

**SUMMARY OF FOUR-YEAR REPORTS
ON HEALTH CONDITIONS IN
THE AMERICAS 1957-1960**

PREPARED FOR
THE XVI PAN AMERICAN SANITARY CONFERENCE



Scientific Publications No. 64

July 1962

PAN AMERICAN HEALTH ORGANIZATION
Pan American Sanitary Bureau - Regional Office of the
WORLD HEALTH ORGANIZATION

WASHINGTON, D.C., U.S.A.

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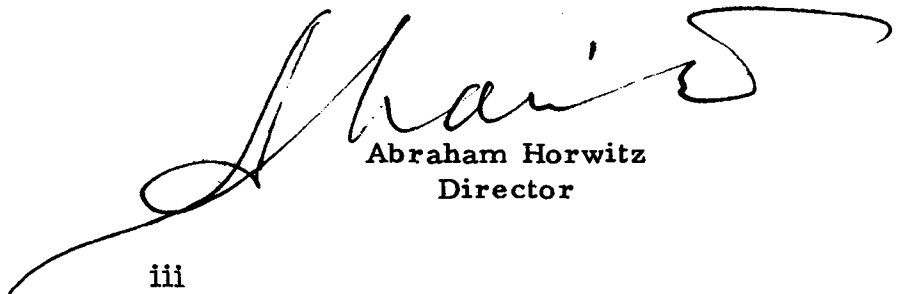
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PROLOGUE

A synthesis of health conditions in the Americas for the period 1957-1960 has been prepared from data provided by the Governments. This presentation includes vital and health statistics, trends of prevailing problems and the resources usually employed with special attention to personnel and investments for health services. The series of data permits understanding of the characteristics of the most prevalent diseases and the effects of the programs for their prevention and treatment. Comparison of this report with the previous ones, reveals the progress achieved or the retrogressions although it still may fail to reflect reality. The data are incomplete in quality and quantity. They are, however, a basic tool for the interpretation of the phenomena which condition health and disease and their projections in time. They represent the basis for the formulation and evaluation of the health plans and programs determining for each period what needs to be done and how it should be done.

One does not consider today collecting statistics without giving thought to their analysis and interpretation, and the resulting modifications they will bring forth, whether in preventive or curative actions, in the priorities assigned or in the methods of solution of health problems. Statistics is a highly dynamic discipline which should serve as an instrument for social progress. In order that their effects be felt in the health administrations of a country, it seems indispensable to have departments of statistics in the Ministries of Health at the national level with the necessary structure at the local level to insure the use of the information where the problems occur and are solved.

We believe that this publication will be useful to the Governments in carrying out the Ten-Year Health Plan which is a part of the Charter of Punta del Este. It permits at the same time, the extension to new communities of present programs, particularly those which are related to problems of significance for economic and social progress. In sponsoring this document the Pan American Sanitary Bureau is fulfilling the repeated resolutions of the Governments emphasizing the importance of vital and health statistics, the need of extending programs of the Organization in this fundamental field, and the intention of Governments to utilize and improve their data in quantity and quality according to the situation of each country.



Abraham Horwitz
Director

P R E F A C E

Since the health officials of the Member Governments of the Pan American Health Organization^(1,2,3) have expressed their interest in the general collection and distribution of health information by the Pan American Sanitary Bureau, summary reports have been prepared for the Pan American Sanitary Conference which is held every four years. To bring the reports together into a unified summary, data have been collected through questionnaires completed in the countries and other areas of the Americas.

The first summary was presented to the XIV Conference held in 1954 in Santiago, Chile, entitled *Summary of Reports on the Health Conditions in the Americas, 1950-1953*.⁽⁴⁾ Data were collected in the same way for the second report, presented to the XV Conference in 1958 in San Juan, Puerto Rico, which was entitled *Summary of Four-Year Reports on Health Conditions in the Americas*.⁽⁵⁾ The information collected for this second report also served for the *First Report on the World Health Situation, 1954-1956*, by the World Health Organization.⁽⁶⁾

A Resolution of the XV Pan American Sanitary Conference in 1958 recommended that reports on health conditions of Member Countries for the XVI Conference in 1962 include statistical information in the various fields. A Resolution of the Eleventh World Health Assembly in 1958 requested the Director-General to prepare a questionnaire on public health and demographic aspects to be used as a guide in the preparation of future reports, and invited the Members of the World Health Organization to prepare a second report covering the period 1957-1960 which would be used for the Second Report on the World Health Situation for the Fifteenth World Health Assembly.

To eliminate the need for completion of two questionnaires, arrangements were made for the questionnaire from the Director-General of the World Health Organization to serve as the basic document for both purposes, namely, the *Summary of Four-Year Reports on Health Conditions in the Americas, 1957-1960*, prepared for the XVI Pan American Sanitary Conference, and the *Second Report on the World Health Situation, 1957-1960*.⁽⁷⁾ The latter report has already been released and consists principally of individual country resumes.

The questionnaire had two parts: Part A, "General Consideration," a narrative account of important events or changes in health administrations, descriptions of any general health plans or programs for development of the overall health services, new developments in education and training of professional and auxiliary health

personnel, a brief summary of research, etc.; and Part B, "Statistical Information," a series of forms for recording vital statistics, morbidity from communicable diseases, resources in terms of health expenditures, hospitals, health centers, laboratories, health personnel, immunizations, etc. Not all health administrations completed Part A, but nearly every one completed Part B. Thus this report is primarily a summary of statistical data on vital statistics, notifiable diseases, and health resources.

In this document for the Pan American Sanitary Conference, only the regional problems and programs which can be described from material provided in the questionnaire have been highlighted. Other official reports from the countries to the Bureau, to the World Health Organization, and to the United Nations have also been used to supplement the information obtained in the *Four-Year Reports*. It would be desirable if each country would establish official figures to be provided to all agencies. Difficulties were encountered in obtaining statistical data in some fields on which data are needed for health planning. When data from different sources were not in agreement, efforts were made to use the most reliable figures for this report. However, this proved to be a difficult task and indicated the need for improvement of basic data. Coordination is desirable so that official figures will become available for planning of health programs and evaluation of progress in each country.

At this time, with emphasis being placed on planning for health programs in accordance with the Act of Bogota⁽⁸⁾ and the Charter of Punta del Este,⁽⁹⁾ inclusion of data essential for health programs of the Americas was deemed advisable. Thus, efforts have been made to assemble data regarding advances in health programs, expenditures for health, hospital facilities and services, populations provided with water supplies and sewerage systems, health personnel, new developments in education and training, in addition to usual data on vital statistics and communicable diseases. The chapter on hospital services includes new data on average lengths of stay and percentage distribution of causes of hospitalization of patients. Such data are useful for planning medical programs.

The progress in health work in the Americas can be reviewed at regular intervals through the *Four-Year Reports* prepared for the Conferences. To provide complete and accurate data in the many fields of health, further efforts can well be directed to improvement of collection of data needed for planning, and to development within each National Health Service of a Statistical Service responsible for analysis and use of official data in each field. Coordination of statistical activities is essential in the countries in order that data be collected and fully utilized for health planning at national and international levels.

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IN THE AMERICAS, 1957-1960

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EXPLANATION OF SYMBOLS

Data not available
Category not applicable
None	-
Less than half of unit employed.	0.0

CHAPTER I

GENERAL VITAL STATISTICS

Planning and evaluation of health programs begin with a critical analysis of health conditions. Knowledge of the growth of a population, its age composition and the principal causes of death is an essential element in such planning. Statistics on population, births and

deaths are at present the most reliable indices available to define the health status of nations and to measure changes taking place. This chapter will be concerned with general vital statistics principally utilizing data received from the Member States for this report.

POPULATION

Accurate estimations of population are derived mainly from censuses. In the past, most population and housing censuses which are the source of demographic statistics for many purposes have been taken at 10-year intervals usually near the beginning of each decade. However, some delays have been encountered in censuses at the beginning of this present decade. In only 12 of the 22 countries of the Americas were censuses taken in 1960 or 1961. In four others, they are scheduled for 1962 and in five for 1963 leaving only one country in which the plans for the census are not known at present. Even in many countries in which the censuses were carried out in 1960 or 1961 final tabulations are not available at the time of preparation of this report and practically no distributions by age can be obtained. The dates of the censuses which have been taken or planned (as reported by the United Nations) are given in Table 1. In Canada the population was enumerated twice in the decade, in 1956 and 1961, and in St. Pierre and Miquelon there were censuses in both 1959 and 1962.

For this report the estimates of population which have been used are in most instances those provided by the countries to the United Nations and published by the United Nations as official estimates. Mainly they are based on previous census data and calculations using the excess of births over deaths and facts about

TABLE 1. DATES OF NATIONAL CENSUSES TAKEN OR PLANNED IN THE AMERICAS DURING THE PERIOD 1955-1964

Area	Date	Area	Date
Argentina	30 IX 1960	Bahama Islands	1963
Bolivia	...	Bermuda	23 X 1960
Brazil	1 IX 1960	British Guiana	7 IV 1960
Canada	{ 1 VI 1956 1 VI 1961	British Honduras	7 IV 1960
Chile	29 XI 1960	Canal Zone	1 IV 1960
Colombia	1963	Falkland Islands	1963
Costa Rica	1963	French Guiana	9 X 1961
Cuba	1963	Guadeloupe	9 X 1961
Dominican Republic	7 VIII 1960	Martinique	9 X 1961
Ecuador	XI 1962	Netherlands Antilles	31 XII 1960
El Salvador	2 V 1961	except Aruba	27 VI 1960
Guatemala (a)	1963	Puerto Rico	1 IV 1960
Haiti	VIII 1962	St. Pierre and Miquelon	{ 15 X 1959 III or IV 1962
Honduras	17 IV 1961	Surinam	...
Mexico	8 VI 1960	Virgin Is.(U.K.)	7 IV 1960
Nicaragua	V 1962	Virgin Is.(U.S.)	1 IV 1960
Panama	11 XII 1960	West Indies Federation	7 IV 1960
Paraguay	IX 1962		
Peru	2 VII 1961		
United States	1 IV 1960		
Uruguay (b)	1963		
Venezuela	26 II 1961		

Source: United Nations Economic and Social Council, E/CN.3/295, 15 Feb. 1962

(a) Personal communication. (b) Reported unofficially in May 1962 to be postponed to 1963.

TABLE 2. ESTIMATED MIDYEAR POPULATIONS FOR 1940, 1950 AND 1960 AND ANNUAL PERCENTAGE GROWTH RATES FOR DECADES 1940-1950 AND 1950-1960 IN 22 COUNTRIES AND 4 LARGE AREAS IN THE AMERICAS

Country	Estimated populations			Annual percentage growth rates	
	1940	1950	1960	1940-1950	1950-1960
Argentina	14 169 000	17 189 000	20 956 000	1.95	2.00
Bolivia	2 690 000	3 019 000	3 454 000	1.16	1.36
Brazil	41 114 000	51 976 000	**70 175 000	2.37	3.05
Canada	11 682 000	13 712 000	17 814 000	1.62	2.65
Chile	5 063 000	6 073 000	7 628 000	1.84	2.31
Colombia	9 094 000	11 334 000	14 132 000	2.23	2.23
Costa Rica	619 000	801 000	1 171 000	2.61	3.87
Cuba	4 566 000	5 508 000	6 797 000	1.89	2.13
Dominican Republic	1 674 000	2 131 000	* 2 994 000	2.44	3.46
Ecuador	2 466 000	3 197 000	4 317 000	2.63	3.05
El Salvador	1 633 000	1 868 000	2 612 000	1.35	3.41
Guatemala	2 201 000	2 805 000	3 765 000	2.45	2.99
Haiti	2 751 000	3 112 000	3 505 000	1.24	1.20
Honduras	1 146 000	1 428 000	1 953 000	2.22	3.18
Mexico	19 815 000	25 826 000	** 34 923 000	2.68	3.06
Nicaragua	825 000	1 060 000	1 477 000	2.54	3.37
Panama	620 000	797 000	* 1 055 000	2.54	2.84
Paraguay	1 111 000	1 397 000	1 768 000	2.32	2.38
Peru	7 033 000	8 521 000	10 857 000	1.94	2.45
United States (a)	132 594 000	152 264 000	* 180 670 000	1.39	1.73
Uruguay	2 155 000	2 407 000	2 827 000	1.11	1.62
Venezuela	3 710 000	4 974 000	** 7 182 000	2.98	3.74
Other areas over 500 000 in 1960					
British Guiana	344 000	423 000	** 565 000	2.09	2.94
Jamaica	1 212 000	1 403 000	* 1 619 000	1.47	1.44
Puerto Rico	1 880 000	2 207 000	* 2 361 000	1.62	0.68
Trinidad and Tobago	476 000	632 000	** 834 000	2.88	2.81

Source: United Nations, Demographic Yearbook 1960, Table 4 and Monthly Bulletin of Statistics, April 1962.

* Also based on recent census data.

** Estimates derived from recent census figures, not published by the United Nations.

(a) Including Alaska and Hawaii and armed forces overseas.

migration. It is recognized that the corrected estimates resulting from the 1960 censuses may differ to some extent from those available at this time, especially in countries with incomplete registration of vital events. For some countries, as indicated in Table 2, provisional or final figures from a recent census have been included. For a few others the estimates are not those published by the United Nations but are geometric interpolations based on the census results in both 1950 and 1960.

The estimated populations in 1940, 1950 and 1960 and the annual percentage growth rates in the two decades, 1940-1950 and 1950-1960 are given in Table 2 with the latter rates shown by rank order in Figure 1. Seven countries of the Americas had more than 10 million inhabitants in 1960, (the United States, 181 million; Brazil, 70 million; Mexico, 35 million; Argentina, 21 million; Canada, 18 million; Colombia, 14 million; and Peru, 11 million. Three other countries had more than 5 million (Chile, 8 million; Venezuela,

7 million; and Cuba 7 million), and populations of the other 12 were between 1 and 5 million. Puerto Rico and Jamaica also had populations over one million — 2,361,000 and 1,619,000 respectively.

