic Health and Development Plan (2000–2006) aims to guarantee comprehensive care to the population, particularly to vulnerable groups; prevent and control prevalent mortality and morbidity; and guarantee that the health services and social development system is run with efficiency, effectiveness, equity, and solidarity.

Health Sector Reform Strategies and Programs

The Executive branch has a high-level body called the Social Cabinet, through which it exercises its guidance and coordination functions in the social and health sectors. Its members are the Minister of Health and Social Development, who chairs it, the ministers of Planning and Development, Education, Culture, and Sports, Production and Commerce, Environment and Natural Resources, and Science and Technology. In order to promote the intersectoral nature of the public health system and guarantee the development of a comprehensive policy, the preliminary Health Bill envisages the creation of the National Intersectoral Health Council, which will coordinate the activities of the sector, including those of the various government and nongovernmental organizations. This Council will act in coordination with the Technical Secretariat of the Federal Council of Government (Article 185 of the Constitution) and its functions in the area of decentralization will be exercised through the Intersectoral State and Municipal Councils. Creation of these intersectoral councils will facilitate the establishment of coordination mechanisms on

technical aspects capable of strengthening the leadership role of the Ministry of Health and Social Development in the development of its policies. Over the last 12 years, the country has taken five large steps towards macro-reform. For various reasons, the first three reforms were unsuccessful and limited. Discussion of the 1999 reforms was postponed for the 2001 National Assembly, which will deal with the legal framework for health sector reform.

With a view to promoting social development, comprehensive health, and citizen participation, in particular by socially excluded groups, funding for 2001 was directed at several areas. For example, funds were allocated to implement policies, within the framework of the Comprehensive Health Care and Social Development Model, to establish equality and social justice, ensuring attention to special social needs and reducing violence, delinquency, and drug abuse by strengthening and modernizing the outpatient and hospital network; care for communicable and noncommunicable diseases; environmental sanitation; and attention to social emergencies and care for vulnerable and socially excluded groups. The priorities are maternal and child health care; disease control and eradication; and accessibility to hospital services, social infrastructure, and care during social emergencies. Funding was also allocated to increase citizen participation by strengthening and consolidating social networks at each level of the community to create a new public management model. In addition, activities to strengthen leadership, integration, and development of health system institutions were funded.

The goal of the Health Bill is to expand and enforce the constitutional right to health. It will regulate all matters related to comprehensive individual and collective health care; the development of a healthy environment; health sector organization and functions; financing; provision of services and health products; duties and rights of individuals; the responsibility of different sectors in the field of health; and the activities of health workers and facilities, be they public or private, and the relationship between them. It also states that in order to guarantee the constitutional right to health, the National Public Health System must be governed by the following principles:

Universality: All persons are entitled to health protection, thus their access to health services and programs will be guaranteed without discrimination and under effectively equal conditions.
Equity: The different needs of the various population groups will be recognized and attended to in order to reduce inequalities in health associated with geographic location, social class, gender, ethnicity, and other classifications.
Solidarity: In order to achieve a level of common well-being and collective health, all individuals and sectors will contribute towards the system's operation according to their ability.
Uniqueness and social integration: Social cohesion, awareness, and citizen organization will be fostered, establishing the right to health as a common goal based on the concept of uniqueness, participation, and solidarity of the National Public Health System.
Free of charge: No amount may be directly charged to people for the health services provided under the National Public Health System, according to the provisions of the Constitution and the terms set forth in this law.
Participation: Civil society will be involved in designing health policies, plans, projects, programs, standards, and regulations, as well as in implementing and evaluating health management.
Comprehensiveness: Health policies, plans, and programs will be designed and implemented in a holistic and intersectoral manner, in an endeavor to improve quality of life and collective well-being. In turn, the health services will undertake comprehensive activities aimed at promoting health and avoiding accidents, including preventive and curative medicine and rehabilitation.
Cultural and linguistic pertinence: Health policies, plans, programs, and services will be designed and implemented in ways that consider national cultural diversity and recognize the multiethnic, multicultural, and multilingual character of the State.
Quality, efficacy, and efficiency: All the services that come under the National Public Health System must be provided on a timely, adequate, and ongoing basis through the effective use of resources and in keeping with such criteria as optimum quality and recognized validity in order to effectively meet the goals set forth in the health policies and plans.

The Health System

Institutional Organization

In 1990, a process was initiated to transfer (decentralize) the health services of the then Ministry of Health to the states. According to information from the Ministry of Health and Social Development, in March 2001, all the states had signed decentralization agreements with the governing body, except for Guárico and Portuguesa, which were still at the negotiation stage. The agreements signed enabled both funds and human resources to be transferred, but not movable property or real estate.

The health sector is composed of the public sector (made up of many institutions that operate in a nonintegrated, centralized, and deconcentrated manner) and the private sector. The public sector is composed of the Ministry of Health and Social Development, the Venezuelan Social Security Institute, the Social Welfare Institute of the Ministry of Education, the Armed Forces Institute of Social Welfare, and the Central Mayoralty (formerly the Office of the Federal District Governor). The network of public health establishments has different levels of care and operates throughout the country.

In Venezuela, over 2,400 institutions work in the area of health. They belong to the public as well as the private sectors, including nongovernmental organizations. The public sector bears the greatest responsibility for providing health services to the general population.

The Constitution and the Health Bill establish means of intergovernmental coordination that will facilitate the creation of the political system governing the health sector. There are enormous shortcomings in health service coverage; while broad groups of the population either lack access to services, or have very limited access, others have multiple coverage by different services. The network's ability to respond to health care needs is insufficient, waiting lists for surgery and specialist outpatient care are long, and there is frequently a lack or shortage of certain essential inputs necessary to deliver health care. The network does not include emergency and disaster mitigation and prevention plans. To deal with these situations, a new comprehensive health care model has been put in place at the outpatient level.

Developments in Health Legislation

The Constitution lays the groundwork for improving the legal nature and organizational model of the health sector. Article 83 states that health is a fundamental social right and an obligation of the State that must be guaranteed. To that end, Article 84 stipulates the creation of a National Public Health System, under the leadership of the Ministry of Health and Social Development, which will be intersectoral, decentralized, and participatory; integrated with the social security system; and governed by the principles of universality, comprehensiveness, equity, and social integration and solidarity, as well as being free of charge. Article 85 stipulates that financing of the National Public Health System is the obligation of the State. Lastly, Article 86 states out that everyone is entitled to social security as a nonprofit public service that guarantees health and ensures protection against different contingencies.

Health Insurance

There are serious shortcomings in health service coverage, since large groups of the population lack access to these services or have very limited use of them, while others have multiple coverage by several services. In 1997, 65% of the population (15,665,235 people) had some kind of insurance. The Venezuelan Social Security Institute provides the broadest coverage (57% of the insured population, including those directly insured and beneficiaries). The Ministry of Health and Social Development and the federal entities are obliged to protect those population groups that lack any other kind of public insurance (35%); however, in practice, the Ministry's outpatient network serves approximately 80% of the population.

Organization of Regulatory Actions

Health Care Delivery

The Ministry of Health and Social Development regulates and controls the public and private establishments that provide health services, for which registration, licensing, and classification mechanisms have been designed. In the sessions held in 2001, the National Assembly looked into the creation of a body responsible for accrediting the establishments that provide health services. The institutions have implemented control measures such as the installation and technological adaptation of industrial plants. There is also a goal to eliminate the use of leaded gasoline by 2005 and incentives to use natural gas or unleaded gasoline for automotive vehicles.

Basic Health Markets

The Comptroller of Collective Health a dependency of the National Public Health System in charge of the registration, analysis, inspection, surveillance, and control of production, storage, marketing, transportation, and dispensing of goods for human use and consumption, as well as of equipment, materials, establishments, and industries for health-related activities. Importation, manufacture, processing, transportation, storage, marketing, and supply, even donated regulated goods, comes under the control of the Ministry of Health and Social Development as far as matters regarding the safeguarding of collective health are concerned.

The Rafael Rangel National Institute of Hygiene is the body of the Ministry of Health and Social Development that provides scientific and technological support and is responsible for the analysis and evaluation of the quality and safety of foods, drugs, cosmetics, reagents and materials for diagnostic and treatment purposes, and of any other product for human use and consumption, with a potential effect on health.

The Ministry of Health and Social Development regulates pharmaceuticals to certify their quality, safety, efficacy, tolerance, purity, and stability through registration, prior authorization, surveillance, monitoring, and inspection of products, establishments, and related professions.

Environmental Quality

According to Venezuelan law, regulation, monitoring, standardization, and control of environmental quality has steering bodies such as the Ministry of the Environment and Natural Resources and the Ministry of Health and Social Development. The first, through the General Directorate of Environmental Quality, and the second through its General Directorate for Environmental Health and Sanitation Control. However, there are a number of State organizations that have different competencies in this sector, which is the case of the Ministry of Infrastructure in the area of housing, and the Ministry of Energy and Mines in the field of chemical safety.

The environmental sanitation services carry out actions designed to achieve, conserve, and recover healthy environmental conditions to preserve individual and collective health. These actions include control, reduction, and eradication of biological, physical, chemical, and other factors in the environment that could be harmful to human beings. All of these actions are carried out in close coordination with the Ministry of the

Environment and Natural Resources; actions concerning its attributions in this area are also coordinated with the Ministry of Labor.

The Ministry of Health and Social Development is responsible for exercising health regulation on the final disposal of organs, tissues, embryos, fetuses, cadavers, and human parts; as well as on the disposal of the waste produced in health establishments in order to prevent the spread of disease and environmental damage. This Ministry is also responsible for defining environmental sanitation policies, plans, and programs; setting technical sanitation standards; and coordinating, controlling, and supervising the implementation of policies and programs and compliance with national and state regulations. The State and Municipal Directorates of Health and Social Development are charged with implementing the environmental sanitation programs established by the governing body.