Growth rates calculated on the compound interest formula from these estimates in the decade 1950-1960 varied widely from the low 1.2 per cent per year for Haiti to high growth rates of at least 3.0 per year in nine countries, namely: Costa Rica, 3.9; Venezuela, 3.7; Dominican Republic, 3.5; El Salvador, 3.4; Nicaragua, 3.4; Honduras, 3.2; Mexico, 3.1; Ecuador, 3.0; and Brazil, 3.0. Of these nine countries the four in Central America and the Dominican Republic in the Caribbean had much higher growth rates than for the previous decade 1940-1950. At the other extreme growth rates were less than 2 per cent per year in four countries, namely: Haiti, 1.2; Bolivia, 1.4; Uruguay, 1.6; and the United States, 1.7. Of the four areas with populations in excess of 500,000 in 1960, British Guiana and Trinidad and Tobago had relatively

FIGURE 1
ANNUAL PERCENTAGE GROWTH RATES OF POPULATION
BETWEEN 1950 AND 1960
IN COUNTRIES OF THE AMERICAS

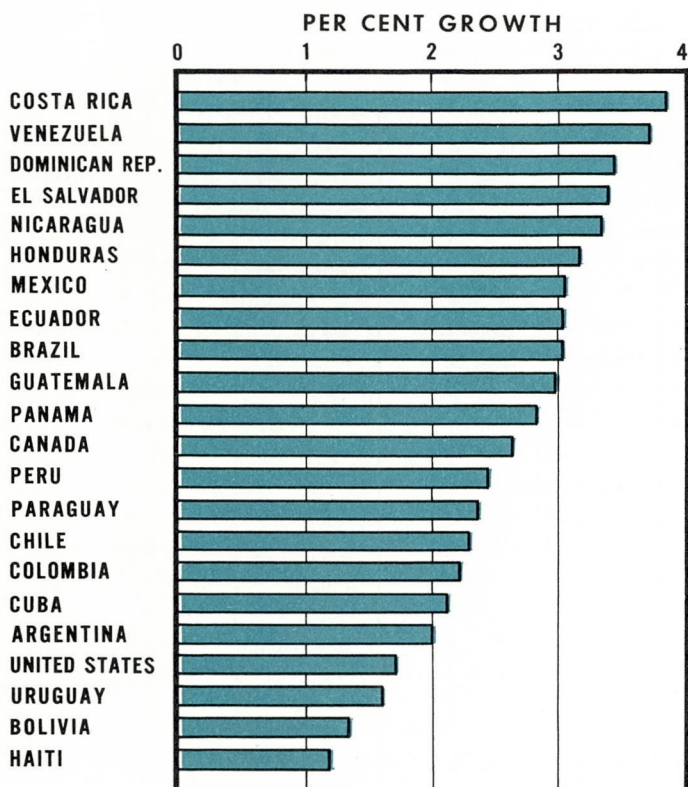


TABLE 3. ESTIMATED POPULATIONS (IN MILLIONS) IN THE
THREE REGIONS OF THE AMERICAS IN 1950, 1960, 1980
AND 2000 WITH AVERAGE ANNUAL PERCENTAGE
GROWTH, 1950-1960

Region (a)	1950	1960	1980	2000	Increase 1950-1960	Annual per cent growth (b) 1950-1960
Total	330	405	603	904	75	2.1
Northern America	167	199	254	312	32	1.8
Middle America	51	66	115	198	15	2.6
South America	112	140	234	394	28	2.3

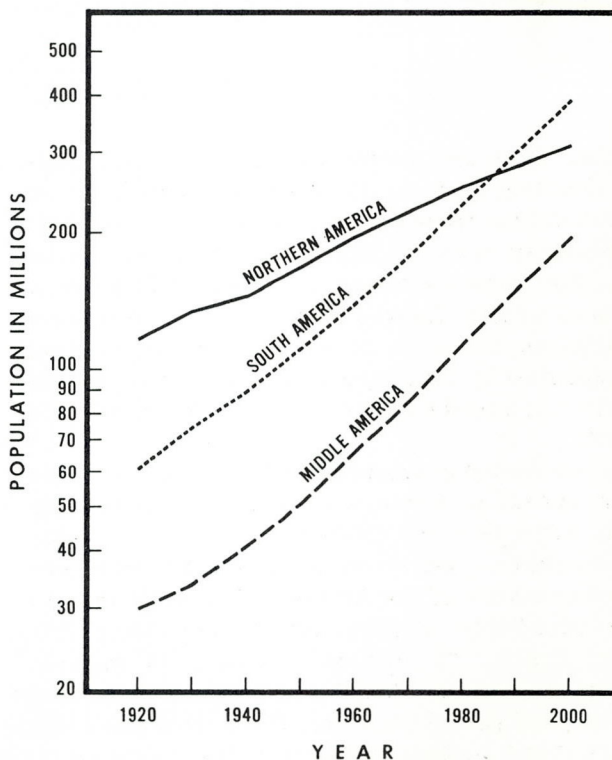
Source: United Nations.

- (a) Northern America: Bermuda, Canada, St. Pierre and Miquelon and United States.
- Middle America: Caribbean Islands, Central America, Mexico and Panama.
- South America: Continent of South America and Falkland Islands.

(b) Annual percentage growth on compound interest formula.

revision will be made. For predictions of population growth which are so necessary for program planning in health, census data as well as complete registration of births and deaths are essential.

FIGURE 2
GROWTH OF POPULATION IN THREE REGIONS OF THE AMERICAS,
1920-1950, AND ESTIMATED GROWTH, 1950-2000



Source: United Nations, Statistical Yearbook, 1958
United Nations, ST/SOA/Series A/28

high growth rates (2.9 and 2.8 per cent respectively) while the growth rates of Jamaica and Puerto Rico were low. The rate for Puerto Rico was only 0.7 per cent, which is in part due to emigration from the island.

The Americas and especially Latin America are in a period of rapid growth. Estimates for the three regions, Northern, Middle and South America for 1950, 1960, 1980 and 2000 (Table 3 and Figure 2) were made by the United Nations during the 1950's. The patterns of growth were taken into account, high fertility for central and tropical America and declining mortality. It was assumed that the decline in mortality would conform to a uniform pattern and that an annual gain of half a year in the expectation of life at birth would be normal in countries with expectations of life at birth ranging from 30 to 55 years. Continuing high levels of fertility were postulated.

By the year 2000 the population in Northern America, as estimated, will be 312 million, while in the rest of the Americas it may be nearly twice as great, 592 million. Estimates such as these are continually subject to revision as new census data become available. As changes occur in birth and death rates which are not in accord with the assumptions used,

The estimated populations which are used as the basis for rates in this report are given in Table 4 for the four years, 1957-1960. Throughout this report population and other data for Alaska and Hawaii have been added when possible to those for the United States since these areas became states of the United States during this period.

TABLE 4. ESTIMATED MIDYEAR POPULATION IN THE AMERICAS, 1957-1960

Area	1957	1958	1959	1960
Argentina	19 873 000	20 248 000	20 614 000	20 956 000
Bolivia	3 317 000	3 361 000	3 408 000	3 454 000
Brazil	64 132 000	66 087 000	68 101 000	70 177 000
Canada	16 589 000	17 048 000	17 442 000	17 814 000
Chile	7 121 000	7 298 000	7 465 000	7 628 000
Colombia	13 227 000	13 522 000	13 824 000	14 132 000
Costa Rica	1 033 000	1 076 000	1 126 000	1 171 000
Cuba	6 388 000	6 523 000	6 661 000	6 797 000
Dominican Republic	2 704 000	2 797 000	2 894 000	2 994 000
Ecuador	3 929 000	4 049 000	4 188 000	4 317 000
El Salvador	2 350 000	2 434 000	2 520 000	2 612 000
Guatemala	3 451 000	3 546 000	3 652 000	3 765 000
Haiti	3 384 000	3 424 000	3 464 000	3 505 000
Honduras	1 769 000	1 828 000	1 887 000	1 953 000
Mexico	31 426 000	32 348 000	33 304 000	34 923 000
Nicaragua	1 332 000	1 378 000	1 424 000	1 477 000
Panama	973 000	1 000 000	1 027 000	1 055 000
Paraguay	1 648 000	1 687 000	1 728 000	1 768 000
Peru	9 923 000	10 213 000	10 524 000	10 857 000
United States	171 108 000	174 057 000	177 131 000	179 977 000
Uruguay	2 723 000	2 758 000	2 792 000	2 827 000
Venezuela	6 426 000	6 669 000	6 921 000	7 182 000
Bahama Islands	98 000	101 000	103 000	105 000
Bermuda	41 000	41 000	42 000	42 000
British Guiana	518 000	533 000	549 000	565 000
British Honduras	83 000	86 000	88 000	91 000
Canal Zone	52 000	43 000	42 000	42 000
Falkland Islands	2 000	2 000	2 000	2 000
French Guiana	30 000	31 000	31 000	31 000
Guadeloupe	251 000	257 000	264 000	270 000
Martinique	258 000	264 000	271 000	277 000
Netherlands Antilles	185 000	187 000	188 000	190 000
Puerto Rico	2 260 000	2 299 000	2 322 000	2 361 000
St. Pierre-Miquelon	5 000	5 000	5 000	5 000
Surinam	238 000	248 000	259 000	270 000
Virgin Is. (U. K.)	7 000	7 000	7 000	7 000
Virgin Is. (U. S.)	29 000	30 000	31 000	33 000
West Indies Fed.				
Antigua	52 000	53 000	54 000	55 000
Barbados	224 000	227 000	230 000	233 000
Dominica	57 000	58 000	59 000	60 000
Grenada	85 000	86 000	88 000	89 000
Jamaica	1 558 000	1 578 000	1 599 000	1 619 000
Montserrat	13 000	13 000	12 000	12 000
St. Kitts-Nevis-Anguilla	54 000	55 000	56 000	57 000
St. Lucia	83 000	84 000	85 000	86 000
St. Vincent	76 000	77 000	79 000	80 000
Trinidad-Tobago	766 000	788 000	811 000	834 000

Source: United Nations, *Monthly Bulletin of Statistics*, April 1962. U. S. *Current Population Reports*, Series P-25, No. 229, - Estimates include Alaska and Hawaii but exclude armed forces overseas.

Note: For Brazil, Venezuela and most territories of United Kingdom, geometric intercensal estimates were used.

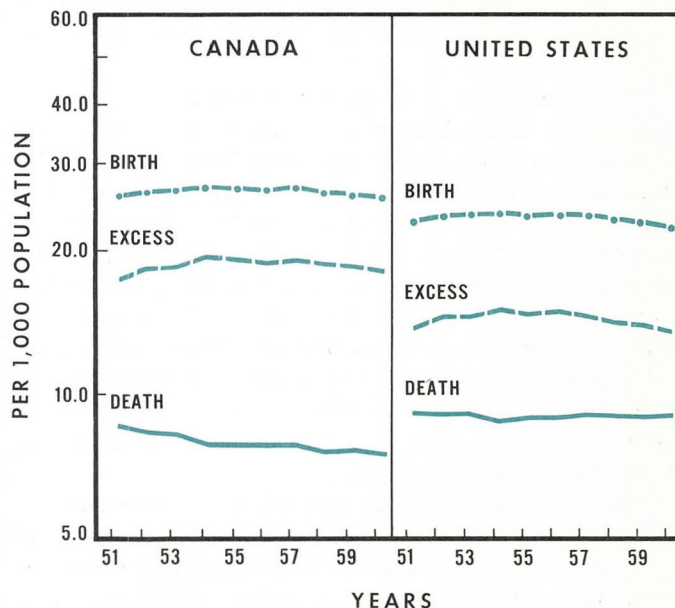
NATALITY

The completeness of birth registration varies widely among the countries of the Americas and within the countries. Definitions established by law for a live birth and the procedures for registration have not been the same in all areas. However, progress toward uniformity is being made. The WHO definitions (1) of a live birth and of a fetal death are being recognized as the standards to be used by all Member States. The *Principles for a Vital Statistics System* of the United Nations (2) established standardized procedures which are gradually being accepted and followed. Correct interpretation of birth rates is dependent on an understanding of definitions and procedures in use in the countries, and thus persons utilizing the data need to be aware of the limitations. However, analyses of these data are valuable for planning programs in the field of health as well as in other fields, such as education.

The numbers of live births with rates per 1,000 population are given in Table 5. These data were available for most areas with the exception of Cuba, Haiti and Brazil. The information presented for Brazil pertains only to the State of Guanabara and the capitals of other states with a few exceptions.

FIGURE 3

BIRTHS, DEATHS AND EXCESS OF BIRTHS OVER DEATHS PER 1,000 POPULATION IN TWO COUNTRIES OF NORTHERN AMERICA, 1951-1960



1/ *Second Report of Expert Committee on Health Statistics* - WHO Technical Report Series No. 25, 1950.

2/ *Annex 2, Handbook of Vital Statistics Methods*, UN Series F, No. 7, 1955.

TABLE 5. NUMBER OF LIVE BIRTHS WITH RATES PER 1,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960
Argentina	476 235	473 103	472 379	467 269	24.0	23.4	22.9	22.3
Bolivia	83 114	92 661	96 969	85 230	25.1	27.6	28.5	24.7
Brazil (a)	341 856	319 958	304 999	...	35.5	33.7	34.7	...
Canada	469 093	470 118	479 275	478 551	28.3	27.6	27.5	26.9
Chile	244 900	246 796	249 799	256 674	34.4	33.8	33.5	33.6
Colombia	563 037	585 561	608 670	595 305	42.6	43.3	44.0	42.1
Costa Rica (b)	48 766	49 341	53 521	* 50 214	47.2	45.9	47.5	* 42.9
Cuba	...	...	...	...	...	...	...	...
Dominican Republic	110 448	115 519	115 151	110 102	40.8	41.3	39.8	36.8
Ecuador	190 605	185 932	199 500	...	48.5	45.9	47.6	...
El Salvador	114 929	115 154	115 622	121 350	48.9	47.3	45.9	46.5
Guatemala	170 381	172 745	181 740	...	49.4	48.7	49.8	...
Haiti	...	...	...	...	...	...	...	...
Honduras	76 313	78 569	78 874	...	43.1	43.0	41.8	...
Mexico	1 485 202	1 447 578	1 589 606	...	47.8	44.7	47.7	...
Nicaragua	57 277	57 058	63 297	60 235	43.0	41.4	44.5	40.8
Panama	37 743	37 738	40 296	41 434	38.8	37.7	39.2	39.3
Paraguay	41 744	43 481	47 362	* 44 525	25.3	25.8	27.4	* 25.2
Peru	327 680	346 945	367 412	* 367 862	33.0	34.0	34.9	* 33.9
United States	4 279 689	4 227 571	4 261 896	* 4 257 850	24.9	24.2	24.0	* 23.6
Uruguay	54 731	56 379	...	...	20.1	20.4	...	...
Venezuela	280 539	282 762	313 565	324 132	43.7	42.4	45.3	45.1
Bahama Islands	3 126	3 029	3 154	...	31.9	30.0	30.6	...
Bermuda	1 084	1 050	1 182	...	26.6	25.4	28.2	...
British Guiana	22 983	23 661	24 458	...	44.3	44.4	44.6	...
British Honduras	3 615	3 988	4 016	...	43.6	46.4	45.6	...
Canal Zone	1 032	819	763	769	19.8	19.0	18.2	18.3
Falkland Islands	39	46	41	54	19.5	23.0	20.5	27.0
French Guiana	993	947	1 014	1 042	33.1	30.5	32.7	33.6
Guadeloupe	9 460	9 886	9 823	10 474	37.7	38.5	37.2	38.8
Martinique	10 502	10 295	10 437	10 400	40.7	39.0	38.5	37.5
Netherlands Antilles	6 578	6 548	6 468	...	35.6	35.0	34.4	...
Puerto Rico	76 058	76 298	74 210	...	33.7	33.2	32.0	...
St. Pierre-Miquelon	112	102	106	98	22.4	20.4	21.2	19.6
Surinam	10 573	11 387	11 765	12 250	44.4	45.9	45.4	45.4
Virgin Islands (U. K.)	317	315	306	...	45.3	45.0	43.7	...
Virgin Islands (U. S.)	1 038	1 129	1 085	...	35.8	37.6	35.0	...
West Indies Fed.								
Antigua	1 764	1 818	1 831	...	33.9	34.3	33.9	...
Barbados	7 314	7 115	7 110	...	32.7	31.3	30.9	...
Dominica	2 557	2 725	2 770	2 815	44.9	47.0	46.9	46.9
Grenada	4 664	4 253	4 115	...	54.9	49.5	46.8	...
Jamaica	60 770	62 077	64 806	69 192	39.0	39.3	40.5	42.7
Montserrat	373	377	391	...	28.7	29.0	32.6	...
St. Kitts-Nevis-Anguilla	2 697	2 520	2 512	...	49.9	45.8	44.9	...
St. Lucia	3 924	3 952	4 108	...	47.3	47.0	48.3	...
St. Vincent	4 261	3 930	4 051	...	56.1	51.0	51.3	...
Trinidad and Tobago	28 848	29 667	30 592	...	37.7	37.6	37.7	...
Northern America	4 749 978	4 698 841	4 742 459	...	25.3	24.6	24.4	...
Middle America (c)	2 329 957	2 304 443	2 470 655	...	45.5	43.7	45.6	...
South America (d)	2 297 173	2 349 661	2 392 934	...	33.3	33.3	34.4	...

* Provisional.

(a) Data for State of Guanabara and capitals of other States, excluding Goiania in 1957, Salvador in 1958 and Recife and Salvador in 1959. (b) By year of occurrence. (c) Excludes Cuba and Haiti. (d) Excludes Brazil 1957-1959 and Uruguay, 1959.

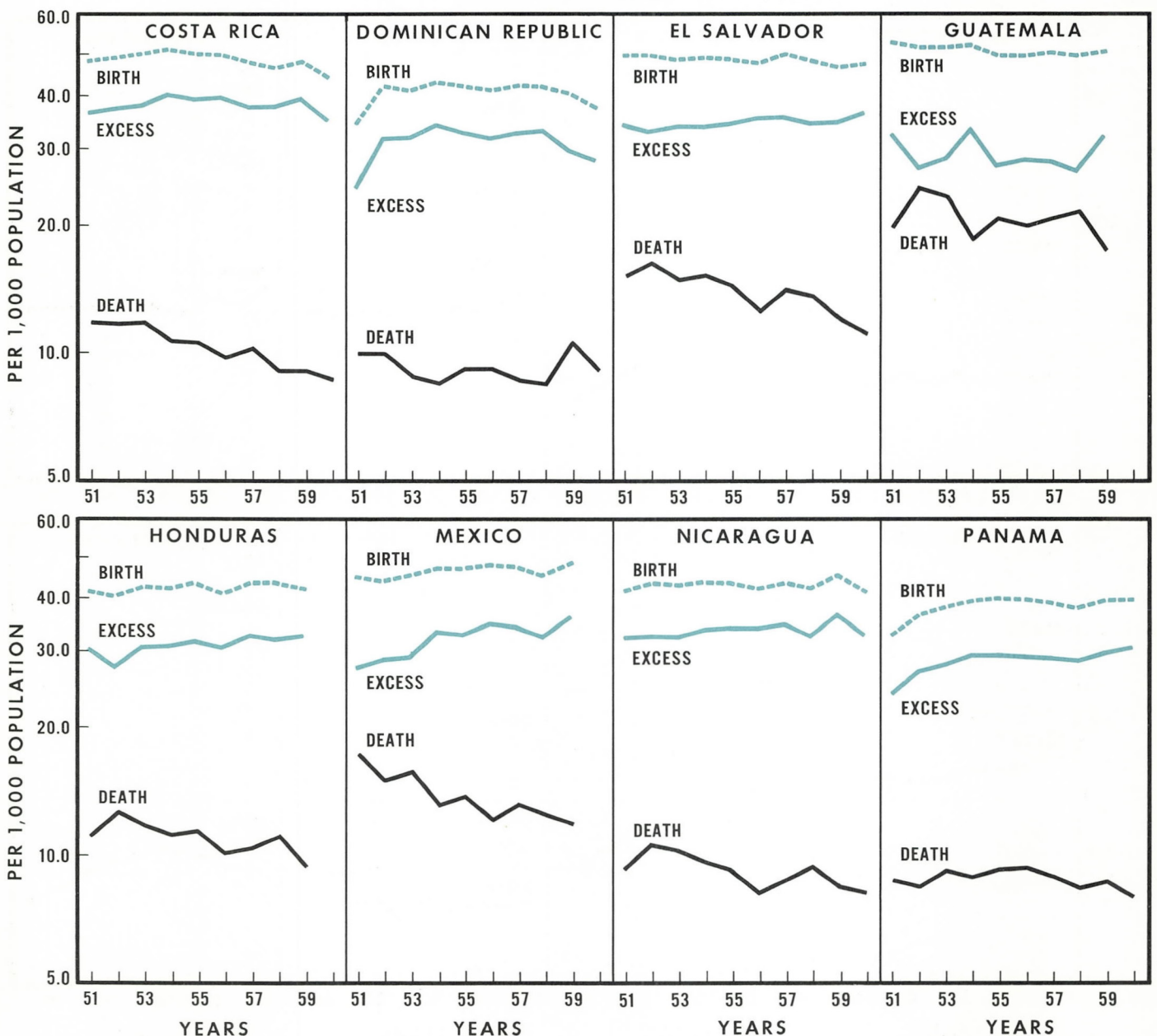
In general the birth rates were high; and for 1960 or for the most recent year with data available, they were in excess of 40 per 1,000 population in nine countries. Usually the rates were low in the countries with the highest proportions of population in the older age groups: Argentina, Canada, the United States, and Uruguay. In other areas of the Americas, the birth rates were generally high and in 10 of the 25 areas listed were in excess of 40 per 1,000 population.

The summary by regions indicates that the highest birth rates occurred in Middle America where the birth rate for the region was 45.6 per 1,000 in 1959.

For consideration of trends of natality, birth rates for the 10-year period are shown in Figures 3, 4 and 5 for all countries in Northern, Middle and South America except Brazil, Cuba, Haiti and Paraguay. Of the two countries in Northern America, Canada and the United States, Canada had the higher birth rate

FIGURE 4

BIRTHS, DEATHS AND EXCESS OF BIRTHS OVER DEATHS PER 1,000 POPULATION IN EIGHT COUNTRIES OF MIDDLE AMERICA, 1951-1960

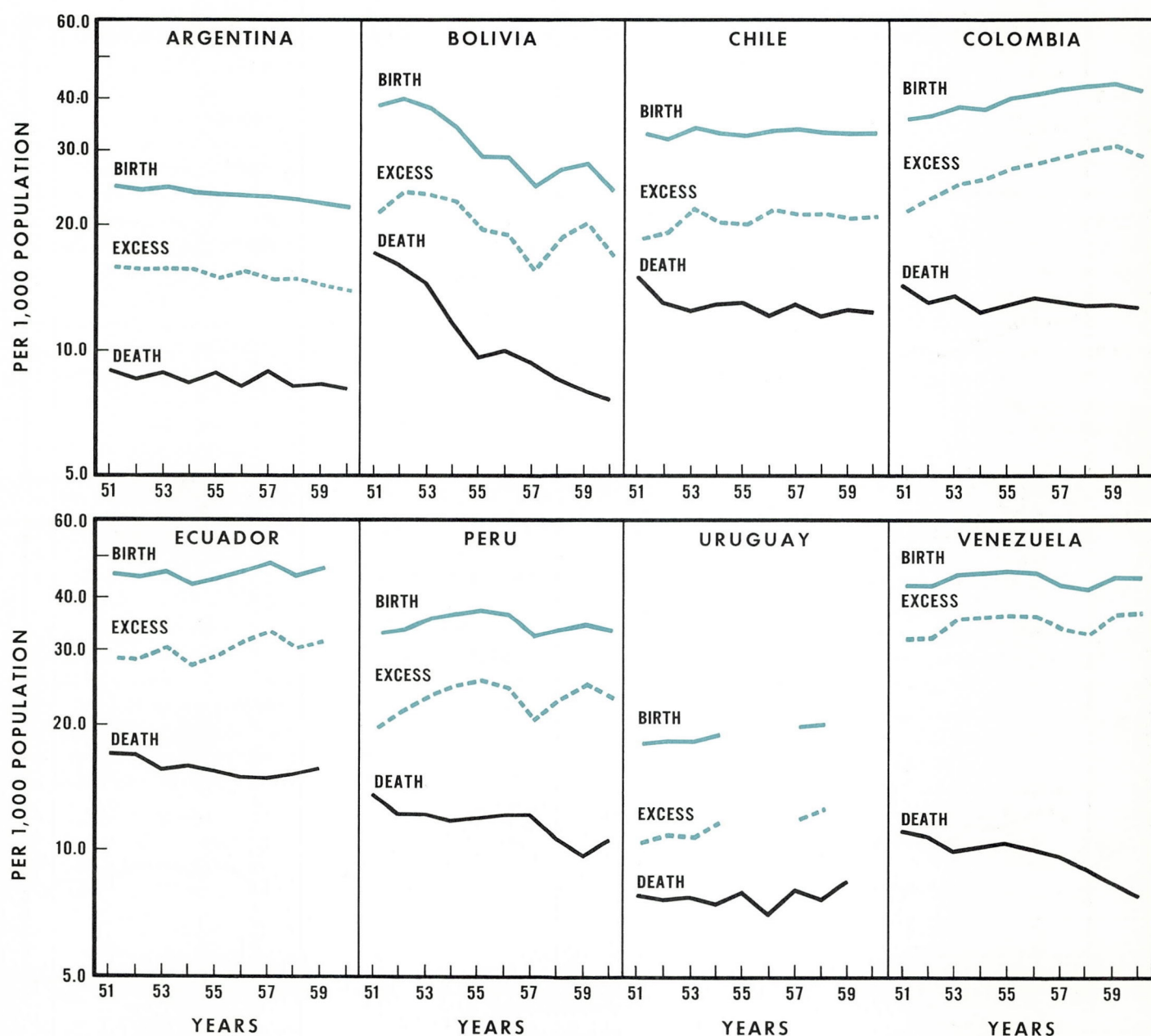


(Figure 3). In both countries slight increases occurred during the decade, but the birth rates at the end of the period were practically the same as in 1951.

The countries of Middle America (excluding Haiti and Cuba) (Figure 4) had high birth rates in the 10-year period with rates remaining at a relatively high level. For South America, birth rates are shown in Figure 5 for eight countries (data were incomplete for Brazil and Paraguay). In several of these it is difficult

to evaluate the trends in the decade since improvement of registration may have contributed to an apparent increase in birth rates and in others registration may at the end of the decade still be incomplete. By the end of the period the birth rates were the highest in Ecuador, Venezuela and Colombia and the lowest in Uruguay and Argentina. In Argentina, a slight downward trend was noted in the birth rate.

FIGURE 5
BIRTHS, DEATHS AND EXCESS OF BIRTHS OVER DEATHS PER 1,000 POPULATION
IN EIGHT COUNTRIES OF SOUTH AMERICA, 1951-1960



MORTALITY

The magnitude of the total death rate is dependent on many factors among which an important one is the age distribution of the population. Data on the age distribution of a population are usually obtained from a census. Since recent census data are not yet available, estimates of age distribution are still being derived from the 1950 census data which were provided in the first Summary of Reports on the Health Conditions in the Americas.⁽³⁾ Because of the lack of current data on age at this time, only total death rates unadjusted for age — often termed crude death rates — are presented.

Death registration is usually incomplete in the same countries and areas where birth registration is also unsatisfactory. Even when data are available for a country, registration may nevertheless be incomplete in rural areas. Thus in many of the countries of the Americas, the crude death rates are probably lower than they would be if all deaths were registered. In spite of limitations, the material on mortality in the Americas is useful in studying health conditions and in reviewing trends.