Food Quality

The Ministry of Health and Social Development is responsible for the registration of all foodstuffs in the country, of which there were 90,000 in 2001, as well as for ensuring their safety from the production stage up to the point of consumption. There is no control over the presence in foods of contaminants originating from veterinary uses (hormones, antibiotics, etc.) nor are their measures to regulate genetically modified foods. As of 2000, the Ministry began to establish a Hazard Analysis Critical Control Points (HACCP) system for foods.

Organization of Public Health Care Services

The State Directorates of Health and Social Development, in their respective fields of competence, apply national health policies; design, implement, and evaluate the state health plans and programs; manage and obtain financing; assign the resources originating from national and state levels; and provide health services and programs. Each directorate includes in a single body within its jurisdiction the activities of all the state-funded public establishments and other institutions involved in the field of health.

The Municipal Directorates of Health and Social Development manage the comprehensive health promotion, accident prevention, preventive medicine, and environmental sanitation services, for which they are responsible, and administer the resources allocated for those purposes. All this is carried out according to the particular characteristics and capacities of each municipality, in keeping with the law and agreements on the transfer of services and programs, where these exist. Each municipal directorate must have permanent representation from civil society in its steering body; the same provision will be taken at parish level.

Environmental health surveillance is incipient and must be strengthened, as it lacks sufficient capacity in the area of laboratories, trained human resources, and research. The national health information system gathers and analyzes information on epidemiology, health programs and services, costs, and expenditures.

Water resources are abundant (over 1,000 million m^3) and it is estimated that utilizable volumes of surface water total 93,000 million m^3 and 22,312 million m^3 in the case of groundwater. Potable water coverage increased from 77% in 1996 to 84% in 2000; the areas not covered are mainly rural, indigenous, and unincorporated urban areas. Regarding water quality, 125 potable water treatment plants are in operation, mainly in the systems that serve the cities. The installed capacity of this infrastructure is considered sufficient, though surveillance and control of the service in rural areas is deficient and thus the quality of the water distributed is questionable.

In 2000, 73% of the population had adequate sewerage services, the deficit being concentrated, as in the case of potable water, in the rural, indigenous, and unincorporated urban areas. Only 10% of the estimated 76 m^3/sec of total sewerage dumped is treated. Annual public investment in the sector has not exceeded 0.2% of GDP in the last five years. By 2001, with additional resources in the order of US$ 88.9 million, which amounted to a budget increase of 26.7% for the sector, the National Sanitation Plan was consolidated. Approximately 62% of water used was not billed for in 1999, which is a fundamental aspect of and a highly significant factor in the sector's financial deficit.

Seventy-two percent of the municipalities have no solid waste disposal infrastructure and the country has no safe landfills for hazardous materials, including hospital waste. This situation, together with widespread inadequate management, has resulted in the urgent need for legislation and a legal framework that would enable this problem to be tackled is being prepared. Atmospheric monitoring is undertaken through a network of instruments that has detected an increase in pollution levels, above all in the concentrations of particulate material in industrial areas in Zulia and Bolívar states. Studies have indicated an association between respiratory diseases and the increase in contaminants in the air.

Organization of Individual Health Care Services

The service facilities and programs of the National Public Health System are organized under the health network modality according to the levels of care and degrees of complexity, geographic coverage, sectorization of the population, and problem-solving capacity. These establishments are hospitals and outpatient services, specialty centers, maternity hospitals, blood banks, and other authorized, registered and accredited health services belonging to the National Public Health System. All public health establishments must be part of a network.

The outpatient and hospital establishments belonging to the National Public Health System are organized according to their

level of complexity and problem-solving capacity, and act together in a coordinated manner in the appropriate public health network to provide their respective catchment populations with services. To that end, there are at least three levels of care. Each level includes the different health establishments belonging to each network, with each level on the scale increasing in complexity. The regulatory provisions and resolutions determine the relationships between the facilities, their characteristics, and their method of operating at each level of care.

At the primary level there are 4,804 public outpatient establishments, 4,605 (96%) of which belong to the Ministry of Health and Social Development. There is no information available on the number of nongovernmental organizations that act at the primary care level, nor is there any on private outpatient establishments. There are 296 hospitals in the network of public establishments: 214 dependent on the Ministry or local governments, 33 on the Venezuelan Social Security Institute, 13 on the Armed Forces Social Welfare Institute, 3 on Petróleos de Venezuela, 29 on the National Institute of Geriatrics and Gerontology, 2 on Corporación Venezolana de Guayana, 1 on the Miranda City Hall, and 1 on the Caracas State Police Department. The private sector has 344 hospitals (315 for-profit institutions and 29 charitable foundations). According to a census conducted in 2000, there were 40,675 public hospital beds in the government sector (17.6 beds per 10,000 population), more than 50% of which are in the Federal District or the most developed states.

Despite the seemingly adequate number of outpatient and hospital establishments, the response capacity of the network, as already mentioned, is precarious. Waiting lists for surgery and specialized outpatient care are long, and essential inputs for individual care are frequently in short supply. A national coordinating committee was set up to look into these hospital problems. It is relatively autonomous and has political and financial support. The main problems were pinpointed and projects designed to deal with them by proposing short, medium, and long-term solutions. In the short term, private services were contracted and agreements set up with friendly countries. This alleviated the need for immediate care that the official network was unable to solve. Additionally, the Government assigned a significant extrabudgetary appropriation to equip or strengthen the infrastructure in selected hospitals and a legal and administrative framework was proposed to foster autonomous management.

Health Supplies

The Ministry of Health and Social Development regulates and inspects everything related to the management of drugs, from their manufacture to their use by patients. The national supply is met by local producers and importers. National production as a percentage of total supply dropped from 95% in 1995 to 45% in 2000. Total spending on drugs increased in recent years, from US$ 1,200 million in 1998 to US$ 1,600 million in 2000. However, access, indirectly measured by an indicator of consumption such as the number of units per capita, dropped from 18 units per capita in 1977 to 13 in 2000. Of the total amount spent on drugs in 2000, 34% (US$ 547 million) corresponded to the public sector. Drug procurement accounted for 15.2% of the amount spent on health through the Venezuelan Social Security Institute and the Ministry of Health and Social Development. The Ministry is drafting a document on the national drug policy, based on ensuring access to essential drugs.

Human Resources

In 1999, there were 19.7 doctors and 7.9 nurses per 10,000 population. Of the total number of doctors in the country, 46.8% worked full- or part-time in the public sector (Ministry of Health and Social Development and the Venezuelan Social Security Institute); there is no information available on those working in other public institutions. In 1998, 50.5% of registered physicians were specialists and 49.5% general physicians. Nevertheless, their distribution by state reveals inequities in the system, since 55% of physicians work in the five states with the highest per capita income.

According to the University Sector Planning Office, in 1997, undergraduate-level training programs were available in the following fields: 10 in medicine, 8 in nursing, 7 in dentistry, 4 in pharmacy, 3 in nutrition, 5 in bioanalysis, and 4 in veterinary science. There were 19 upper-level technical training programs in nursing, 3 in physiotherapy, 3 in occupational health, 1 in cardiopulmonary care, 1 in health information, 1 in health engineering, 2 in cytotechnology, 2 in speech therapy, 1 in social work, 2 in hospital administration, 2 in service management, 1 in radiology, and 1 in gerontology. The National Council of Universities, which is under the Ministry of Education, Culture, and Sports, grants operating permits for all training programs in the country, including those in the field of health, and is working to introduce an accreditation system.

There were 4 mid-level technical training programs in service management, 3 in child care, 2 in health records and statistics, 2 in clinical laboratory, 2 in orthopedics and traumatology, 1 in electromedicine, and 1 in health inspection. The Directorate of Diversified and Professional Intermediate Education of the Ministry of Education, Culture, and Sports licenses the operation of and accredits these courses. No current information is available on enrollment in and completion of health science courses.

According to data from 1997 from the National Council of Universities, the University Sector Planning Office, the postgraduate courses available are for specializations, master's degrees, and doctorates. There are 167 specialization programs, 53 postgraduate programs, and 20 doctoral programs. There are no statistics on postgraduate enrollments and completions.

According to information from the Health Project 2001 Training Unit, during 1997–2000, a National Training Program

funded by the World Bank was developed within the framework of the projects to strengthen the health system with technical support from PAHO. During this period, 143 courses were held, with a total of 2,816 participants from the country's 24 states. The course content covered epidemiology, maternal and child health and social promotion, health services management, comprehensive care, and technological aspects of health management. Only a small proportion of staff receives training, especially in the regions, and there are no records on staff training in the administrative and service categories.

The average remuneration for general practitioners working under the Ministry of Health and Social Development is US$ 1,000 per month. The average remuneration for specialists employed by the Ministry is US$ 1,200. There are substantial differences (between 10% and 20%) in the earnings of doctors employed by the Ministry of Health and Social Development, the Venezuelan Social Security Institute, and the local governments.

Most of the human resources areas in the field of health and social development need to be strengthened, particularly the information system and the definition of a comprehensive human resources policy that is consistent with health policies. Certification of professionals is provided by the respective training body or university. The Department of Health Control of the Ministry of Health and Social Development registers the following categories of professionals and provides them with a registration number: physicians, professional nurses and nurse technicians, dentists, pharmacists, nutritionists, and bioanalysts. Professional practice is regulated through professionals associations and federations, with emphasis on the practice of medical specialties, through the credentials commission and with specific standards. According to the Health Bill, the Ministry of Health and Social Development will be charged with regulating, supervising, inspecting, and monitoring the practice of health professionals and technicians, based on the principles of good practice, ethics, teaching, research, and new staff management plans. With a view to establishing recertification criteria and mechanisms, a committee will be created with representation from the Ministries of Health and Social Development (coordination); Education, Culture, and Sports; Science and Technology; and the national universities, national academies, and scientific societies.

Health Research and Technology

The National Council for Scientific and Technological Research (CONICYT) coordinates scientific and technological promotion and management at the national level. Science and technology foundations that operate in 10 states come under CONICYT but are autonomously managed. Through the creation of the Ministry of Science and Technology in 1999, CONICYT and the other entities are experimenting with a process to restructure and reorient its functions entirely.