The numbers of deaths with rates per 1,000 population are contained in Table 6 for the 4 years 1957-1960. From the summary of death rates for the three regions, the rate for Middle America exclusive of Haiti appears to be the highest, followed in order by South America and Northern America. Death rates for the 10-year period are shown in Figures 3, 4 and 5 for the countries of Northern, Middle and South America. The marked downward trends are clear in several countries such as Costa Rica, El Salvador, and Mexico in Middle America and Peru and Venezuela in South America indicating progress in the reduction from the high mortality rates of the past.

In the same three figures the natural increase in population which is the excess of the birth rate over the death rate is also shown by country. In several an upward trend of the natural increase is clearly evident in this 10-year period, for example in Middle America for Mexico, and in South America for Colombia. In several others the apparent changes may be due to improvement in the registration of births. In others such as the United States the natural increases have remained nearly constant. In a few, for

example in Argentina, the natural increase declined in the 10-year period. Since the growth of population is due to the excess of births over deaths together with migration, these data are closely related to those presented earlier in Figure 1.

Data on causes of death are available for 21 countries and 23 other areas of the Americas for 1960 or an earlier year. Causes of death were given usually in accordance with a slight expansion of the abbreviated list (B list) of the International Classification of Diseases⁽⁴⁾. However, complete data were not supplied by all areas for this expanded list. Whenever possible the data were supplemented from other sources. The numbers of deaths from these specific causes are given in Table 7 and the death rates per 100,000 population in Table 8. For assessing health problems, understanding of the usefulness of these data as well as their limitations is important. Careful analysis of this material supports the need of coordinated efforts for improvement of medical certification in the Americas.

In order to point out the leading causes of mortality as part of the study of health conditions in the region of the Americas, the five principal causes of death have been determined for each country and four large areas providing information (Table 9). The method of selection of the principal causes is that recommended by Curiel⁽⁵⁾. Residual groups of diseases or the group, senility, ill-defined and unknown causes, are not included in designating principal causes of death. For Haiti, incomplete data on causes of deaths in hospitals are presented in order to give some idea of the leading causes.

The five leading causes are shown in Figure 6 for countries of North America (excluding Haiti) and in Figure 7 for countries of South America (excluding Bolivia). The causes, which are communicable diseases or are in large part due to communicable diseases (such as gastritis, enteritis, etc.), are designated in color, while other causes are in black or shaded with black.

Several different patterns of mortality are evident in these countries. In five countries: namely, Canada, the United States, Cuba, Uruguay and Argentina, the

^{3/} *Summary of Reports on the Health Conditions in the Americas 1950-1953*. Scientific Publication No. 25, Pan American Sanitary Bureau, 1956.

^{4/} *International Classification of Diseases, Injuries and Causes of Death*, WHO, Geneva, 1957.

^{5/} Curiel, D., *Causas Principales de Muerte*, *Boletín de la Oficina Sanitaria Panamericana*, Vol. XL, No. 3, Marzo 1956.

TABLE 6. NUMBER OF DEATHS WITH RATES PER 1,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960
Argentina	176 756	165 601	170 301	169 692	8.9	8.2	8.3	8.1
Bolivia	30 871	28 863	27 133	26 283	9.3	8.6	8.0	7.6
Brazil (a)	142 134	144 538	140 356	...	14.6	14.4	14.0	...
Canada	136 579	135 201	139 913	139 693	8.2	7.9	8.0	7.8
Chile	91 073	88 611	93 292	93 625	12.8	12.1	12.5	12.3
Colombia	173 873	173 681	176 834	177 581	13.1	12.8	12.8	12.6
Costa Rica	10 471	9 692	10 176	10 063	10.1	9.0	9.0	8.6
Cuba	39 964	41 959	43 423	...	6.3	6.4	6.5	...
Dominican Republic	23 210	23 592	30 288	27 025	8.6	8.4	10.5	9.0
Ecuador	57 885	60 950	65 314	...	14.7	15.1	15.6	...
El Salvador	32 893	32 831	30 038	28 775	14.0	13.5	11.9	11.0
Guatemala	70 933	75 634	63 010	...	20.6	21.3	17.3	...
Haiti	...	...	...	...	...	...	...	...
Honduras	18 434	20 272	17 815	...	10.4	11.1	9.4	...
Mexico	414 545	404 529	397 372	411 277	13.2	12.5	11.9	11.8
Nicaragua	11 552	12 879	11 911	11 935	8.7	9.3	8.4	8.1
Panama	8 656	8 364	8 959	8 427	8.9	8.4	8.7	8.0
Paraguay (b)	7 875	9 118	9 096	9 467	10.3	11.5	10.7	10.5
Peru	120 538	109 798	101 519	114 044	12.1	10.7	9.6	10.5
United States	1 637 796	1 652 235	1 660 187	* 1 711 983	9.6	9.5	9.4	* 9.5
Uruguay	21 722	20 983	23 523	...	8.0	7.6	8.4	...
Venezuela	61 814	59 766	57 260	55 019	9.6	9.0	8.3	7.7
Bahama Islands	764	1 046	1 095	...	7.8	10.4	10.6	...
Bermuda	347	359	376	379	8.5	8.8	9.0	9.0
British Guiana	5 955	5 463	5 590	...	11.5	10.2	10.2	...
British Honduras	932	795	730	717	11.2	9.2	8.3	7.9
Canal Zone	134	127	135	130	2.6	3.0	3.2	3.1
Falkland Islands	22	21	28	32	11.0	10.5	14.0	16.0
French Guiana	468	379	448	454	15.6	12.2	14.5	14.6
Guadeloupe	2 920	2 540	2 427	2 721	11.6	9.9	9.2	10.1
Martinique	2 533	2 754	2 353	2 432	9.8	10.4	8.7	8.8
Netherlands Antilles	966	940	998	...	5.2	5.0	5.3	...
Puerto Rico	15 978	16 074	15 818	...	7.1	7.0	6.8	...
St. Pierre-Miquelon	44	29	32	38	8.8	5.8	6.4	7.6
Surinam	2 276	1 989	2 177	2 200	9.6	8.0	8.4	8.1
Virgin Islands (U.K.)	106	93	84	67	15.1	13.3	12.0	9.6
Virgin Islands (U.S.)	324	340	320	...	11.2	11.3	10.3	...
West Indies Federation								
Antigua	512	551	517	538	9.8	10.4	9.6	9.8
Barbados	2 469	2 298	2 084	2 127	11.0	10.1	9.1	9.1
Dominica	870	929	826	922	15.3	16.0	14.0	15.4
Grenada	908	973	919	1 032	10.7	11.3	10.4	11.6
Jamaica	14 482	14 320	16 702	14 347	9.3	9.1	10.4	8.9
Montserrat	162	172	184	141	12.5	13.2	15.3	11.8
St. Kitts-Nevis-Anguilla	749	822	670	764	13.9	14.9	12.0	13.4
St. Lucia	1 270	1 269	1 297	1 272	15.3	15.1	15.3	14.8
St. Vincent	985	1 223	1 141	...	13.0	15.9	14.4	...
Trinidad and Tobago	7 283	7 288	7 476	6 608	9.5	9.2	9.2	7.9
Northern America	1 774 766	1 787 824	1 800 508	...	9.5	9.4	9.3	...
Middle America (c)	685 005	684 306	668 768	...	11.9	11.6	11.0	...
South America (d)	751 128	725 223	732 515	...	11.0	10.4	10.3	...

* Provisional.

(a) Data for State of Guanabara and capitals of other States. For 1957 and 1958 data exclude Boa Vista and Porto Velho and for 1959, Manaus, Goiania, Rio Branco, Boa Vista and Porto Velho. (b) Data for Area of Information only.

(c) Excludes Haiti. (d) Excludes Brazil.

TABLE 7. NUMBER OF DEATHS FROM SPECIFIC CAUSES IN THE AMERICAS, RECENT YEARS

Cause	Argentina 1956	Brazil 1959 (a)	Canada 1960	Chile 1960	Colom- bia 1959	Costa Rica 1960	Cuba 1959	Domini- can Re- public 1959	Ecuador 1958	El Salvador 1960	Guate- mala 1959
Total deaths	157 169	140 356	139 693	93 625	176 834	10 063	43 423	30 288	60 950	28 775	63 010
Tuberculosis, all forms 001-019	3 844	8 434	823	4 032	3 841	151	1 146	512	1 454	408	1 207
Syphilis and its sequelae 020-029	324	1 152	172	175	267	12	111	105	65	81	8
Typhoid fever 040	133	269	4	196	675	12	58	138	872	50	377
Paratyphoid fever and other											
Salmonella infections 041, 042	-	...	5	12	83	3	8	...	46	-	12
Dysentery, all forms 045-048	73	1 765	32	87	1 169	64	39	258	511	78	1 803
Scarlet fever and streptococcal											
sore throat 050, 051	12	5	22	18	30	-	1	-	9	-	25
Diphtheria 055	100	550	7	405	472	39	62	67	144	19	51
Whooping cough 056	208	307	71	362	2 833	137	83	87	3 021	307	4 068
Meningococcal infections 057	26	123	63	19	28	5	3	-	13	-	4
Plague 058	-	-	-	-	-	-	-	-	15	-	-
Leprosy 060	-	48	-	-	121	5	29	...	9	2	-
Tetanus 061	-	1 347	5	57	1 385	255	274	...	876	484	133
Yaws 073	-	-	-	-	-	-	-	...	-	-	-
Acute poliomyelitis 080	595	130	83	101	62	22	32	12	22	6	34
Smallpox 084	5	72	-	-	169	-	-	-	156	-	1
Measles 085	156	702	53	2 116	1 788	131	38	30	3 390	552	1 379
Yellow fever 091	-	-	-	-	23	-	-	-	-	-	-
Rabies 094	-	37	-	7	26	-	7	-	11	4	8
Typhus and other rickett. diseases . 100-108	18	-	-	7	686	1	1	11	41	-	4
Malaria 110-117	3	70	2	-	1 308	15	27	950	898	444	124
All other infective and parasitic											
diseases Residual	1 198	3 318	361	592	4 350	352	348	1 023	706	417	9 160
Malignant neoplasms, etc. 140-205	23 473	10 518	23 181	7 618	6 437	863	5 810	633	1 469	497	883
Benign and unspecified											
neoplasms 210-239	843	547	301	275	1 519	33	208	26	174	59	140
Diseases of thyroid gland 250-254	-	...	115	15	45	4	...	...	23	3	6
Diabetes mellitus 260	1 359	1 220	2 081	373	620	83	543	79	87	57	81
Avitaminoses and other metabolic											
diseases 280-289	-	...	231	132	4 594	85	...	...	280	376	735
Anemias 290-293	335	322	320	103	2 361	130	330	439	995	271	1 288
Vascular lesions affecting central											
nervous system 330-334	12 049	6 932	15 428	4 171	3 692	336	2 761	380	659	335	259
Non-meningococcal meningitis . . . 340	1 388	674	177	565	2 056	52	175	253	264	35	164
Rheumatic fever 400-402		242	53	59	121	17	73	11	40	5	44
Chronic rheumatic heart											
disease 410-416		881	1 394	479	587	41	161	53	103	8	44
Arteriosclerotic and degenerative											
heart disease 420-422		8 738	42 439	4 555	2 469	438	3 911	164	227	114	566
Other diseases of the heart 430-434	32 147	6 914	2 129	721	4 752	207	4 890	277	934	133	351
Hypertension with heart disease . . 440-443		3 429	3 222	466	1 329	46	569	10	163	16	50
Hypertension without mention											
of heart 444-447		1 321	985	611	459	31		123	92	6	164
Arteriosclerosis 450		...	2 331	949	948	38		...	86	18	201
Other diseases of the											
circulatory system 451-468		...	1 377	321	443	51		...	180	71	87
Influenza 480-483	155	1 641	547	1 548	3 651	119	354	57	2 762	200	3 615
Pneumonia 490-493	7 021	9 260	5 360	16 253	10 835	636	1 809	953	2 928	771	4 250
Bronchitis 500-502	578	747	862	648	8 433	279	456	767	5 325	685	1 823
Other diseases of respiratory											
system 470-475, 510-527	...	...	1 494	1 010	1 318	77	649	...	572	246	317
Ulcer of stomach and duodenum . . . 540, 541	242	480	921	327	690	35	230	41	119	54	64
Appendicitis 550-553	102	139	187	107	210	11	43	13	53	15	21
Intestinal obstruction and hernia . . 560, 561, 570	834	750	890	503	811	46	394	109	360	75	162
Gastritis, enteritis, etc. 543, 571, 572	2 552	19 239	974	6 613	18 373	1 408	2 887	5 862	5 517	1 714	8 518
Cirrhosis of the liver 581		2 301	1 097	1 944	656	62	770	265	147	159	266
Other diseases of digestive											
system Residual	921	...	1 331	1 619	6 122	158	390	...	1 693	3 344	920
Nephritis and nephrosis 590-594	2 868	2 423	1 558	756	1 896	99	826	253	375	55	273
Other diseases of the											
genitourinary system 600-637	48	...	1 415	496	564	56	208	...	166	48	112
Complications of pregnancy,											
childbirth and puerperium 640-689	465	755	215	845	1 537	74	224	125	595	210	422
Congenital malformations 750-759		1 935	2 696	695	1 198	148	180	153	178	90	155
Certain diseases of early											
infancy 760-776	12 204	11 717	7 085	13 580	16 536	966	1 981	5 444	3 086	5 480	6 726
Senility, ill-defined, and unknown . 780-795	28 930	9 785	1 357	8 174	35 519	1 421	1 750	7 690	15 191	8 117	8 776
All other diseases Residual	15 954	10 865	3 231	2 146	4 612	333	3 803	2 265	1 181	872	1 446
Motor vehicle accidents E810-E835			3 700	1 264	1 182	63	520	130		165	282
All other accidents E800-E802	8 006	8 252	5 703	4 409	5 034	351	1 066	345	2 667	521	962
E840-E962											
Suicide E963, E970-E979			1 350	559	396	25	1 065	49		297	117
Homicide and injury resulting											
from operations of war E964-E965			253	530	5 513	37	1 038	146		801	322
E980-E999											

(a) State of Guanabara and capitals of other states excluding Manaus, Goiânia, Rio Branco, Boa Vista and Porto Velho.

TABLE 7. NUMBER OF DEATHS FROM SPECIFIC CAUSES IN THE AMERICAS, RECENT YEARS (Continued)

Cause	Haiti 1959 (a)	Honduras 1959	Mexico 1960	Nicaragua 1960	Panama 1960	Paraguay 1960 (b)	Peru 1959 (c)	United States 1959 (d)	Uruguay 1959	Venezuela 1960	Bahama Islands 1960 (e)
Total deaths	8 104	17 815	411 277	11 935	8 427	9 467	34 337	1 660 187	23 523	55 019	685
Tuberculosis, all forms 001-019	301	297	9 719	123	288	292	3 182	11 474	507	1 411	22
Syphilis and its sequelae 020-029	11	5	695	2	7	25	63	3 074	134	196	-
Typhoid fever 040	40	96	2 673	154	3	16	164	22	26	49	-
Paratyphoid fever and other											
Salmonella infections 041, 042	-	-	1 126	384	...	9	137	72	-	9	-
Dysentery, all forms 045-048	13	136	5 599	34	27	67	86	404	3	556	-
Scarlet fever and streptococcal sore throat 050, 051	-	1	150	-	1	3	6	130	-	9	-
Diphtheria 055	2	11	624	13	13	18	27	72	6	58	-
Whooping cough 056	6	312	5 365	127	243	34	410	269	112	299	-
Meningococcal infections 057	-	1	49	-	7	1	14	700	4	11	-
Plague 058	-	-	-	-	-	-	1	1	-	-	-
Leprosy 060	-	1	-	1	...	4	...	6	2	20	-
Tetanus 061	250	51	2 517	365	202	227	275	283	28	607	9
Yaws 073	-	-	-	-	...	-	...	-	-	-	-
Acute poliomyelitis 080	3	15	222	8	2	8	45	454	4	35	-
Smallpox 084	-	-	-	-	-	1	-	-	-	-	-
Measles 085	-	264	6 334	67	107	30	467	385	86	199	-
Yellow fever 091	-	-	-	-	-	-	-	-	-	2	-
Rabies 094	-	1	-	-	...	-	...	7	-	5	-
Typhus and other rickett. diseases . 100-108	-	4	141	-	-	-	1	13	-	3	-
Malaria 110-117	113	1 704	6 426	731	73	5	28	7	-	5	-
All other infective and parasitic diseases Residual	808	587	11 372	312	193	145	417	5 092	196	611	5
Malignant neoplasms, etc. 140-205	159	314	12 484	230	471	518	2 259	260 632	4 396	3 830	62
Benign and unspecified neoplasms 210-239	16	20	954	77	40	29	90	4 962	104	113	-
Diseases of thyroid gland 250-254	-	5	-	1	...	5	...	979	6	20	-
Diabetes mellitus 260	19	37	2 764	57	58	38	188	28 160	364	362	4
Avitaminoses and other metabolic diseases 280-289	285	432	...	20	...	51	...	3 431	31	514	-
Anemias 290-293	30	219	3 269	150	141	79	125	3 251	76	128	14
Vascular lesions affecting central nervous system 330-334	137	469	6 952	263	427	385	870	191 664	2 719	1 580	37
Non-meningococcal meningitis . . . 340	79	29	1 641	120	41	84	322	2 217	86	260	11
Rheumatic fever 400-402	6	1	590	-	1	27	31	795	34	28	-
Chronic rheumatic heart disease 410-416	2	2	1 485	-	23	24	126	17 535	130	251	-
Arteriosclerotic and degenerative heart disease 420-422	92	31	5 032	-	377	170	1 363	531 010	3 370	3 322	53
Other diseases of the heart 430-434	66	273	15 977	-	104	155	233	24 386	359	693	24
Hypertension with heart disease . . 440-443	65	-	1 237	316	41	26	373	68 407	598	629	-
Hypertension without mention of heart 444-447	37	41	1 132	-	64	57	269	13 149	380	263	-
Arteriosclerosis 450	18	9	...	3	...	100	...	34 668	487	261	-
Other diseases of the circulatory system 451-468	23	88	...	53	...	40	...	18 224	43	188	-
Influenza 480-483	28	197	7 396	-	16	140	551	2 852	335	554	-
Pneumonia 490-493	118	733	49 388	603	497	448	4 354	52 306	543	2 469	105
Bronchitis 500-502	39	11	10 785	20	336	122	863	3 842	211	409	2
Other diseases of respiratory system 470-475, 510-527	219	39	...	136	...	76	...	20 752	260	309	1
Ulcer of stomach and duodenum . . . 540, 541	11	24	1 716	29	26	11	103	10 707	120	106	-
Appendicitis 550-553	7	15	642	13	17	14	52	1 841	48	73	3
Intestinal obstruction and hernia . . 560, 561, 570	62	36	2 031	34	64	88	339	9 120	157	274	-
Gastritis, enteritis, etc. 543, 571, 572	507	468	59 553	1 482	688	748	3 685	7 780	517	4 468	30
Cirrhosis of the liver 581	59	53	7 696	-	30	45	401	19 284	187	473	...
Other diseases of digestive system Residual	705	2 160	...	616	...	110	...	15 434	315	351	30
Nephritis and nephrosis 590-594	80	25	3 045	15	56	77	408	14 170	269	630	11
Other diseases of the genitourinary system 600-637	30	50	206	60	11	61	64	15 905	182	205	4
Complications of pregnancy, childbirth and puerperium 640-689	54	212	2 076	103	85	90	300	1 592	69	353	8
Congenital malformations 750-759	11	10	4 599	10	65	63	331	21 856	243	699	10
Certain diseases of early infancy 760-776	1 138	987	46 792	1 282	561	588	4 623	68 214	1 705	5 250	112
Senility, ill-defined, and unknown . 780-795	2 200	5 869	45 534	2 797	1 691	3 361	1 217	19 089	1 788	16 679	22
All other diseases Residual		187	37 910	369	810	268	3 329	30 342	935	1 107	45
Motor vehicle accidents E810-E835	41		1 074		79	43	606	37 999	136	1 217	
All other accidents E800-E802		1 283		450							61
E840-E962			12 528		330	244	1 406	54 288	807	2 000	
Suicide E963, E970-E979	-		667	13	52	22	74	18 877	305	416	
Homicide and injury resulting from operations of war E964-E965 E980-E999	27		11 110	292	59	175	59	8 202	120	550	

(a) Hospital deaths only. (b) Area of Information only. (c) Principal cities only. (d) For some of the above categories, deaths for Hawaii were included in residual groups. (e) General hospital only.

TABLE 7. NUMBER OF DEATHS FROM SPECIFIC CAUSES IN THE AMERICAS, RECENT YEARS (Continued)

Cause	Bermuda 1960	British Guiana 1957	British Hon- duras 1960	Canal Zone 1960	Falkland Islands 1960	French Guiana 1960	Guade- loupe 1960 (a)	Martin- ique 1960 (a)	Nether- lands Antilles 1959 (b)	Puerto Rico 1959	St. Pierre and Miquelon 1960 (c)
Total deaths	379	5 955	717	130	32	454	1 980	1 271	998	15 818	44
Tuberculosis, all forms 001-019	1	139	16	-	-	11	59	92	5	679	1
Syphilis and its sequelae 020-029	2	20	2	1	-	-	-	-	7	54	-
Typhoid fever 040	...	32	1	1	-	-	5	2	-	-	-
Paratyphoid fever and other											
Salmonella infections 041, 042	-	4	-	-	-	-	-	-	...	1	-
Dysentery, all forms 045-048	-	92	2	-	-	5	7	-	29	-	-
Scarlet fever and streptococcal											
sore throat 050, 051	-	-	-	-	-	-	1	-	-	1	-
Diphtheria 055	-	11	2	-	-	-	1	1	-	11	-
Whooping cough 056	-	8	-	-	-	-	10	-	-	37	-
Meningococcal infections 057	-	1	-	-	-	-	-	-	-	8	-
Plague 058	-	-	-	-	-	-	-	-	-	-	-
Leprosy 060	...	-	...	-	-	1	1	-	...	2	-
Tetanus 061	...	8	...	-	-	5	14	-	...	61	-
Yaws 073	...	-	...	-	-	-	-	23	...	-	-
Acute poliomyelitis 080	-	-	-	-	-	-	-	-	-	2	-
Smallpox 084	-	-	-	-	-	-	-	-	-	-	-
Measles 085	-	-	3	1	-	-	2	-	-	33	-
Yellow fever 091	...	-	...	-	-	-	-	-	...	-	-
Rabies 094	...	-	...	-	-	-	-	-	...	-	-
Typhus and other rickett. diseases . 100-108	...	-	...	-	-	-	-	-	...	-	-
Malaria 110-117	-	4	3	-	-	1	13	-	-	-	-
All other infective and parasitic											
diseases Residual	1	48	11	2	-	31	18	50	11	215	-
Malignant neoplasms, etc. 140-205	54	264	45	15	6	-	94	88	161	1 799	7
Benign and unspecified											
neoplasms 210-239	-	12	5	-	-	-	5	-	11	78	-
Diseases of thyroid gland 250-254	...	4	...	-	-	-	-	-	...	6	-
Diabetes mellitus 260	9	85	-	1	-	1	13	-	11	218	-
Avitaminoses and other metabolic											
diseases 280-289	...	102	...	-	-	-	-	-	...	159	-
Anemias 290-293	-	83	5	-	-	5	17	-	1	125	-
Vascular lesions affecting central											
nervous system 330-334	53	346	32	9	4	-	2	121	98	995	3
Non-meningococcal meningitis . . . 340	1	11	3	1	-	2	7	-	3	79	-
Rheumatic fever 400-402	-	7	-	-	-	-	3	-	-	11	-
Chronic rheumatic heart											
disease 410-416	2	15	-	2	-	-	-	-	5	73	-
Arteriosclerotic and degenerative											
heart disease 420-422	100	260	26	21	10	-	-	-	84	1 877	-
Other diseases of the heart 430-434	3	214	30	4	-	34	240	389	42	331	5
Hypertension with heart disease . . 440-443	11	54	...	4	-	24	-	-	...	294	-
Hypertension without mention											
of heart 444-447	2	88	...	1	-	-	8	-	...	124	-
Arteriosclerosis 450	...	34	-	-	-	18	-	-	...	344	-
Other diseases of the											
circulatory system 451-468	...	15	-	1	1	-	-	-	...	128	-
Influenza 480-483	-	22	2	-	-	-	4	-	7	41	-
Pneumonia 490-493	31	309	51	13	1	9	41	-	48	742	2
Bronchitis 500-502	-	224	4	-	-	2	17	150	2	79	-
Other diseases of respiratory											
system 470-475, 510-527	...	39	-	3	-	7	17	...	...	193	1
Ulcer of stomach and duodenum . . . 540, 541	2	14	1	-	1	-	5	-	6	56	-
Appendicitis 550-553	-	12	-	-	-	-	1	-	2	12	2
Intestinal obstruction and hernia . . 560, 561, 570	-	25	6	-	-	1	16	-	6	83	-
Gastritis, enteritis, etc. 543, 571, 572	-	556	103	1	-	5	211	149	11	1 003	-
Cirrhosis of the liver 581	5	38	...	1	-	7	49	17	...	293	1
Other diseases of digestive											
system Residual	...	582	4	3	-	-	38	...	...	128	-
Nephritis and nephrosis 590-594	4	152	3	1	-	25	41	-	13	207	1
Other diseases of the											
genitourinary system 600-637	...	43	-	2	-	1	2	-	11	86	-
Complications of pregnancy,											
childbirth and puerperium 640-689	-	89	6	-	-	-	2	-	4	60	-
Congenital malformations 750-759	4	54	3	3	1	-	65	32	86	351	-
Certain diseases of early											
infancy 760-776	29	686	63	13	-	11	1	157	78	1 657	4
Senility, ill-defined, and unknown . 780-795	16	390	201	2	2	64	689	-	68	1 557	12
All other diseases Residual	27	503	66	3	3	157	160	-	94	429	4
Motor vehicle accidents E810-E835	8	8	...	2	2	6	20	-	...	215	-
All other accidents E800-E802	11	221	...	18	1	-	-	-	...	-	-
Suicide E840-E962	2	18	-	1	-	7	63	-	-	533	-
Homicide and injury resulting											
from operations of war E964-E965	1	9	1	-	-	1	8	-	10	124	1
from operations of war E980-E999	1	9	1	-	-	1	8	-	10	124	1

(a) Incomplete. (b) Curacao and Aruba only. (c) Total differs from that in Table 6.