The Directorate for Health Research operates within the Ministry of Health and Social Development and is dependent on the General Directorate for Research and Education. There are also nine health centers and institutes that depend on the Ministry, among whose main functions are to conduct health research. According to information from CONICYT, the health field used 34% of the total resources in 1990 and only 20.3% in 1993.

In 1998, under the Grants Program for Scientific Research, the area of medical technology and medical science used 46.4% of the VEB 1,553 million (US$ 2,875,926) available. Health projects obtained 6.1% of the total VEB 988 million (US$ 1,829,629) available in the Technological Development Program. Of 140 annual scholarships for the training of researchers, the health sector accounted for 12 (8.6%).

In 1990, health research activities focused on basic and clinical biomedical research (88%) and only 12% on public health projects and papers. Although no current information is available, the trend seems to be decreasing; in other words policies and priorities, as well sources of funding for health research, are not well defined and this weakness is all the greater when it comes to research on health policies, systems, and services. Postgraduate courses are aimed more at training specialists (68.7% of the programs) than on research (8.6% are doctoral programs), and the research staff management system does not receive the attention it deserves.

No regulatory policies have been defined yet on development, adaptation, and incorporation of technologies in the Ministry of Health and Social Development. Technologies are incorporated without a preliminary study or validation process. Adjustments are in keeping with the circumstances and specific needs of certain programs or services.

Health Sector Expenditure and Financing

The National Public Health System is financed on the basis of solidarity and comprehensiveness. It is provided through national, state, and municipal fiscal budgets for health, state and municipal revenues earmarked for health, transfers from other social security subsystems, specific tariffs, resources obtained from cost recovery for registration services, and the Comptroller for Collective Health.

Public spending on health's share of the national budget increased from 8.6% in 1995 to 11.6% in 2000. Total spending on health as a percentage of GDP was 2.6% in 1995, 2.0% in 1996, 2.7% in 1997, and 3.0% in 2000. Public spending per capita fluctuated in a similar manner, from US$ 34.10 in 1995, to US$ 23.80 in 1996, and US$ 62.20 in 2000. Central government spending on health as a percentage of GDP dropped from 1.5% in 1995 to 0.8% in 1996, and rose to 1.3% in 1999. Private spending increased by a greater proportion than public spending, representing over 50% of the total (1.6% of GDP) in 1999. The Ministry of Health and Social Development was assigned 6.6% (US$

2,108,150,100) of the Nation's Fiscal Budget for 2001. Seventy-four percent (US$ 1,560,031,000) of this amount was transferred to agencies under the Ministry and to the states. The per capita allocation ranged from US$ 76 (Apure) and US$ 24 (Miranda), which reveals the effort to afford priority to ensuring equity. However, 70% of the budget was earmarked for the hospital network, 20% to primary health care, and the remaining 10% to management of the system.

The country's general budget in 2001 was US$ 32,063,954,400 and included a contribution of US$ 13,129,166,000 for the social sector. Of the latter figure, 16.1% (US$ 2,108,149,200) was assigned to the Ministry of Health and Social Development. The budget appropriations assigned to this Ministry account for 6.6% of the total national budget.

External Technical Cooperation and Financing

The total contribution of external cooperation to the health budget in 2001 was US$ 82.6 million, equivalent to 3.9% of the Ministry of Health and Social Development's budget. Of that, US$ 72.3 million (88%) were loans and US$ 10.3 million (12%) donations and multilateral cooperation, specifically from the United Nations and the Inter-American System.

The loans were for modernizing and strengthening the health sector, supporting the social management initiative (IDB), reforming health services, and strengthening and modernizing the health sector in Caracas (World Bank), investment and social development (ADC), hospital waste handling (Plan Hispano-Venezolano), and social investment and urban development (Foreign Debt Bonds).

Contributions from multilateral cooperation in 2001 amounted to US$ 10.3 million, to which the United Nations contributed US$ 9.3 million. UNDP contributed US$ 2,159,992 for democratic governance, human development (poverty), local development, environment, cooperation management and other projects. UNFPA contributed US$ 831,600 for the Sexual and Reproductive Health Project among rural populations; gender and employment; sexual and reproductive health education for National Armed Forces conscripts; gender; population; project support; population network; the Venezuelan Association for Alternative Sexual Education (AVESA, an NGO); and project management. UNAIDS contributed US$ 210,000 for the policy project, information, support for NGOs, and generic drugs. FAO contributed US$ 982,500 for the project for Rural Development, Food Security, and Agricultural Development. UNHCR provided US$ 1,652,000 for the project for medical care and specific aid for refugees. UNICEF contributed US$ 1,746,362 for public policies; mobilization and communication; local development; the Andean Region Program (ProAndes); and the Amazon Region Program. PAHO/WHO provided US$ 1,741,000 for technical cooperation in all areas of public health. In addition to this, IICA contributed US$ 450,000 to animal and plant production, safety, trade, in foods, and agricultural and livestock research, and the OAS provided US$ 40,000 for international health courses.

FIGURE 1. Population structure, by age and sex, Venezuela, 2000.

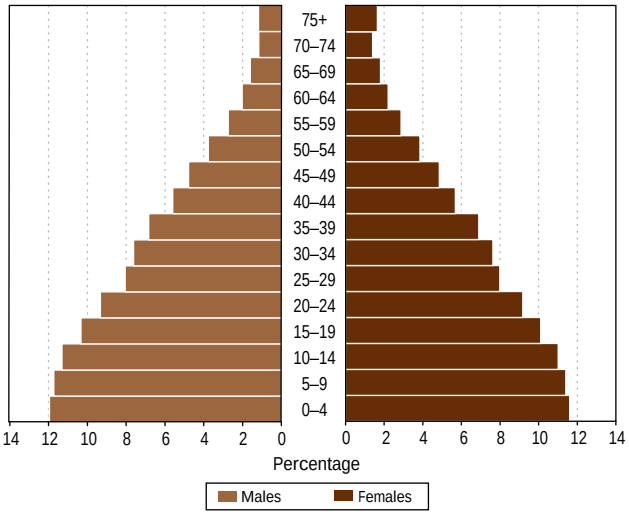


FIGURE 2. Gross domestic product, annual growth (%), Venezuela, 1990–2000.

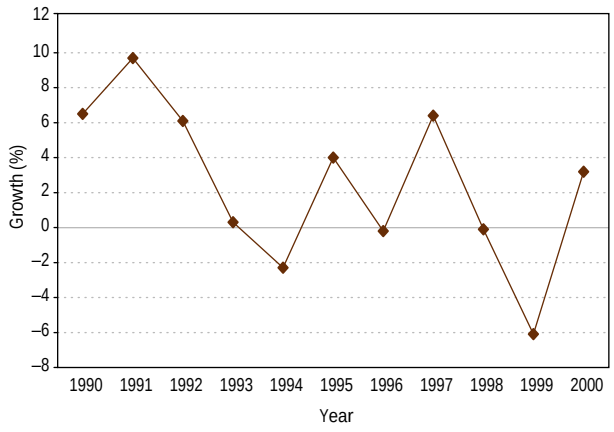


FIGURE 3. Estimated mortality, by broad groups of causes and sex, Venezuela, 1995–2000.

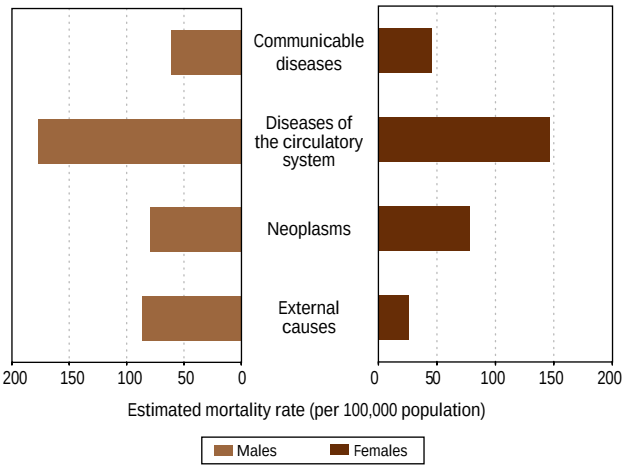
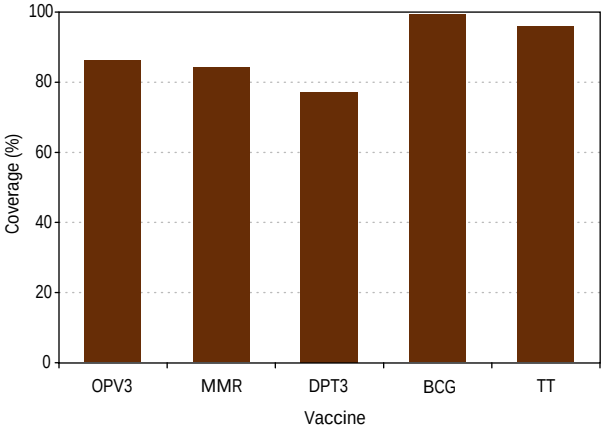


FIGURE 4. Vaccination coverage among the population under 1 year of age, by vaccine, and tetanus toxoid coverage among women of childbearing age, Venezuela, 2000.



UNITED STATES-MEXICO BORDER AREA

OVERVIEW

The border between the United States and Mexico is 1,952 mi (3,141 km) long, stretching from the Gulf of Mexico to the Pacific Ocean. In 1983, under the Agreement on Cooperation for the Protection and Improvement of the Environment and Transboundary Problems (better known as "the La Paz Agreement"), the border region was legally defined as the area within 62 mi (100 km) on either side of the geographical border separating the two countries (approximately 250,000 mi^2).

The border is shared by six Mexican states (Tamaulipas, Nuevo León, Coahuila, Chihuahua, Sonora, and Baja California) and four U.S. states (Texas, New Mexico, Arizona, and California). In 1997, the ten states had a total population of 74,353,816, and in 2000, the population of the border region itself, living in 48 U.S. counties and 88 Mexican municipalities (including the 14 pairs of sister cities), came to 17.9 million, with 63.7% on the U.S. side.