TABLE 7. NUMBER OF DEATHS FROM SPECIFIC CAUSES IN THE AMERICAS, RECENT YEARS (Continued)

Cause	Surinam 1960	Virgin Islands (U.K.) 1960	Virgin Islands (U.S.) 1959	West Indies Federation								
				Antigua 1960	Bar- bados 1960	Domi- nica 1960	Grenada 1960	Jamaica 1956	Mont- serrat 1960	St. Kitts- Nevis- Anguilla 1959	St. Lucia 1960	Trinidad and Tobago 1960
Total deaths	2 200	67	320	538	2 127	922	1 032	14 670	141	670	1 272	6 608
Tuberculosis, all forms 001-019	22	2	2	3	16	29	10	323	5	14	15	95
Syphilis and its sequelae 020-029	6	-	1	16	24	2	8	240	-	4	6	43
Typhoid fever 040	4	-	-	1	-	5	1	60	-	-	4	7
Paratyphoid fever and other												
Salmonella infections 041, 042	-	-	-	-	-	-	-	...	-	-	-	...
Dysentery, all forms 045-048	1	-	-	2	7	63	17	13	-	-	2	30
Scarlet fever and streptococcal sore throat 050, 051	-	-	-	-	-	-	-	-	-	-	-	-
Diphtheria 055	-	-	-	-	-	-	1	6	-	1	-	8
Whooping cough 056	-	-	-	-	1	-	-	41	-	1	-	8
Meningococcal infections 057	-	-	-	-	-	4	-	1	-	-	1	-
Plague 058	-	-	-	-	-	-	-	-	-	-	-	-
Leprosy 060	5	-	-	-	-	-	-	...	-	2	-	...
Tetanus 061	13	-	2	2	17	8	8	...	-	4	9	...
Yaws 073	-	-	-	-	-	-	-	...	-	-	-	...
Acute poliomyelitis 080	-	-	-	-	-	-	-	3	-	-	-	3
Smallpox 084	-	-	-	-	-	-	-	-	-	-	-	-
Measles 085	-	-	-	-	-	-	1	-	-	-	-	5
Yellow fever 091	-	-	-	-	-	-	-	...	-	-	-	...
Rabies 094	-	-	-	-	-	-	-	...	-	-	-	...
Typhus and other rickett. diseases	-	-	-	-	-	-	-	-	-	-	-	-
Malaria 110-117	4	-	-	-	-	-	-	261	-	-	-	2
All other infective and parasitic diseases Residual	29	-	1	4	15	a 126	11	272	1	5	30	87
Malignant neoplasms, etc. 140-205	124	4	25	47	224	48	69	797	13	42	28	485
Benign and unspecified neoplasms 210-239	2	1	2	-	6	2	3	42	1	3	3	8
Diseases of thyroid gland 250-254	-	-	-	-	1	-	1	...	...	-	1	...
Diabetes mellitus 260	22	-	8	6	34	4	16	188	1	2	13	133
Avitaminoses and other metabolic diseases 280-289	40	1	4	3	39	142	43	...	1	25	144	...
Anemias 290-293	11	-	-	4	2	14	4	63	2	2	10	47
Vascular lesions affecting central nervous system 330-334	97	-	22	52	294	55	64	731	25	62	51	618
Non-meningococcal meningitis 340	10	-	1	-	8	-	4	57	1	4	6	23
Rheumatic fever 400-402	4	-	-	1	2	-	1	21	-	3	1	10
Chronic rheumatic heart disease 410-416	8	-	-	2	4	-	2	52	-	5	3	17
Arteriosclerotic and degenerative heart disease 420-422	116	5	69	25	188	73	35	703	7	80	47	807
Other diseases of the heart 430-434	78	5	1	16	53	4	24	334	8	26	32	200
Hypertension with heart disease 440-443	17	-	27	9	52	5	-	246	2	-	-	255
Hypertension without mention of heart 444-447	17	} 2	6	11	39	4	} 29	151	-	} 3	} 18	99
Arteriosclerosis 450	14	-	18	-	2	15	...	...	-	15	2	...
Other diseases of the circulatory system 451-468	4	-	2	4	} 108	-	4	...	4	3	1	...
Influenza 480-483	3	-	3	2	1	2	4	27	-	-	1	10
Pneumonia 490-493	85	9	13	51	148	83	51	626	6	50	50	401
Bronchitis 500-502	37	2	-	2	32	16	12	138	-	4	34	148
Other diseases of respiratory system 470-475, 510-527	14	1	2	-	34	1	5	...	-	2	10	...
Ulcer of stomach and duodenum 540, 541	7	-	1	2	9	1	1	80	-	2	3	36
Appendicitis 550-553	2	-	-	2	3	-	1	16	-	1	-	3
Intestinal obstruction and hernia 560, 561, 570	13	-	3	8	13	-	4	129	-	4	10	46
Gastritis, enteritis, etc. 543, 571, 572	48	2	13	75	96	a ...	164	574	18	79	166	475
Cirrhosis of the liver 581	35	...	6	3	18	...	...	70	1	...	...	76
Other diseases of digestive system Residual	32	...	2	1	16	11	17	...	1	12	10	...
Nephritis and nephrosis 590-594	54	-	3	14	24	7	9	269	5	4	12	92
Other diseases of the genitourinary system 600-637	15	-	2	5	54	3	8	...	1	3	2	...
Complications of pregnancy, childbirth and puerperium 640-689	16	-	2	10	17	7	5	141	2	5	14	43
Congenital malformations 750-759	26	1	4	7	14	6	4	80	-	6	-	69
Certain diseases of early infancy 760-776	166	7	30	48	267	66	149	757	19	78	283	841
Senility, ill-defined, and unknown 780-795	768	12	8	35	137	50	136	559	3	65	189	353
All other diseases Residual	111	9	7	52	57	74	58	6 149	10	31	27	695
Motor vehicle accidents E810-E835	28	} 4	7	1	8	} 4	} 32	82	-	} 15	} 33	125
All other accidents E800-E802	64	-	16	14	38	-	-	296	2	-	-	139
Suicide E963, E970-E979	20	-	3	-	2	-	1	30	-	-	1	27
Homicide and injury resulting from operations of war E964-E965 E980-E999	8	-	4	-	5	-	-	42	2	3	-	39

(a) Gastritis, enteritis, etc. included under infectious diseases.

TABLE 8 DEATH RATES PER 100,000 POPULATION FROM SPECIFIC CAUSES IN THE AMERICAS, RECENT YEARS

Cause	Argentina 1956	Brazil 1959 (a)	Canada 1960	Chile 1960	Colombia 1959	Costa Rica 1960	Cuba 1959	Dominican Republic 1959	Ecuador 1958	El Salvador 1960	Guatemala 1959
Total deaths	806.2	1400.8	784.2	1227.4	1279.2	859.4	651.9	1046.6	1505.3	1101.7	1725.4
Tuberculosis, all forms	19.7	84.2	4.6	52.9	27.8	12.9	17.2	17.7	35.9	15.6	33.1
Syphilis and its sequelae	1.7	11.5	1.0	2.3	1.9	1.0	1.7	3.6	1.6	3.1	0.2
Typhoid fever	0.7	2.7	0.0	2.6	4.9	1.0	0.9	4.8	21.5	1.9	10.3
Paratyphoid fever and other											
Salmonella infections	-	...	0.0	0.2	0.6	0.3	0.1	...	1.1	...	0.3
Dysentery, all forms	0.4	17.6	0.2	1.1	8.5	5.5	0.6	8.9	12.6	3.0	49.4
Scarlet fever and streptococcal											
sore throat	0.1	0.0	0.1	0.2	0.2	-	0.0	-	0.2	-	0.7
Diphtheria	0.5	5.5	0.0	5.3	3.4	3.3	0.9	2.3	3.6	0.7	1.4
Whooping cough	1.1	3.1	0.4	4.7	20.5	11.7	1.2	2.3	74.6	11.8	111.4
Meningococcal infections	0.1	1.2	0.4	0.2	0.2	0.4	0.0	-	0.3	-	0.1
Plague	-	-	-	-	-	-	-	-	0.4	-	-
Leprosy	-	0.5	-	-	0.9	0.4	0.4	...	0.2	0.1	-
Tetanus	-	13.4	0.0	0.7	10.0	21.8	4.1	...	21.6	18.5	3.6
Yaws	-	-	-	-	-	-	-	...	-	-	-
Acute poliomyelitis	3.1	1.3	0.5	1.3	0.4	1.9	0.5	0.4	0.5	0.2	0.9
Smallpox	0.0	0.7	-	-	1.2	-	-	-	3.9	-	0.0
Measles	0.8	7.0	0.3	27.7	12.9	11.2	0.6	1.0	83.7	21.1	37.8
Yellow fever	-	-	-	-	0.2	-	-	-	-	-	-
Rabies	-	0.4	-	0.1	0.2	-	0.1	-	0.3	0.2	0.2
Typhus and other rickett. diseases. 100-108	0.1	-	-	0.1	5.0	0.1	0.0	0.4	1.0	-	0.1
Malaria	0.0	0.7	0.0	-	9.5	1.3	0.4	32.8	22.2	17.0	3.4
All other infective and parasitic diseases	6.1	33.1	2.0	7.8	31.5	30.1	5.2	35.3	17.4	16.0	250.8
Malignant neoplasms, etc.	120.4	105.0	130.1	99.9	46.6	73.7	87.2	21.9	36.3	19.0	24.2
Benign and unspecified neoplasms	4.3	5.5	1.7	3.6	11.0	2.8	3.1	0.9	4.3	2.3	3.8
Diseases of thyroid gland	-	-	0.6	0.2	0.3	0.3	-	...	0.6	0.1	0.2
Diabetes mellitus	7.0	12.2	11.7	4.9	4.5	7.1	8.2	2.7	2.1	2.2	2.2
Avitaminoses and other metabolic diseases	-	-	1.3	1.7	33.2	7.3	-	...	6.9	14.4	20.1
Anemias	1.7	3.2	1.8	1.4	17.1	11.1	5.0	15.2	24.6	10.4	35.3
Vascular lesions affecting central nervous system	61.8	69.2	86.6	54.7	26.7	28.7	41.5	13.1	16.3	12.8	7.1
Non-meningococcal meningitis	7.1	6.7	1.0	7.4	14.9	4.4	2.6	8.7	6.5	1.3	4.5
Rheumatic fever		2.4	0.3	0.8	0.9	1.5	1.1	0.4	1.0	0.2	1.2
Chronic rheumatic heart disease		8.8	7.8	6.3	4.2	3.5	2.4	1.8	2.5	0.3	1.2
Arteriosclerotic and degenerative heart disease		87.2	238.2	59.7	17.9	37.4	58.7	5.7	5.6	4.4	15.5
Other diseases of the heart		69.0	12.0	9.5	34.4	17.7	73.4	9.6	23.1	5.1	9.6
Hypertension with heart disease. 440-443		34.2	18.1	6.1	9.6	3.9	8.5	0.3	4.0	0.6	1.4
Hypertension without mention of heart		13.2	5.5	8.0	3.3	2.6		4.3	2.3	0.2	4.5
Arteriosclerosis . . . . .		...	13.1	12.4	6.9	3.2		...	2.1	0.7	5.5
Other diseases of the circulatory system . . . . .		...	7.7	4.2	3.2	4.4		...	4.4	2.7	2.4
Influenza	0.8	16.4	3.1	20.3	26.4	10.2	5.3	2.0	68.2	7.7	99.0
Pneumonia	36.0	92.4	30.1	213.1	78.4	54.3	27.2	32.9	72.3	29.5	116.4
Bronchitis	3.0	7.5	4.8	8.5	61.0	23.8	6.8	26.5	131.5	26.2	49.9
Other diseases of respiratory system	...	...	8.4	13.2	9.5	6.6	9.7	...	14.1	9.4	8.7
Ulcer of stomach and duodenum . . 540, 541	1.2	4.8	5.2	4.3	5.0	3.0	3.5	1.4	2.9	2.1	1.8
Appendicitis	0.5	1.4	1.0	1.4	1.5	0.9	0.6	0.4	1.3	0.6	0.6
Intestinal obstruction and hernia 560, 561, 570	4.3	7.5	5.0	6.6	5.9	3.9	5.9	3.8	8.9	2.9	4.4
Gastritis, enteritis, etc.	13.1	192.0	5.5	86.7	132.9	120.2	43.3	202.6	136.3	65.6	233.2
Cirrhosis of the liver . . . . .	...	23.0	6.2	25.5	4.7	5.3	11.6	9.2	3.6	6.1	7.3
Other diseases of digestive system	4.7	...	7.5	21.2	44.3	13.5	5.9	...	41.8	128.0	25.2
Nephritis and nephrosis	14.7	24.2	8.7	9.9	13.7	8.5	12.4	8.7	9.3	2.1	7.5
Other diseases of the genitourinary system	0.2	...	7.9	6.5	4.1	4.8	3.1	...	4.1	1.8	3.1
Complications of pregnancy, childbirth and puerperium	2.4	7.5	1.2	11.1	11.1	6.3	3.4	4.3	14.7	8.0	11.6
Congenital malformations		19.3	15.1	9.1	8.7	12.6	2.7	5.3	4.4	3.4	4.2
Certain diseases of early infancy		116.9	39.8	178.0	119.6	82.5	29.7	188.1	76.2	209.8	184.2
Senility, ill-defined, and unknown 780-795	138.1	97.7	7.6	107.2	256.9	121.3	26.3	265.7	375.2	310.8	240.3
All other diseases	81.8	108.4	18.1	28.1	33.4	28.4	57.1	78.3	29.2	33.5	39.6
Motor vehicle accidents			20.8	16.6	8.6	5.4	7.8	4.5		6.3	7.7
All other accidents		82.4	32.0	57.8	36.4	30.0	16.0	11.9	65.9	19.9	26.3
Suicide			7.6	7.3	2.9	2.1	16.0	1.7		11.4	3.2
Homicide and injury resulting from operations of war			1.4	6.9	39.9	3.2	15.6	5.0		30.7	8.8

(a) State of Guanabara and capitals of other states excluding Manaus, Goiania, Rio Branco, Boa Vista and Porto Velho.