Three Mexican cities (Tijuana, Ciudad Juárez, and Mexicali) account for slightly more than 50% of the Mexican border population. On the American side, the Hispanic population is growing steadily; according to the 2000 Census, it represented 40% of all people living in the region, 92% of whom are of Mexican origin. The concentration of Hispanic population along the U.S. side of the border varies, reaching as high as 84% in Texas. This demographic mosaic also includes people from 25 Native American Indian nations who live in towns or on lands within the border area on the U.S. side.

In the 1990s, heavy migration and high birth rates (26.1 live births per 1,000 population on the Mexican side and 18.9 per 1,000 on the U.S. side) led to an average annual population growth rate of 4.5% on the Mexican side and 2.4% on the U.S. side—in both cases, higher than the respective national rates. Some counties and municipalities saw substantial population growth between 1980 and 1990—for example: Santa Cruz (Arizona), 45%; Dona Ana (New Mexico), 41%; Tijuana (Baja California), 62%; Nogales (Sonora), 59%; and Ciudad Juárez (Chihuahua), 40%.

Approximately half the demographic growth in the border area is due to successive waves of migration, most of them resulting from the establishment of manufacturing or in-bond processing plants (*maquiladoras)* in northern Mexico. Because of this migratory phenomenon, 33% of the population on the Mexican side are under 15 years old and only 4% are over 65, an age distribution far different from that of the nation as a whole. On the U.S. side, 25% are under 15 years of age and 12% are over 65.

The United States is among the countries with the largest number of immigrants. Between 1920 and 1998, 64.6 million people entered the country legally, 660,477 of them in 1998. For the last nine years, most of the country's immigrants have come from Mexico, the Caribbean area, Central America, and South America; in 1998, for example, 19.8% came from Mexico and 42.9% from the other regions mentioned. The majority (67.9%) of the Mexican and Central American immigrants are between 15 and 39 years of age, making for an impressive labor force, and 72.5% of them work in the agricultural, industrial, and service sectors.

The heavy flow of international migration makes the U.S.-Mexico border the most frequently crossed international boundary in the world. In 1998, 400 million people, or four times the population of Mexico, crossed it legally. The border cities that have the largest numbers of arrivals are San Diego, El Paso, and Laredo. Of the 131,575 Mexicans who migrated legally to the United States in 1998, 99% did so by crossing the border, and most of them took up residence in California (47.2%), Texas (17.4%), Illinois (7.7%), Washington (3.1%), and Arizona (2.4%).

At the same time, illegal immigration is on the rise. In 1999, the U.S. Border Patrol detained more than 1.6 million undocumented aliens. This agency has its main centers of operation in San Diego (California), El Paso and McAllen (Texas), and Tucson (Arizona). Most of the immigrants who enter the United States by crossing the border illegally come from poor areas, are seeking opportunities to work, and have limited education. Undocumented Hispanic immigrants have the highest rates of lack of health insurance coverage (64%), and those with coverage consult the health services mainly for obstetric problems and sexually transmitted infections.

Economic development in the U.S.-Mexico border area has brought a high level of trade, but it has also encouraged migration and contributed to the deterioration of environmental conditions both physically and socially.

The North American Free Trade Agreement (NAFTA) between Canada, the United States, and Mexico, which went into effect in 1994, increased foreign investment along the border between Mexico and the United States, boosted trade between the two countries, and opened up opportunities for the creation of new jobs. Since 1994, total trade (exports plus imports) between the United States and Mexico has risen 78%, and in 1997 it was valued at US$ 180,000 million. In 1998, Mexico replaced Japan as the number two trading partner of the United States. U.S. exports of merchandise to Mexico—consisting mainly of electronic products and household appliances, plastic and rubber goods, and basic metals—came to US$ 71,000 million in 1997 and US$ 87,000 million in 1999. Seventy-six percent of Mexico's exports, valued at a total of US$ 86,000 million, went to the United States in 1997, and more than 40% of this volume came from the six Mexican border states. However, the U.S. International Trade Commission has estimated that in 1997 at least 45% of the products imported from Mexico by the United States contained parts and components made in the latter country. These products included motor vehicles; computer, telephone, radio, and air-conditioning equipment; and household appliances.

The *maquiladora* program has played an important role in economic growth along the border. The *maquiladoras* are in-bond assembly and processing plants established in Mexico by branches of foreign firms, most of them based in the United States. In 1999, there were 2,868 such plants along the U.S.-Mexico border, and they employed some 1.8 million people. Most of the *maquiladoras* are located in Tijuana (Baja California) and Ciudad Juárez (Chihuahua). This industry represents Mexico's second largest source of export income.

In both countries, the percentage of border population engaged in farming is smaller than the proportion for the countries as a whole, but even so, for certain border counties, mainly in the lower Rio Grande Valley (Texas) and Imperial County (California), agriculture is a major source of employment.

Of the 318 metropolitan areas in the United States, the six poorest are border cities. It is estimated that nearly 55% of the U.S. border population lives in poverty, although in San Diego (California) only 8% fall below the poverty line. The poorest segment of the population is concentrated in new settlements, called *colonias*, spawned by the steady migratory flow from Mexico to the United States. These *colonias*, which lack basic sanitation services and are beset with many health problems, are found on both sides of the border. There are some 1,800 *colonias* along the border between Texas and Mexico alone, with a total population of more than half a million people, 98% of them Hispanic. Poverty rates in the Mexican border states are considerably lower than the national average, except in Tamaulipas, where the rate is close to the average. In general, the distribution of income in these states tends to be more equitable than in the rest of Mexico, a situation that is particularly noticeable at the municipal level.

Rapid population growth and industrialization in the border region have generated major challenges for protection of the environment. Air, water, and soil pollution affect the populations on both sides of the border. Most of the sister cities exceed maximum air quality limits (especially in terms of PM10 particles, sulfur dioxide, ozone, and carbon monoxide), and the large number of *maquiladoras* has made for a significant increase in the volume of solid waste.

Binational Health Priorities, Programs, and Institutions

The two countries have developed a series of mechanisms, largely in the form of agreements or pacts, for maintaining good relations along the border and overcoming obstacles to binational collaboration. However, these instruments have been difficult to put into practice because of the different systems of health sector financing in the two countries and the problems involved in transferring resources from one country to the other. Each country's government sets its own national health priorities. U.S. health goals are based on a strategic plan developed by the Department of Health and Human Services and are basically in line with the national health promotion and disease prevention program known as "Healthy People 2010," which proposes 25 objectives for addressing the various needs and problems of the U.S. communities along the border. Mexico's national priorities, in turn, are based on its National Health Program.

Creation of the U.S.-Mexico Border Health Commission marked the beginning of an effort to develop uniform criteria for a binational approach to health problems and establish priorities for both sides of the border. The Commission has drafted a program entitled "Healthy Border 2010," which sets forth objectives to be met within 10 years in the areas of health promotion and disease prevention in the border area. This program is composed of 20 elements that are recognized both in Mexico's 46 health indicators and in the 25 objectives of the U.S. "Healthy People" program. These shared objectives represent the priority areas, and they will also serve to orient the allocation of health resources and help to promote binational health projects.

The 20 shared objectives of the "Healthy Border 2010" program are grouped into 12 areas, each with a specific set of objectives: guaranteed access to primary care or basic health services; reduced mortality from breast and cervical cancer; reduced mortality and hospitalization due to diabetes; improved access to sewerage and drainage services and reduced hospitalizations for acute pesticide poisoning; reduced incidence of HIV/AIDS; expanded childhood immunization coverage and reduced incidence of hepatitis and tuberculosis; reduced mortality from automobile accidents and child mortality caused by injuries;

reduced neonatal mortality due to congenital defects; improved prenatal care and reduced adolescent pregnancy rates; reduced mortality from suicide; improved access to oral health care; reduced hospitalization rates for asthma; and improved research capacity in health-related areas.

U.S.-Mexico Binational Commission. In 1977, the governments of the two countries created a consultation mechanism which, in 1981, became the U.S.-Mexico Binational Commission. The Commission provides a regular forum in which government officials meet to discuss policy matters of importance to the two countries. It has 14 working groups, including one on health, established in 1996. This working group addresses six priority areas: immunization, women's health and reproductive health, tobacco use, migrant health, addiction, and aging.

International Boundary and Water Commission. The oldest of the binational bodies, the International Boundary Commission (IBC), was created in 1889 for the purpose of setting the rules for determining the boundary between the United States and Mexico. In 1944, the two countries signed a Water Treaty designed to strengthen the authority of the IBC over the land boundary and to extend it to include the water boundary. Consequently, the IBC became the International Boundary and Water Commission (IBWC). In the 1960s, the United States and Mexico negotiated bilateral procedures for addressing sanitation problems in the border area.

North American Commission for Environmental Cooperation and related agencies. The North American Commission for Environmental Cooperation, the Border Environment Cooperation Commission (BECC), and the North American Development Bank (NADB) were created in 1993 in association with NAFTA. The first of these agencies oversees and executes NAFTA's separate environmental accord, the North American Agreement on Environmental Cooperation, while BECC and the NADB work with communities on the execution and financing of activities that address any environmental challenges which might result from increased trade between the United States and Mexico. The IBWC Commissioners serve on the BECC Board of Directors, and the IBWC provides administrative, technical, and logistic support for BECC.

Border XXI Program. The origins of this program date back to 1983, when the two countries signed the La Paz Agreement on Cooperation for the Protection and Improvement of the Environment and Transboundary Problems. In 1995, the Border XXI Program was created under the leadership of the U.S. Environmental Protection Agency (EPA) and Mexico's then Ministry of the Environment, Natural Resources, and Fisheries, which since November 30, 2000, has been the Secretariat of the Environment and Natural Resources. Later, other agencies of the U.S. Department of Agriculture and Department of the Interior and Mexico's Secretariat of Foreign Relations and Secretariat of Health became involved, along with the U.S. and Mexican components of the IBWC, BECC, and the NADB, local and municipal governments, and the local departments of health and the environment of the border states and Indian reservations.