TABLE 8 DEATH RATES PER 100,000 POPULATION FROM SPECIFIC CAUSES IN THE AMERICAS, RECENT YEARS (Continued)

Cause	Honduras 1959	Mexico 1960	Nicaragua 1960	Panama 1960	Paraguay 1960 (a)	Peru 1959 (b)	United States 1959 (c)	Uruguay 1959	Venezuela 1960	Bermuda 1960	British Guiana 1957
Total deaths	944.1	1177.7	808.1	798.8	1049.6	964.6	937.3	842.5	766.1	902.4	1149.6
Tuberculosis, all forms 001-019	15.7	27.8	8.3	27.3	32.4	89.4	6.5	18.2	19.6	2.4	26.8
Syphilis and its sequelae 020-029	0.3	2.0	0.1	0.7	2.8	1.8	1.7	4.8	2.7	4.8	3.9
Typhoid fever 040	5.1	7.7	10.4	0.3	1.8	4.6	0.0	0.9	0.7	-	6.2
Paratyphoid fever and other											
Salmonella infections 041,042	...	3.2	26.0	...	1.0	3.8	0.0	-	0.1	...	0.8
Dysentery, all forms 045-048	7.2	16.0	2.3	2.6	7.4	2.4	0.2	0.1	7.7	-	17.8
Scarlet fever and streptococcal sore throat 050,051	0.1	0.4	-	0.1	0.3	0.2	0.1	-	0.1	-	-
Diphtheria 055	0.6	1.8	0.9	1.2	2.0	0.8	0.0	0.2	0.8	-	2.1
Whooping cough 056	16.5	15.4	8.6	23.0	3.8	11.5	0.2	4.0	4.2	-	1.5
Meningococcal infections 057	0.1	0.1	-	0.7	0.1	0.4	0.4	0.1	0.2	-	0.2
Plague 058	-	-	-	-	-	0.0	0.0	-	-	-	-
Leprosy 060	0.1	-	0.1	...	0.4	-	0.0	0.1	0.3	...	-
Tetanus 061	2.7	7.2	24.7	19.1	25.2	7.7	0.2	1.0	7.1	...	1.5
Yaws 073	-	-	-	...	-	...	-	-	-	...	-
Acute poliomyelitis 080	0.8	0.6	0.5	0.2	0.9	1.3	0.3	0.1	0.5	-	-
Smallpox 084	-	-	-	-	0.1	-	-	-	-	-	-
Measles 085	14.0	18.1	4.5	10.1	3.3	13.1	0.2	3.1	2.8	-	-
Yellow fever 091	-	-	-	-	-	-	-	-	0.0	-	-
Rabies 094	0.1	-	-	...	-	-	0.0	-	0.1	...	-
Typhus and other rickett. diseases . 100-108	0.2	0.4	-	-	-	0.0	0.0	-	0.0	...	-
Malaria 110-117	90.3	18.4	49.5	6.9	0.6	0.8	0.0	-	0.1	-	0.8
All other infective and parasitic diseases Residual	31.1	32.6	21.1	18.3	16.1	11.7	2.9	7.0	8.5	2.4	9.3
Malignant neoplasms, etc. 140-205	16.6	35.7	15.6	44.6	57.4	63.5	147.1	157.4	53.3	128.6	51.0
Benign and unspecified neoplasms 210-239	1.1	2.7	5.2	3.8	3.2	2.5	2.8	3.7	1.6	-	2.3
Diseases of thyroid gland 250-254	0.3	-	0.1	...	0.6	-	0.6	0.2	0.3	-	0.8
Diabetes mellitus 260	2.0	7.9	3.9	5.5	4.2	5.3	16.9	13.0	5.0	21.4	16.4
Avitaminoses and other metabolic diseases 280-289	22.9	...	1.4	...	5.7	-	1.9	1.1	7.2	-	19.7
Anemias 290-293	11.6	9.4	10.2	13.4	8.8	3.5	1.8	2.7	1.8	-	16.0
Vascular lesions affecting central nervous system 330-334	24.9	19.9	17.8	40.5	42.7	24.4	108.2	97.4	22.0	126.2	66.8
Non-meningococcal meningitis 340	1.5	4.7	8.1	3.9	9.3	9.0	1.3	3.1	3.6	2.4	2.1
Rheumatic fever 400-402	0.1	1.7	-	0.1	3.0	0.9	0.4	1.2	0.4	-	1.4
Chronic rheumatic heart disease 410-416	0.1	4.3	-	2.2	2.7	3.5	9.9	4.7	3.5	4.8	2.9
Arteriosclerotic and degenerative heart disease 420-422	1.6	14.4	-	35.7	18.8	38.3	299.8	120.7	46.3	238.1	50.2
Other diseases of the heart 430-434	14.5	45.7	-	9.9	17.2	6.5	13.8	12.9	9.6	7.2	41.3
Hypertension with heart disease . . 440-443	-	3.5	21.4	3.9	2.9	10.5	38.6	21.4	8.8	26.2	10.4
Hypertension without mention of heart 444-447	2.2	3.2	-	6.1	6.3	7.6	7.4	13.6	3.7	4.8	17.0
Arteriosclerosis 450	0.5	...	0.2	...	11.1	...	19.6	16.7	3.6	...	6.6
Other diseases of the circulatory system 451-468	4.7	...	3.6	...	4.4	...	10.3	1.5	2.6	...	2.9
Influenza 480-483	10.4	21.2	-	1.5	15.5	15.5	1.6	12.0	7.7	-	4.2
Pneumonia 490-493	38.8	141.4	40.8	47.1	49.7	122.3	29.5	19.4	34.4	73.8	59.7
Bronchitis 500-502	0.6	30.9	1.4	31.8	13.5	24.2	2.2	7.6	5.7	-	43.2
Other diseases of respiratory system 470-475,510-527	2.1	...	9.2	...	8.4	...	11.7	9.3	4.3	...	7.5
Ulcer of stomach and duodenum . . . 540,541	1.3	4.9	2.0	2.5	1.2	2.9	6.0	4.3	1.5	4.8	2.7
Appendicitis 550-553	0.8	1.8	0.9	1.6	1.6	1.5	1.0	1.7	1.0	-	2.3
Intestinal obstruction and hernia . 560,561,570	1.9	5.8	2.3	6.1	9.8	9.5	5.1	5.6	3.8	-	4.8
Gastritis, enteritis, etc. 543,571,572	24.8	170.5	100.3	65.2	82.9	103.5	4.4	18.5	62.2	-	107.3
Cirrhosis of the liver 581	2.8	22.0	-	2.8	5.0	11.3	10.9	6.7	6.6	11.9	7.3
Other diseases of digestive system Residual	114.5	...	41.7	...	12.2	...	8.7	11.3	4.9	...	112.4
Nephritis and nephrosis 590-594	1.3	8.7	1.0	5.3	8.5	11.5	8.0	9.6	8.8	9.5	29.3
Other diseases of the genitourinary system 600-637	2.6	0.6	4.1	1.0	6.8	1.8	9.0	6.5	2.9	...	8.3
Complications of pregnancy, childbirth and puerperium 640-689	11.2	5.9	7.0	8.1	10.0	8.4	0.9	2.5	4.9	-	17.2
Congenital malformations 750-759	0.5	13.2	0.7	6.2	7.0	9.3	12.3	8.7	9.7	9.5	10.4
Certain diseases of early infancy 760-776	52.3	134.0	86.8	53.2	65.2	129.9	38.5	61.1	73.1	69.0	132.4
Senility, ill-defined, and unknown . 780-795	311.0	130.4	189.4	160.3	372.6	34.2	10.8	64.0	232.2	38.1	75.3
All other diseases Residual	9.9	108.6	25.0	76.8	29.7	93.5	17.1	33.5	15.4	64.3	97.1
Motor vehicle accidents E810-E835	...	3.1	...	7.5	4.8	17.0	21.5	4.9	16.9	18.0	1.5
All other accidents E800-E802	68.0	...	30.5	...	...	...	...	...	...	...	...
Suicide E840-E962	...	35.9	...	31.3	27.1	39.5	30.6	28.9	27.8	26.2	42.7
Homicide and injury resulting from operations of war E963, E970-E979	...	1.9	0.9	4.9	2.4	2.1	10.5	10.9	5.8	4.8	3.5
Homicide and injury resulting from operations of war E980-E999	...	31.8	19.8	5.6	19.4	1.7	4.6	4.3	7.7	2.4	1.7

(a) Area of Information only. (b) Principal cities only. (c) For some causes, deaths for Hawaii included in residual groups.

TABLE 8 DEATH RATES PER 100,000 POPULATION FROM SPECIFIC CAUSES IN THE AMERICAS, RECENT YEARS (Continued)

Cause	British Honduras 1960	Canal Zone 1960	Falkland Islands 1960	French Guiana 1960	Nether-lands Antilles 1959 (a)	Puerto Rico 1959	St. Pierre and Miquelon 1960 (b)	Surinam 1960	Virgin Islands (UK) 1960	Virgin Islands (US) 1959
Total deaths	787.9	309.5	1600.0	1464.5	530.9	681.2	880.0	814.8	957.1	1032.3
Tuberculosis, all forms 001-019	17.6	-	-	35.5	2.7	29.2	20.0	8.1	28.6	6.5
Syphilis and its sequelae 020-029	2.2	2.4	-	-	3.7	2.3	-	2.2	-	3.2
Typhoid fever 040	1.1	2.4	-	-	-	-	-	1.5	-	-
Paratyphoid fever and other Salmonella infections 041, 042	-	-	-	-	...	0.0	-	-	-	-
Dysentery, all forms 045-048	2.2	-	-	16.1	15.4	-	-	0.4	-	-
Scarlet fever and streptococcal sore throat 050, 051	-	-	-	-	-	0.0	-	-	-	-
Diphtheria 055	2.2	-	-	-	-	0.5	-	-	-	-
Whooping cough 056	-	-	-	-	-	1.6	-	-	-	-
Meningococcal infections 057	-	-	-	-	-	0.3	-	-	-	-
Plague 058	-	-	-	-	-	-	-	-	-	-
Leprosy 060	...	-	-	3.2	...	0.1	-	1.9	-	-
Tetanus 061	...	-	-	16.1	...	2.6	-	4.8	-	6.5
Yaws 073	-	-	-	-	...	-	-	-	-	-
Acute poliomyelitis 080	-	-	-	-	-	0.1	-	-	-	-
Smallpox 084	-	-	-	-	-	-	-	-	-	-
Measles 085	3.3	2.4	-	-	-	1.4	-	-	-	-
Yellow fever 091	...	-	-	-	...	-	-	-	-	-
Rabies 094	...	-	-	-	...	-	-	-	-	-
Typhus and other rickett. diseases . 100-108	...	-	-	-	...	-	-	-	-	-
Malaria 110-117	3.3	-	-	3.2	-	-	-	1.5	-	-
All other infective and parasitic diseases Residual	12.1	4.8	-	100.0	5.9	9.3	-	10.7	-	3.2
Malignant neoplasms, etc. 140-205	49.5	35.7	300.0	-	85.6	77.5	140.0	45.9	57.1	80.6
Benign and unspecified neoplasms 210-239	5.5	-	-	-	5.9	3.4	-	0.7	14.3	6.5
Diseases of thyroid gland 250-254	...	-	-	-	...	0.3	-	-	-	-
Diabetes mellitus 260	-	2.4	-	3.2	5.9	9.4	-	8.1	-	25.8
Avitaminoses and other metabolic diseases 280-289	...	-	-	-	...	6.8	-	14.8	14.3	12.9
Anemias 290-293	5.5	-	-	16.1	0.5	5.4	-	4.1	-	-
Vascular lesions affecting central nervous system 330-334	35.2	21.4	200.0	-	52.1	42.9	60.0	35.9	-	71.0
Non-meningococcal meningitis . . . 340	3.3	2.4	-	6.5	1.6	3.4	-	3.7	-	3.2
Rheumatic fever 400-402	-	-	-	-	-	0.5	-	1.5	-	-
Chronic rheumatic heart disease 410-416	-	4.8	-	-	2.7	3.1	-	3.0	-	-
Arteriosclerotic and degenerative heart disease 420-422	28.6	50.0	500.0	-	44.7	80.8	-	43.0	71.4	222.6
Other diseases of the heart 430-434	33.0	9.5	-	109.7	22.3	14.3	100.0	28.9	71.4	3.2
Hypertension with heart disease . 440-443	3.3	9.5	-	77.4	13.8	12.7	-	6.3	28.6	87.1
Hypertension without mention of heart 444-447	3.3	2.4	-	-	13.8	5.3	-	6.3	28.6	19.4
Arteriosclerosis 450	-	-	-	58.1	...	14.8	-	5.2	-	58.1
Other diseases of the circulatory system 451-468	-	2.4	50.0	-	...	5.5	-	1.5	-	6.5
Influenza 480-483	2.2	-	-	-	3.7	1.8	-	1.1	-	9.7
Pneumonia 490-493	56.0	31.0	50.0	29.0	25.5	32.0	40.0	31.5	128.6	41.9
Bronchitis 500-502	4.4	-	-	6.5	1.1	3.4	-	13.7	28.6	-
Other diseases of respiratory system 470-475, 510-527	-	7.1	-	22.6	...	8.3	20.0	5.2	14.3	6.5
Ulcer of stomach and duodenum . . 540, 541	1.1	-	50.0	-	3.2	2.4	-	2.6	-	3.2
Appendicitis 550-553	-	-	-	-	1.1	0.5	40.0	0.7	-	-
Intestinal obstruction and hernia . 560, 561, 570	6.6	-	-	3.2	3.2	3.6	-	4.8	-	9.7
Gastritis, enteritis, etc. 543, 571, 572	113.2	2.4	-	16.1	5.9	43.2	-	17.8	28.6	41.9
Cirrhosis of the liver 581	...	2.4	-	22.6	...	12.6	20.0	13.0	...	19.4
Other diseases of digestive system Residual	4.4	7.1	-	-	...	5.5	-	11.9	...	6.5
Nephritis and nephrosis 590-594	3.3	2.4	-	80.6	6.9	8.9	20.0	20.0	-	9.7
Other diseases of the genitourinary system 600-637	-	4.8	-	3.2	5.9	3.7	-	5.6	-	6.5
Complications of pregnancy, childbirth and puerperium 640-689	6.6	-	-	-	2.1	2.6	-	5.9	-	6.5
Congenital malformations 750-759	3.3	7.1	50.0	-	45.7	15.1	-	9.6	14.3	12.9
Certain diseases of early infancy 760-776	69.2	31.0	-	35.5	41.5	71.4	80.0	61.5	100.0	96.8
Senility, ill-defined, and unknown . 780-795	220.9	4.8	100.0	206.5	36.2	67.1	240.0	284.4	171.4	25.8
All other diseases Residual	72.5	7.1	150.0	506.5	50.0	18.5	80.0	41.1	128.6	22.6
Motor vehicle accidents E810-E835	15.4	4.8	100.0	19.4	30.9	9.3	-	10.4	57.1	22.6
All other accidents E800-E802	15.4	4.8	100.0	19.4	30.9	9.3	-	10.4	57.1	22.6
Suicide E840-E962	-	42.9	50.0	41.9	-	23.0	-	23.7	-	51.6
Homicide and injury resulting from operations of war E963, E970-E979	-	2.4	-	22.6	-	9.6	-	7.4	-	9.7
Homicide and injury resulting from operations of war E964-E965	-	2.4	-	22.6	-	9.6	-	7.4	-	9.7
from operations of war E980-E999	1.1	-	-	3.2	5.3	5.3	20.0	3.0	-	12.9

(a) Curacao and Aruba only. (b) Total differs from that in Table 6.