The Border XXI Program divides the region into five geographic areas: Texas-Tamaulipas; Texas-Coahuila-Nuevo León; Texas-New Mexico-Chihuahua; Arizona-Sonora; and California-Baja California. Activities are carried out by nine working groups in the following areas: air quality; water; solid and hazardous wastes; emergency and contingency planning; information resources management; natural resources; enforcement of laws and regulations; prevention of pollution; and environmental health. The activities of the last group, which is the most closely related to public health, include advanced training, development of a poison control center, measurement of blood lead levels in children, binational environmental health alerts, pesticides and children, application of geographic information systems, surveillance of neural tube defects, and exchange of border health alerts.

U.S.-Mexico Border Health Commission. Since the early 1980s, local and state public agencies as well as private institutions in the two countries have been promoting the establishment of an agency to deal with border problems in the area of public health. In October 1994, the U.S. Congress enacted a law which created such an entity on the U.S. side, and in 1999, the President appointed the commissioners, including representatives of state governments and the private sector. The Mexican counterpart was created in October 2000, and the agreement to establish the Commission was signed in November of that year. The agreement's key objectives are to implant a local approach to border health that will transcend political changes; create a participatory mechanism for health professionals and others interested in improving border health; foster social and community participation; serve as a catalyst for change; promote political commitment; increase the resources available to the border area; and foster personal responsibility for health.

Border Governors Conference. These meetings, held once a year, include health issues on their agenda, and the participants work to reach a consensus on the implementation of joint programs in the border states.

Ten Against Tuberculosis. This initiative, launched in 1995 by the heads of the state departments of health in the 10 border states, has as its main goal the control and prevention of tuberculosis in the region. A number of federal, local, international, and nongovernmental health agencies also take part in the initiative, with activities centered on four main areas: training of professionals, treatment of patients, epidemiological surveillance, and laboratory infrastructure.

Ten Against Tuberculosis is a good example of an association that brings together the two federal governments, 10 state governments, and various interested organizations, including the American Lung Association, the Texas Medical Association, the Migrant Clinicians Network, and the Pan American Health Organization (PAHO).

Pan American Health Organization. The PAHO Field Office for the U.S.-Mexico Border, in El Paso, Texas, was established at the request of the two governments in 1942. Since then, the Office has promoted and accompanied the majority of health and environmental protection initiatives in the border region, and it has also served as a neutral mediator for the solution of binational problems. Technical cooperation priorities are set by the federal governments, which periodically define cooperation strategy in coordination with the PAHO Secretariat.

U.S.-Mexico Border Health Association. The USMBHA was created in 1943 as an affiliated nonprofit association, with the PAHO Field Office in El Paso acting as its secretariat. From the outset, it has served as a forum for the consideration of border health problems and the coordination of federal, state, and local priorities and initiatives. Its organization consists of binational health councils, conference groups, and standing committees. Responsibility for planning and organizing the annual meeting alternates among the border cities in each country. The Association currently has 600 members.

High Level Contact Group. In 1996, a memorandum of understanding was signed between the Substance Abuse and Mental Health Services Administration, under the U.S. Department of Health and Human Services, and the Office of National Drug Control Policy for the financing of this initiative, which started its work with four subsidies amounting to US$ 1.6 million for California, Texas, Arizona, and New Mexico. Those states have launched an ongoing effort to prevent substance abuse in 12 border communities, working in collaboration with the respective Mexican border communities.

Border Liaison Mechanism. This initiative is a joint creation of the U.S. Department of State and Mexico's Secretariat of Foreign Relations. Its purpose is to encourage bilateral cooperation based on decentralized decision-making, with authority delegated to the border consular services to solve day-to-day problems.

HEALTH SITUATION

Mortality

During 1995–1997, there were 177,909 registered deaths in the sister communities on the two sides of the border, corresponding to a crude mortality rate of 5.8 per 1,000 population. Of this total, 61,104 deaths were on the Mexican side and 116,805 on the U.S. side, with corresponding rates of 4.7 per 1,000 population and 6.7 per 1,000, or 43% more in the United States. However, the age-adjusted mortality rate was 6.0 per 1,000 population on the Mexican side and 4.4 per 1,000 on the U.S. side, and the latter rate was 27% lower. The general age-adjusted mortality rate for the entire border region was 5.0 per 1,000 population.

The period 1990–1997 saw a downward trend in mortality from all causes and broad groups of causes in both males and females. On the Mexican side, there was also a decline in mortality from communicable diseases during the period, but in the U.S. the rate rose in males between 1993 and 1995. Slight declines were seen in mortality from tumors, certain conditions originating in the perinatal period, and external causes. Congenital anomalies were the second leading cause of death on both sides of the border in infants under 1 year and in children 1–4 years old, especially those due to anencephaly, for which the rates per 10,000 live births in the border states exceed the national rates in both countries. Table 1 shows the leading causes of death in the U.S.-Mexico border area in 2000.

In 1995–1997, as in 1992–1994, heart disease was the leading cause of death in the border communities. In the Mexican sister communities, there were 11,209 deaths from this cause, representing 18.7% of all deaths from defined causes, whereas in the U.S. sister communities, there were 33,420 deaths, or three times

TABLE 1. Leading causes of death in the U.S.-Mexico border area, 2000.

United States	Mexico
1. Heart disease	1. Heart disease
2. Malignant neoplasms	2. Malignant neoplasms
3. Cerebrovascular diseases	3. Accidents
4. Chronic obstructive pulmonary disease	4. Diabetes mellitus
5. Accidents	5. Cerebrovascular diseases
6. Influenza and pneumonia	6. Homicide
7. Diabetes mellitus	7. Liver diseases and cirrhosis
8. Liver diseases and cirrhosis	8. Influenza and pneumonia
9. Suicide	9. Chronic obstructive pulmonary disease
10. HIV/AIDS	10. Nephritis and nephrosis

as many, and this cause accounted for 29.8% of all deaths from defined causes. Within this category, ischemic heart disease represented 67% of the deaths on the Mexican side and 64% on the U.S. side. On the Mexican side, heart disease was responsible for 4,966 deaths in women (20.6% of all female deaths from defined causes) and 6,242 in men (17.4% of male deaths from defined causes), while on the U.S. side both the numbers and the proportions were much greater: 17,656 deaths in men (29%) and 16,764 in women (30.6%).

Age-adjusted mortality rates for heart disease during 1995–1997 were 128.5 per 100,000 males and 121.5 per 100,000 females in the Mexican sister communities, or 32.7% and 11.6% higher than the corresponding national rates, whereas on the U.S. side they were 123.5 per 100,000 males and 113.5 per 100,000 females, or 20.8% and 21.5% lower than the national levels. The rates in the U.S. sister communities were 4% lower than the Mexican rate for males and 6.6% lower than the rate for females.

Malignant tumors ranked as the second leading cause of death on both sides of the border, with a total of 7,388 deaths in the Mexican sister communities and 26,657 in the U.S. sister communities. In the Mexican case, this cause represented 12.3% of all deaths from defined causes, and the proportion was nearly double (23.1%) on the U.S. side. The leading sites in the Mexican border area were as follows: trachea, bronchus, and lung (16.9%); digestive organs and the peritoneum (17.3%); and cervix, uterus, corpus uteri, and uterus-part unspecified (9.1%). On the U.S. side, the leading sites were the trachea, bronchus, and lung (25.5%), and the female breast (8.3%).

Accidents and adverse effects were the third leading cause of death in the Mexican communities, with 6,346 deaths (10.6% of the deaths from defined causes), while this cause group ranked fifth on the U.S. side, with 5,507 deaths (4.8%). Among males residing in the U.S. border communities, accidents were in third place, with 3,879 deaths (6.4% of all male deaths), and on the Mexican side they were the second leading cause among males, with 5,048 deaths (14%). For women in the Mexican border area, deaths from accidents were in fifth place, numbering 1,295 (5.4% of all female deaths); on the U.S. side, accidents did not figure among the leading causes of death among women. Motor vehicle accidents accounted for 32.4% of the deaths due to accidents on the Mexican side and 45.2% on the U.S. side. Accidents and adverse effects were the leading cause of death in the population 1–45 years of age on both sides of the border.

The third most important cause of death in the U.S. border communities was cerebrovascular diseases, with 8,051 deaths and an age-adjusted rate of 27.3 per 100,000 population. This was also the third leading cause of female mortality, at 4,662 deaths (31.7 per 100,000), and it was in fourth place for males, with 3,389 deaths (23.1 per 100,000). All the U.S. border communities had excess female mortality from cerebrovascular diseases.

Diabetes mellitus was the fourth leading cause of death in the Mexican border communities in 1995–1997, with a total of 5,706 deaths, or 9.5% of all deaths from defined causes. Diabetes was also the number four cause of mortality in males, with 2,602 reported deaths (7.2%), but it was the third leading cause among women, at 3,104 deaths (12.9%). The age-adjusted mortality rate from diabetes was 63.5 per 100,000 (54.4 in males and 73.1 in females). By contrast, mortality from diabetes on the U.S. side was only one-fifth as high, with an age-adjusted rate of 12.9 per 100,000 population.

Chronic obstructive pulmonary disease (COPD) was the fourth leading cause of mortality in the U.S. border communities, at 6,046 deaths (5.2% of all deaths from defined causes). It ranked fifth for men, with 3,097 deaths (5.1% of male deaths), and fourth for women, with 2,949 deaths (5.4% of female deaths). The age-adjusted mortality rate from COPD was 20.4 per 100,000 population (20.5 for men and 20.1 for women). On the Mexican side, at 1,757 deaths (2.9% of all deaths), COPD did not figure among the leading causes of mortality; however, the age-adjusted rate (20.2 per 100,000 population) was only 2% lower than in the U.S. communities. More men than women die from COPD on both sides of the border.

An analysis of overall mortality for 1998 in the 10 border states shows that Texas, with 142,605 deaths, had the highest age-adjusted mortality rate on the U.S. side of the border, at 475.3 per 100,000 population, and an infant mortality rate of 6.4 per 1,000 live births. On the Mexican side, Chihuahua had the highest general mortality rate, at 5.2 per 1,000 population (6.1 per 1,000 males and 4.3 per 1,000 females), as well as the largest number of deaths in children under 1 year of age, which came to 1,265.

In 1999, Texas had 146,649 deaths and an age-adjusted mortality rate of 897.7 per 100,000 population, and an infant mortality rate of 6.2 per 1,000 live births (2,160 deaths). Chihuahua was again the state with the highest general mortality rate on the Mexican side, at 5.1 per 1,000 population (15,517 deaths)—6.0 per 1,000 males (9,013 deaths) and 4.3 per 1,000 females (6,501 deaths)—and the largest number of deaths in children under 1 year (1,284).

In 2000, the state on the Mexican side of the border with the highest age-adjusted mortality rate was Baja California, with 4.7 deaths per 1,000 population.

Heart disease was the leading cause of general mortality in the 10 border states in both 1998 and 1999. In the latter year, Texas reported 57,071 deaths from cardiovascular diseases, with an age-adjusted rate of 360.3 per 100,000 population. On the Mexican side, Nuevo León had the largest number of deaths from ischemic heart disease (2,374) and Baja California had the highest rate (95.0 per 100,000 population).

The border state with the highest mortality from motor vehicle traffic accidents was Sonora, with 18.5 deaths per 100,000 population in 1999.

Although it is not a leading cause of death, tuberculosis is one of the diseases on which there has been the most cooperation between the two countries. In 1999, the Mexican border state with

the largest number of deaths from pulmonary tuberculosis was Nuevo León (175), and the state with the highest mortality rate from pulmonary tuberculosis was Baja California (8.7 per 100,000 population). That same year, Baja California also reported a total of 234 deaths from AIDS, with a mortality rate of 9.4 per 100,000 population.

Morbidity

In the case of some diseases, the morbidity rates in the border communities are quite different from the rates for their respective states and the rest of the country. Such is the case of tuberculosis and AIDS, which have incidence rates in some localities that are double the corresponding national rates.

Tuberculosis

During 1998–1999, a total of 11,575 cases of tuberculosis were reported in the four U.S. border states (32.2% of the national total). California had the largest number of cases in both years, with 3,852 in 1998 and 3,606 in 1999. In 1998, both California and Texas exceeded the national rate of 6.8 per 100,000 population, with 11.8 and 9.2 cases per 100,000, respectively, and in 1999 these two states again surpassed the national rate (6.4 per 100,000) at 10.9 and 8.2 cases per 100,000. In those same two years, the six Mexican border states reported a total of 8,802 cases of pulmonary tuberculosis, corresponding to 25.2% of the national total. Nuevo León had the largest number of cases, with 1,336 in 1998 and 987 in 1999. Tamaulipas had the highest incidence of all the border states in 1998 and 1999, with rates of 38.5 and 34.5 per 100,000.

HIV/AIDS and Other Sexually Transmitted Infections

On the U.S. side, California was the border state with the largest number of AIDS cases during 1997–1999, with a total of 17,784. On the Mexican side, Baja California had the most cases of this disease in 1998 (190) and the highest incidence (8.1 per 100,000 population), while in 1999, Tamaulipas had the largest number of new AIDS cases (55) and an incidence rate of 2.0 per 100,000.

Among the sexually transmitted infections, Texas was the U.S. border state with the most cases of gonorrhea both in 1998 (32,932 cases and a rate of 166.7 per 100,000 population) and in 1999 (32,680 cases and a rate of 163.0 per 100,000). On the Mexican side, Baja California reported the largest number of gonococcal genitourinary infections in both years, with a total of 531 new infections (22.6 per 100,000 population) in 1998 and 622 (26.7 per 100,000) in 1999. With regard to primary and secondary syphilis, the state with the most cases on the U.S. side was Texas, with a combined total of 429 cases of both forms of the disease (2.2 per 100,000 population) in 1998 and 459 (2.3 per 100,000) in 1999. On the Mexican side, in 1998, Nuevo León had the most cases of acquired syphilis (108), while the highest rate corresponded to Tamaulipas, with 3.4 per 100,000, and in 1999, Chihuahua had both the largest number of cases (124) and the highest rate (4.1 per 100,000).

Vector-borne Diseases

Dengue is the vector-borne disease of greatest concern along the U.S.-Mexico border, since the mosquito vector *Aedes aegypti* continues to breed in several of the states. On the U.S. side, California had most cases of dengue in 1998, with a total of 28, and Texas headed the list in 1999 with 69 cases. On the Mexican side, in 1998 Tamaulipas and Nuevo León had the largest proportion of classic dengue cases, followed by Sonora and Coahuila, while Tamaulipas reported the largest number, with a total of 5,873 cases and a rate of 221.7 per 100,000 population. In 1999, Nuevo León reached a high of 11,478 cases and also had the highest rate, at 301.3 per 100,000.

Of all types of malaria registered on the U.S. side of the border, California had the largest number, with 217 cases in 1998 and 218 in 1999. All were imported. On the Mexican side, Chihuahua reported the most malaria cases, with 244 in 1998 and 126 in 1999.

Infectious Hepatitis

California registered 4,178 cases of hepatitis A in 1998 and 3,439 in 1999, making it the U.S. border state with the largest number of cases in both years. On the Mexican side, Tamaulipas headed the list with the most cases of hepatitis A in 1998, with a total of 1,164 and a rate of 43.9 per 100,000, and again in 1999, with 1,250 cases and a rate of 46.3 per 100,000.

With regard to hepatitis B, on the U.S. side, Texas had the most reports in 1998, with 1,960 cases, followed by California with 1,445 cases, and in 1999, California had 1,234 cases. The Mexican border state with the largest number of hepatitis B cases in 1998 was Chihuahua (49), while Sonora had the highest rate (2.2 per 100,000). In 1999, the 75 cases of hepatitis B in Sonora represented the largest number reported in any of the Mexican border states, and it also had the highest incidence, at 3.4 per 100,000.

Diseases Preventable by Immunization

Thanks to excellent vaccination coverage, which reached 100% on the Mexican side and 69% on the U.S. side, diseases preventable by immunization have decreased along the border. No Mexican border state reported a case of measles in 1998 or 1999. On the U.S. side, in 1998, Arizona and California were the only U.S. states that reported the disease (11 and 10 cases, respectively), and in 1999, California reported 17 cases; Texas, 7; Arizona, 1; and New Mexico, none.

California had the most cases of mumps in 1998 and 1999, with 110 and 95 cases, respectively. On the Mexican side, Nuevo León headed the list both in 1998 (7,741 cases and a rate of 211.9 per 100,000 population) and in 1999 (3,628 cases and a rate of 95.2 per 100,000).

In the four U.S. border states, there were a total of 95 cases of rubella in 1998, 89 of them in Texas, while in 1999, there were 27 cases in all. By contrast, on the Mexican side, Tamaulipas reported 8,181 rubella cases in 1998 and a rate of 308.8 per 100,000 population, while in 1999, Coahuila had the largest number of cases (1,754) and a rate of 74.6 per 100,000.

California had the most cases of pertussis on the U.S. side by a wide margin in both 1998 and 1999, with 1,085 and 1,144, respectively. On the Mexican side, Tamaulipas reported 19 cases in 1998, followed by Baja California with 10 cases. In 1999, Baja California had 6 cases and Sonora and Tamaulipas each had 5 cases.

With regard to *Salmonella* infections, among the U.S. states, California had the largest number of cases in 1998 (4,724) and 1999 (4,208), followed by Texas, with 3,401 cases in 1998 and 2,198 in 1999. On the Mexican side, Coahuila reported 17,279 cases of paratyphoid and other *Salmonella* infections, and a rate of 757.0 per 100,000 population in 1998. In 1999, this state had 15,952 new cases and a rate of 678.4 per 100,000; Tamaulipas came in second in both years. California and Texas also reported the most cases of shigellosis on the U.S. side in both years, and each of them had more than twice as many cases as the states of Arizona and New Mexico combined. On the Mexican side, Nuevo León had 791 cases of shigellosis and a rate of 21.7 per 100,000 in 1998, while in 1999 Tamaulipas had the most cases (472) and Sonora had the highest rate (16.2 cases per 100,000).

The largest number of intestinal amebiasis infections on the U.S. side of the border was reported in California, where there were 700 cases in 1998 and 599 in 1999. Morbidity from this disease was considerably higher on the Mexican side. Coahuila, the state that reported the most cases, had 17,279 and a rate of 757 per 100,000 population in 1998, and 15,952 cases with a rate of 678.4 per 100,000 in 1999. Tamaulipas ranked second during the same period.

Zoonoses

No cases of human rabies have been registered in the border region since 1996, although there have been reports in other areas of the border states. For example, in Chihuahua, there were two reported human cases caused by vampire bats in 1999 and one transmitted by an insectivorous bat in Amador County, California, in 2000. Since 1996, there have been no cases of canine rabies in the Mexican border cities, and in the U.S. cities, canine rabies is under control.

Domestic rabies is closely related to the disease found in sylvan reservoirs. Along the border, the three main reservoirs that have been observed are foxes, skunks, and insectivorous bats. Rabies in skunks is on the rise, and an epizootic has been developing in the U.S. border states. In 2000, 550 skunks in Texas were found to be positive for rabies, the highest figure in 15 years. Texas has taken steps to control rabies transmitted by foxes and coyotes by aerially distributing bait containing sachets of vaccinia-rabies glycoprotein recombinant vaccine, which between 1994 and 1998 achieved a significant reduction of rabies in these species, and consequently a reduction in dogs as well. The cost of this operation has been about US$ 4 million a year.

Diabetes Mellitus

At the national level, diabetes is the sixth most important cause of death in the United States and the third leading cause in Mexico, while in the border states it occupies seventh place on the U.S. side and fourth place on the Mexican side. As can be seen in Table 2, the mortality rate from diabetes in many of the border counties and municipalities is higher than the national rate, and in general it is on the rise. The rate is higher among women than among men on both sides of the border.

In response to the increase in diabetes on both sides of the border, the U.S.-Mexico Border Diabetes Prevention and Control Project was launched in 1998 as a collaborative effort of PAHO (through its Field Office in El Paso, Texas), the U.S. Centers for Disease Control and Prevention, and the Mexican Secretariat of Health, with the participation of state health authorities and nongovernmental organizations on both sides of the border. This is a five-year project that includes a study of diabetes prevalence and risk factors, as well as access to health services and care, aimed at improving access and strengthening the quality of health services for people in the border region who suffer from type 2 diabetes.

Substance Abuse

Mexico reported that a total of 23,835 patients with substance abuse problems were treated in nine areas near the border in the northeastern part of the country between 1994 and 1999. This information, which comes mainly from the admission records of drug treatment programs, helps to give an idea of drug use trends along the border and also serves to support the planning and execution of drug treatment programs and prevention services.

Heroin was the illegal drug most widely used along the border, especially in the western part of the region. In Mexico, half of all persons admitted to treatment programs in Ensenada were heroin users, as were 79%–88% of those admitted in Tijuana, Ciudad Juárez, and Mexicali. Cocaine was not used as much as heroin in the border area. The highest percentages of admissions for cocaine use—23% to 32%—were seen in Hidalgo County (Texas) and in Nuevo Laredo and Chihuahua.

The results of a school survey in El Paso, Texas, indicated that 16% of the students in eleventh grade and 20% of those in the twelfth grade had experimented with crack cocaine. In the Texas border counties of Hidalgo and Cameron, 11% to 13% of the group surveyed had used crack cocaine. During 1998–1999, the highest percentages of admissions for marijuana use were in the Mexican states of Chihuahua, Monterrey, and Nuevo Laredo and in Hidalgo County, Texas, ranging from 32% to 48%. The use of inhalants was not as common; the highest percentages of admis-

TABLE 2. Crude death rate for diabetes, U.S.-Mexico border area, 1992–1994 and 1995–1997.

UNITED STATES			MEXICO		
	Rate (per 100,000 population)			Rate (per 100,000 population)	
State/county	1992–1994	1995–1997	State/municipality	1992–1994	1995–1997
United States	20.8	23.1	Mexico	33.3	37.1
California	13.2	16.4	Baja California	35.7	37.1
San Diego	10.6	13.9	Tijuana	31.1	32.7
Imperial	10.7	11.0	Mexicali	43.0	47.9
Arizona	17.6	21.5	Sonora	36.3	39.3
Yuma	20.6	16.9	San Luis Rio Colorado	45.4	50.4
Santa Cruz	12.8	17.1	Nogales	37.1	35.0
Cochise	21.2	24.0	Agua Prieta	31.9	28.8
New Mexico	24.4	24.8	Chihuahua	35.9	42.0
Luna	43.4	34.4	Ascención	20.2	37.9
Dona Ana	23.8	30.3	Ciudad Juárez	49.7	51.0
Texas	23.3	24.6	Coahuila	46.2	49.2
El Paso	25.6	29.4	Piedras Negras	66.0	62.3
Maverick	30.6	39.4	Nuevo León	32.6	33.3
Webb	32.5	42.5	Anáhuac	50.1	43.3
Cameron	30.0	34.3	Tamaulipas	39.6	42.5
			Nuevo Laredo	56.4	50.8
			Matamoros	45.0	40.7

Sources: Pan American Health Organization (PAHO). *Mortality Profiles of the Sister Communities on the United States-Mexico Border, 1992–1994.* PAHO: Washington, D.C. 1999.

Pan American Health Organization (PAHO). *Mortality Profiles of the Sister Communities on the United States-Mexico Border, 1995–1997.* PAHO: Washington, D.C. 2000.

sions were in El Paso (24%) and Laredo (18%), Texas, and Monterrey (21%), Nuevo León.

The substance abuse treatment programs in the border region provide services to addicts and their families and carry out drug abuse prevention programs for adolescents and adults. The treatment services include case-finding and referral, treatment for drug addiction, long-term treatment, and follow-up.

HEALTH SYSTEMS AND SERVICES IN THE BORDER STATES

There are some important differences in how health services are delivered in the two countries. For example, the U.S. health care system is characterized by a demand model, whereas the Mexican model is focused on supply. In Mexico, health care is a fundamental right for all citizens, and public health expenditure is 1.1% of total GNP. In the United States, on the other hand, health care is based on the fee-for-service system, and spending on health represents 15% of the total GNP.

Health Services Coverage and Utilization

Fifty-two percent of the population living in the Mexican border states have social security coverage through the Mexican Social Security Institute (IMSS), 4% are affiliated with the State Workers' Social Security and Services Institute (ISSSTE), 2% are beneficiaries of state government social security institutions, 1% come under the health services of Petróleos Mexicanos, the Secretariat of National Defense, and the Secretariat of the Navy, and 35% have no coverage (6% have no information available).

In the U.S. border states, 77% of the population had some form of health insurance in 1999: 62% were covered by private insurance, 12.3% by Medicaid, 12.4% by Medicare, and 3.9% by some other form of government insurance. Because of the large proportion of the U.S. population who are uninsured or underinsured, several studies have documented that about 30% of the residents on the U.S. side of the border cross over to the Mexican side to get health care, and 60% go there for dental care. Approximately 60% of the Hispanic population in the U.S. buy drugs on the Mexican side, since they cost 40% to 50% less than in the United States.

The pattern of health service utilization in the six Mexican border states differs somewhat from the situation in the rest of the country, and the private sector plays a larger role. In this region, 48.9% of the population relies on the IMSS; 13% are covered by the Secretariat of Health, 5.7% by ISSSTE, and 3.1% by state government services, while 27.9% seek private care and 2.42% are not covered by any institution.

Health Resources

In the Mexican border states, there are 2.09 physicians per 1,000 population, and of their total number, 59.7% are in the public sector and 40.3% in the private sector. The ratio of nursing personnel is 2.6 per 1,000 population, 83.5% of the total in public institutions and the remaining 16.5% in private ones. In 1999, the U.S. border states had an average of 0.84 physicians, 0.47 dentists, and 6.4 registered nurses per 1,000 population.

In 1999, there were 1.25 countable beds per 1,000 population in the Mexican border states, 74.6% of the total in public establishments and 25.8% in private ones, and there were 67.4 doctors' offices per 100,000 population, 77.5% in the public sector and 22.5% in the private sector. In 1999, 84% of Mexico's health budget went to institutions that provide care for their insured population (90% to the IMSS) and this expenditure corresponded to US$ 21.2 per beneficiary. The remaining 16% went to institutions serving the "open," or uninsured, population and represented US$ 4.76 per person. Federal and state contributions to the Fund for Municipal Social Infrastructure averaged US$ 18.79 per person in the border states. In terms of budget execution by program category, 71.2% went for medical care, 18% for shared services, and less than 0.3% for public health actions.

The U.S. border states have 138,314 establishments devoted to the delivery of health care and social services for a population of 58,504,535. Of these establishments, 102,164 (73.9%) are outpatient facilities, 1,233 (0.9%) are hospitals, 10,928 (7.9%) are homes or shelters for care of the sick, and 23,989 (17.3%) are centers that provide social services. There are 76.5 physician offices, 43 dental offices, and 4 medical and diagnostic laboratories per 100,000 population.

In 1997, expenditure for the provision of health and social services in the U.S. border states was slightly more than US$ 174,816 million, or US$ 2,988 per capita. Of this total, 55% corresponded to establishments subject to federal income tax. These taxable entities represented 86.7% of the total number of establishments. In the taxable establishments, 73.8% of the expenditure was for outpatient services, whereas among those that were nontaxable, 69.2% corresponded to hospitals. That same year, the U.S. Department of Health and Human Services, which is responsible for ensuring access to basic health care for the low-income, uninsured, and medically underserved population, contributed nearly US$ 533 million to the care of these groups in the border area.

Health Promotion

The objective of the Safe and Healthy Sister Cities initiative is to improve the coordination of activities aimed at solving border health problems. For this purpose, a network of paired sister communities has been proposed, all of them working on behalf of border health and fostering social participation as well as involvement of the different sectors. PAHO has provided leadership and technical support; enlisted the interest of municipal, state, and federal authorities in participating in and supporting the initiative; and helped to mobilize the various sectors in the border communities. In its technical role, the Organization has trained border community leaders (including those in the health sector) in local participatory planning methodologies and has served as the secretariat for the network.

So far, five sets of sister cities have joined the initiative: (1) Reynosa (Tamaulipas)-McAllen (Texas); (2) Ciudad Juárez (Chihuahua)-El Paso (Texas)-Las Cruces (New Mexico); (3) Matamoros (Tamaulipas)-Brownsville (Texas); (4) Nogales (Sonora)-Nogales (Arizona); and (5) Ojinaga (Chihuahua)-Presidio (Texas). The initiative has also achieved some collateral results: inclusion of health on the political agenda of the respective mayors, creation or strengthening of mechanisms for publicizing local health regulations, development of local health standards, and identification of the roles that can be played by the various sectors and by the community as a whole in the solution of transborder problems within the framework of action plans.

Health and the Environment

In the border region, the complex interaction between rapid industrialization, population growth, migration, and poverty poses major challenges for maintaining health and environmental integrity. A considerable percentage of households have no access to water supply, sewerage, or waste disposal systems. Other serious problems include pesticide exposure, because of the intense agricultural activity in the area, and excessive ozone levels, which have been associated with asthma and other respiratory diseases.

Potable Water and Sewerage Systems

Many of the public health and environmental problems in the border area can be traced to the inadequacy of water supply and sewerage systems and infrastructure for the treatment of household wastewater. Water is scarce along the border, both for the burgeoning human population (which increased from 10.6 million in 1995 to an estimated 17.9 million in the year 2000) and for the region's wildlife. There are binational initiatives that focus on the development of environmental infrastructure, the prevention of water pollution, watershed planning, the monitoring of water quality, training, environmental education, and the rational use of water—all based on community participation.

The proportion of population in the Mexican border region that had access to potable water was 88% in 1995 and 93% in 2000. However, according to Mexico's National Water Commission, 12% of this population was without potable water in 1997 because many of the hydraulic infrastructure projects were still in the preconstruction phase. In the major border cities on the U.S. side, most of the population has water supply service provided by either public or private systems. However, such is not the

case in the small unincorporated communities called *colonias*, mostly located in Texas. A study conducted by Texas A&M University found that 50% of the 350,000 people residing in *colonias* did not have access to potable water.

On the Mexican side of the border, the proportion of the population with access to sewerage systems was estimated at 69% in 1995 and 75% in 2000, although many of these connections are old and have outlived their utility. On the U.S. side, the entire population in the major border cities has the benefit of sewerage service, but those in small rural communities do not.

Pollution Prevention and Control

Industrial growth, motor vehicle traffic, and dust from unpaved streets and roads have all contributed to the deterioration of air quality along the border. A considerable portion of the PM10 contamination consists of dust raised by strong winds. More than half of all volatile organic compound (VOC) emissions are produced by motor vehicles (e.g., cars, trucks, and buses), which are also responsible for excessive levels of carbon monoxide in urban areas. Approximately one-third of all VOC emissions come from consumer products, automobile paint shops, and gasoline stations.

The air quality working group under the Border XXI Program has focused its efforts on three geographical areas in particular: (1) Tijuana-Rosarito-San Diego County, (2) Mexicali-Imperial County, and (3) Ciudad Juárez-El Paso County-Dona Ana County. This group also addresses problems stemming from traffic congestion and examines the relationship between electrical power generation and air quality along the entire border.

Solid and Hazardous Wastes

On the Mexican side of the border there are five sanitary landfills for the permanent disposal of municipal solid waste (located in Tijuana, Nogales, Ciudad Juárez, Nuevo Laredo, and Matamoros), while on the U.S. side, there are 27 sanitary landfills in Texas, 10 in Arizona, 18 in California, and 4 in New Mexico.

A large proportion of the hazardous waste exported to Mexico from the United States has a high content of zinc, as well as lead and tin residue from used batteries. There is only one containment center in Mexico, located in Monterrey (Nuevo León); it receives more than half of all the hazardous waste sent to Mexico for recycling each year. Among other things, this center recycles steel dust from blast furnaces in the United States.

In the Mexican border states, there are 23 companies authorized to recycle hazardous waste: 7 for used solvents, 5 for metals, 4 for used drums, 3 for used lubricants, and 4 for the integrated management of alternative fuel preparation. It is important to note that this information refers to businesses located in the Mexican border states but does not necessarily apply to the border regions within these states, where there are no sites for the final disposal of hazardous waste. On the U.S. side of the border, there is one site for hazardous waste containment, located in Westmoreland, California. At the national level, however, the United States has more than enough capacity for hazardous waste containment.

Human Resources and Technology Development

In all, the 10 border states on the U.S.-Mexico border have 55 universities that engage in the development of human resources in health or related areas. The existence of 16 departments or graduate schools of public health is a good reflection of the number and degree of specialization of academic institutions in the border region. There are also 21 centers that carry out research on border-related or binational topics, including subjects in the field of health. In addition, there are 20 PAHO/WHO Collaborating Centers in the U.S. border states, although only 9 of them carry out activities related or applicable to the border—3 in Mexico and 6 in the United States.

ACRONYMS USED IN THIS PUBLICATION

AFP	Acute flaccid paralysis
ADC	Andean Development Corporation
AECI	Spanish Agency for International Co-operation
AIDIS	Inter-American Association of Sanitary Engineering
AIDS	Acquired immunodeficiency syndrome
ALAESP	Latin American and Caribbean Association of Public Health Education
ALOS	Average length of stay
AMPES	American Region Planning, Programming, Monitoring, and Evaluation System (PAHO)
API	Annual parasite index
ARI	Acute respiratory infections
BCG	Bacille Calmette-Guérin vaccine
BIREME	Latin American and Caribbean Center on Health Sciences Information (PAHO)
BMI	Body mass index
CAREC	Caribbean Epidemiology Center (PAHO)
CARICOM	Caribbean Community
CARMEN	Strategies to reduce multifactor non-communicable diseases
CAT	Computerized axial tomography
CEHI	Caribbean Environmental Health Institute
CELADE	Latin American and Caribbean Demographic Center (ECLAC)
CEPIS	Pan American Center for Sanitary Engineering and Environmental Sciences (PAHO)
CDB	Caribbean Development Bank
CDC	Centers for Disease Control and Prevention (USA)
CFNI	Caribbean Food and Nutrition Institute (PAHO)
CHRC	Caribbean Health Research Council
CIDA	Canadian International Development Agency
CIN	Cervical intraepithelial neoplasia
CIOMS	Council for International Organizations of Medical Sciences
CIS/CA	Carcinoma in situ/Carcinoma
COSALFA	South American Commission for the Control of Foot-and-Mouth Disease
CPC	Caribbean Program Coordination (PAHO)
CRS	Congenital rubella syndrome
CSIH	Canadian Society for International Health
CT	Computed tomography
CVD	Cardiovascular diseases
CWWA	Caribbean Water and Wastewater Association
DALY	Disability-adjusted life year
DANIDA	Danish International Development Agency
DFID	Department for International Development (UK)
DMFT	Decayed, missing, filled teeth
DOTS	Directly observed treatment, short course
DPT	Diphtheria, pertussis, tetanus vaccine
DT	Pediatric diphtheria and tetanus toxoid vaccine
EAP	Economically active population
ECDS	Eastern Caribbean Drug Service
ECLAC	Economic Commission for Latin America and the Caribbean
ECRI	Emergency Care Research Institute
EDV	European Development Fund
ELISA	Enzyme-linked immunosorbent assay
EPA	Environmental Protection Agency (USA)
EPI	Expanded Program on Immunization
FAO	Food and Agriculture Organization of the United Nations
FDA	Food and Drug Administration (USA)
GDP	Gross domestic product
GEF	Global Environment Facility
GNP	Gross national product
GTZ	German Technical Cooperation Agency
Ha	Hectares
HACCP	Hazard analysis critical control point
Hb	Hemoglobin
HBV	Hepatitis B virus
HBsAg	Hepatitis B surface antigen
HCV	Hepatitis C virus
HDI	Human development index (UNDP)
Hib	*Haemophilus influenzae* type b vaccine
HIPC	Heavily Indebted Poor Countries Initiative (IMF/World Bank)
HIV	Human immunodeficiency virus

HMO	Health maintenance organization
HTLV	Human T-cell lymphotropic virus
IAEA	International Atomic Energy Agency
IBRD	International Bank for Reconstruction and Development (World Bank)
IBWC	International Boundary and Water Commission
ICD-9	International Classification of Diseases, Ninth Revision
ICD-10	International Classification of Diseases, Tenth Revision
IDB	Inter-American Development Bank
IICA	Inter-American Institute for Cooperation on Agriculture
ILO	International Labor Organization
IMCI	Integrated Management of Childhood Illnesses
IMF	International Monetary Fund
INCAP	Institute of Nutrition of Central America and Panama (PAHO)
INPPAZ	Pan American Institute for Food Protection and Zoonoses (PAHO)
ISCA	Central American Health Initiative
IUD	Intrauterine device
JICA	Japan International Cooperation Agency
LAMM	Latin American and Caribbean Initiative for Maternal Mortality Reduction
LILACS	Latin American and Caribbean Center on Health Sciences (PAHO)
MASICA	Environment and Health in the Central American Isthmus Program (PAHO)
MedCarib	Caribbean Health Sciences Literature
MERCOSUR	Southern Common Market
MMR	Measles, mumps, rubella vaccine
MRI	Magnetic resonance imaging
NAFTA	North American Free Trade Agreement
NGO	Nongovermental organization
NORAD	Norwegian Agency for Development Cooperation
OAS	Organization of American States
OECD	Organization for Economic Cooperation and Development
OECS	Organization of Eastern Caribbean States
OPV	Oral polio vaccine
PAHEF	Pan American Health and Education Foundation
PAHO	Pan American Health Organization
PALTEX	PAHO Expanded Textbook and Instructional Materials Program
PANAFTOSA	Pan American Foot-and-Mouth Disease Center (PAHO)
PASB	Pan American Sanitary Bureau
PCB	Polychlorinated biphenyl
PLAGSALUD	Occupational and Environmental Aspects of Exposure to Pesticides in the Central American Isthmus
PPO	Preferred provider organization
QAP	Quality Assurance Project
RELAB	Latin American Biology Network
REPAMAR	Pan American Environmental Waste Management Network
REPIDISCA	Pan American Network of Information and Documentation in Sanitary Engineering and Environmental Sciences
RESSCA	Meeting of the Health Sector of Central America
RESSCAD	Meeting of the Health Sector of Central America and the Dominican Republic
RILAA	Inter-American Network of Food Analysis Laboratories
SciELO	Scientific Electronic Library Online
SD	standard deviation
SICA	Central American Integration System
SIDA	Swedish International Development Cooperation Agency
SIDS	Sudden infant death syndrome
SIREVA	Regional System of Vaccines (PAHO)
SME	Small and medium enterprises
SPR	Slide positive rate
STD	Sexually transmitted diseases
STI	Sexually transmitted infections
SUMA	Humanitarian Supply Management System (PAHO)
TCC	Technical cooperation among countries
Td	Adult diphtheria and tetanus toxoid vaccine
TRUST	Toluidine red unheated serum test
TSP	Total suspended particles
TT	Tetanus toxoid vaccine
UNAIDS	Joint United Nations Program on HIV/AIDS
UNDP	United Nations Development Programme
UNDCP	United Nations Drug Control Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNFPA	United Nations Fund for Population Activities
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNISDR	United Nations International Strategy for Disaster Reduction
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
UWI	University of West Indies
VDRL	Venereal Disease Research Laboratories
WFP	World Food Program
WHO	World Health Organization
WTO	World Trade Organization
YLE	Years of life expectancy
YLEG	Years of life expectancy gained
YLEL	Years of life expectancy lost
YPLL	Years of potential life lost