TABLE 8 DEATH RATES PER 100,000 POPULATION FROM SPECIFIC CAUSES IN THE AMERICAS, RECENT YEARS (Continued)

Cause	West Indies Federation								
	Antigua 1960	Barba- dos 1960	Domi- nica 1960	Grenada 1960	Jamaica 1956	Mont- serrat 1960	St. Kitts- Nevis- Anguilla 1959	St. Lucia 1960	Trinidad and Tobago 1960
Total deaths	978.2	912.9	1536.7	1159.6	953.8	1175.0	1196.4	1479.1	792.3
Tuberculosis, all forms 001-019	5.5	6.9	48.3	11.2	21.0	41.7	25.0	17.4	11.4
Syphilis and its sequelae 020-029	29.1	10.3	3.3	9.0	15.6	-	7.1	7.0	5.2
Typhoid fever 040	1.8	-	-	1.1	3.9	-	-	4.7	0.8
Paratyphoid fever and other			8.3						
Salmonella infections 041, 042	-	-	-	-	...	-	-	-	...
Dysentery, all forms 045-048	3.6	3.0	105.0	19.1	0.8	-	-	2.3	3.6
Scarlet fever and streptococcal sore throat 050, 051	-	-	-	-	-	-	-	-	-
Diphtheria 055	-	-	-	1.1	0.4	-	1.8	-	1.0
Whooping cough 056	-	0.4	-	-	2.7	-	1.8	-	1.0
Meningococcal infections 057	-	-	6.7	-	0.1	-	-	1.2	-
Plague 058	-	-	-	-	-	-	-	-	-
Leprosy 060	-	-	-	-	...	-	3.6	-	...
Tetanus 061	3.6	7.3	13.3	9.0	...	-	7.1	10.5	...
Yaws 073	-	-	-	-	...	-	-	-	...
Acute poliomyelitis 080	-	-	-	-	0.2	-	-	-	0.4
Smallpox 084	-	-	-	-	-	-	-	-	-
Measles 085	-	-	-	1.1	-	-	-	-	0.6
Yellow fever 091	-	-	-	-	...	-	-	-	...
Rabies 094	-	-	-	-	...	-	-	-	...
Typhus and other rickett. diseases . 100-108	-	-	-	-	-	-	-	-	-
Malaria 110-117	-	-	-	-	17.0	-	-	-	0.2
All other infective and parasitic diseases Residual	7.3	6.4	210.0	12.4	17.7	8.3	8.9	34.9	10.4
Malignant neoplasms, etc. 140-205	85.5	96.1	80.0	77.5	51.8	108.3	75.0	32.6	58.2
Benign and unspecified neoplasms 210-239	-	2.6	3.3	3.4	2.7	8.3	5.4	3.5	1.0
Diseases of thyroid gland 250-254	-	0.4	-	1.1	...	...	-	1.2	...
Diabetes mellitus 260	10.9	14.6	6.7	18.0	12.2	8.3	3.6	15.1	15.9
Avitaminoses and other metabolic diseases 280-289	5.5	16.7	236.7	48.3	...	8.3	44.6	167.4	...
Anemias 290-293	7.3	0.9	23.3	4.5	4.1	16.7	3.6	11.6	5.6
Vascular lesions affecting central nervous system 330-334	94.5	126.2	91.7	71.9	47.5	208.3	110.7	59.3	74.1
Non-meningococcal meningitis . . 340	-	3.4	-	4.5	3.7	8.3	7.1	7.0	2.8
Rheumatic fever 400-402	1.8	0.9	-	1.1	1.4	-	5.4	1.2	1.2
Chronic rheumatic heart disease 410-416	3.6	1.7	-	2.2	3.4	-	8.9	3.5	2.0
Arteriosclerotic and degenerative heart disease 420-422	45.5	80.7	121.7	39.3	45.7	58.3	142.9	54.7	96.8
Other diseases of the heart . . . 430-434	29.1	22.7	6.7	27.0	21.7	66.7	46.4	37.2	24.0
Hypertension with heart disease . 440-443	16.4	22.3	8.3	-	16.0	16.7	-	-	30.6
Hypertension without mention of heart 444-447	20.0	16.7	6.7	32.6	9.8	-	5.4	20.9	11.9
Arteriosclerosis 450	-	-	3.3	16.9	...	-	26.8	2.3	...
Other diseases of the circulatory system 451-468	7.3	46.4	-	4.5	...	33.3	5.4	1.2	...
Influenza 480-483	-	0.4	3.3	4.5	1.8	-	-	1.2	1.2
Pneumonia 490-493	92.7	63.5	138.3	57.3	40.7	50.0	89.3	58.1	48.1
Bronchitis 500-502	3.6	13.7	26.7	13.5	9.0	-	7.1	39.5	17.7
Other diseases of respiratory system 470-475, 510-527	-	14.6	1.7	5.6	...	-	3.6	11.6	...
Ulcer of stomach and duodenum . . 540, 541	3.6	3.9	1.7	1.1	5.2	-	3.6	3.5	4.3
Appendicitis 550-553	3.6	1.3	-	1.1	1.0	-	1.8	-	0.4
Intestinal obstruction and hernia . 560, 561, 570	14.5	5.6	-	4.5	8.4	-	7.1	11.6	5.6
Gastritis, enteritis, etc. 543, 571, 572	136.4	41.2	a) ...	184.3	37.3	150.0	141.1	193.0	57.0
Cirrhosis of the liver 581	5.5	7.7	...	...	4.6	8.3	...	...	9.1
Other diseases of digestive system Residual	1.8	6.9	18.3	19.1	...	8.3	21.4	11.6	...
Nephritis and nephrosis 590-594	25.5	10.3	11.7	10.1	17.5	41.7	7.1	14.0	11.0
Other diseases of the genitourinary system 600-637	9.1	23.2	5.0	9.0	...	8.3	5.4	2.3	...
Complications of pregnancy, childbirth and puerperium 640-689	18.2	7.3	11.7	5.6	9.2	16.7	8.9	16.3	5.2
Congenital malformations 750-759	12.7	6.0	10.0	4.5	5.2	-	10.7	-	8.3
Certain diseases of early infancy 760-776	87.3	114.6	110.0	167.4	49.2	158.3	139.3	329.1	100.8
Senility, ill-defined, and unknown . 780-795	63.6	58.8	83.3	152.8	36.3	25.0	116.1	219.8	42.3
All other diseases Residual	94.5	24.5	123.3	65.2	399.7	83.3	55.4	31.4	83.3
Motor vehicle accidents E810-E835	1.8	3.4	-	-	5.3	-	-	-	15.0
All other accidents E800-E802 E840-E962	25.5	16.3	6.7	36.0	19.2	16.7	26.8	38.4	16.7
Suicide E963, E970-E979	-	0.9	-	1.1	2.0	-	-	1.2	3.2
Homicide and injury resulting from operations of war E980-E999	-	2.1	1.7	-	2.7	16.7	5.4	-	4.7

(a) Gastritis, enteritis, etc. included under infectious diseases.

TABLE 9. FIRST FIVE PRINCIPAL CAUSES* OF DEATH WITH RATES PER 100,000 POPULATION
IN THE AMERICAS, RECENT YEARS

Area and causes of death	Number	Rate	Per cent of total deaths	Area and causes of death	Number	Rate	Per cent of total deaths
ARGENTINA (1956) - All causes...	157 169	806.2	100.0	COSTA RICA (Continued)			
Diseases of the circulatory system (a) (400-468)	32 147	164.9	20.5	Influenza and pneumonia (480-483, 490-493)	755	64.5	7.5
Malignant neoplasms (140-205).....	23 473	120.4	14.9	Diseases of the heart (410-443)	732	62.5	7.3
Certain diseases of early infancy (760-776) (d)	12 204	62.6	7.8	CUBA (1959) - All causes	43 423	651.9	100.0
Vascular lesions affecting central nervous system (330-334)	12 049	61.8	7.7	Diseases of the heart (410-443)	9 531	143.1	21.9
Accidents, suicide and homicide (b) (E800-E999)	8 006	41.1	5.1	Malignant neoplasms (140-205)	5 810	87.2	13.4
BRAZIL (1959) (c) - All causes ...	140 356	1400.8	100.0	Gastritis, enteritis, etc. (543,571,572) .	2 887	43.3	6.6
Diseases of the heart (410-443)	19 962	199.2	14.2	Vascular lesions affecting central nervous system (330-334)	2 761	41.5	6.4
Gastritis, enteritis, etc. (543,571,572) .	19 239	192.0	13.7	Influenza and pneumonia (480-483, 490-493)	2 163	32.5	5.0
Certain diseases of early infancy (760-776)	11 717	116.9	8.3	DOMINICAN REPUBLIC (1959)			
Influenza and pneumonia (480-483, 490-493)	10 901	108.8	7.8	All causes	30 288	1046.6	100.0
Malignant neoplasms (140-205).....	10 518	105.0	7.5	Gastritis, enteritis, etc. (543,571,572) .	5 862	202.6	19.4
CANADA (1960) - All causes	139 693	784.2	100.0	Certain diseases of early infancy (760-776)	5 444	188.1	18.0
Diseases of the heart (410-443).....	49 184	276.1	35.2	Influenza and pneumonia (480-483, 490-493)	1 010	34.9	3.3
Malignant neoplasms (140-205).....	23 181	130.1	16.6	Malaria (110-117)	950	32.8	3.1
Vascular lesions affecting central nervous system (330-334).....	15 428	86.6	11.0	Bronchitis (500-502)	767	26.5	2.5
Accidents (E800-E962)	9 403	52.8	6.7	ECUADOR (1958) - All causes	60 950	1505.3	100.0
Certain diseases of early infancy (760-776)	7 085	39.8	5.1	Influenza and pneumonia (480-483, 490-493)	5 690	140.5	9.3
CHILE (1960) - All causes	93 625	1227.4	100.0	Gastritis, enteritis, etc. (543,571,572) .	5 517	136.3	9.1
Influenza and pneumonia (480-483, 490-493)	17 801	233.4	19.0	Bronchitis (500-502)	5 325	131.5	8.7
Certain diseases of early infancy (760-776)	13 580	178.0	14.5	Measles (085)	3 390	83.7	5.6
Malignant neoplasms (140-205).....	7 618	99.9	8.1	Certain diseases of early infancy (760-776)	3 086	76.2	5.1
Gastritis, enteritis, etc. (543,571,572) .	6 613	86.7	7.1	EL SALVADOR (1960) -			
Diseases of the heart (410-443).....	6 221	81.6	6.6	All causes	28 775	1101.7	100.0
COLOMBIA (1959) - All causes ...	176 834	1279.2	100.0	Certain diseases of early infancy (760-776)	5 480	209.8	19.0
Gastritis, enteritis, etc. (543,571,572) .	18 373	132.9	10.4	Gastritis, enteritis, etc. (543,571,572) .	1 714	65.6	6.0
Certain diseases of early infancy (760-776)	16 536	119.6	9.4	Influenza and pneumonia (480-483, 490-493)	971	37.2	3.4
Influenza and pneumonia (480-483, 490-493)	14 486	104.8	8.2	Homicide (E964, E980-E985)	801	30.7	2.8
Diseases of the heart (410-443)	9 137	66.1	5.2	Accidents (E800-E962)	686	26.3	2.4
Bronchitis (500-502)	8 433	61.0	4.8	GUATEMALA (1959) - All causes .	63 010	1725.4	100.0
COSTA RICA (1960) - All causes ..	10 063	859.4	100.0	Gastritis, enteritis, etc. (543,571,572) .	8 518	233.2	13.5
Gastritis, enteritis, etc. (543,571,572) .	1 408	120.2	14.0	Influenza and pneumonia (480-483, 490-493)	7 865	215.4	12.5
Certain diseases of early infancy (760-776)	966	82.5	9.6	Certain diseases of early infancy (760-776)	6 726	184.2	10.7
Malignant neoplasms (140-205)	863	73.7	8.6	Whooping cough (056)	4 068	111.4	6.5
				Bronchitis (500-502)	1 823	49.9	2.9

* International Statistical Classification of Diseases, Injuries, and Causes of Death, World Health Organization, Geneva, 1955.

(a) Data available only for entire section which includes group used in ranking, namely diseases of the heart (410-443).

(b) Data available only for entire group of accidents and violence which includes accidents (E800-E962).

(c) State of Guanabara and capitals of other states only, excluding Manaus, Goiania, Rio Branco, Boa Vista and Porto Velho.

(d) Includes congenital malformations.

TABLE 9. FIRST FIVE PRINCIPAL CAUSES* OF DEATH WITH RATES PER 100,000 POPULATION
IN THE AMERICAS, RECENT YEARS (Continued)

Area and causes of death	Number	Rate	Per cent of total deaths	Area and causes of death	Number	Rate	Per cent of total deaths
HAITI (1959) (d) - All causes	8 104		100.0	PARAGUAY (Continued)			
Certain diseases of early infancy (760-776)	1 138		14.0	Influenza and pneumonia (480-483, 490-493)	588	65.2	6.2
Gastritis, enteritis, etc. (543,571,572)	507		6.3	Malignant neoplasms (140-205)	518	57.4	5.5
Tuberculosis (001-019)	301		3.7	Vascular lesions affecting central nervous system (330-334)	385	42.7	4.1
Avitaminosis and other metabolic diseases (280-289)	285		3.5	PERU (1959) (f) - All causes	34 337	964.6	100.0
Tetanus (061)	250		3.1	Influenza and pneumonia (480-483, 490-493)	4 905	137.8	14.3
HONDURAS (1959) - All causes	17 815	944.1	100.0	Certain diseases of early infancy (760-776)	4 623	129.9	13.5
Malaria (110-117)	1 704	90.3	9.6	Gastritis, enteritis, etc. (543,571,572)	3 685	103.5	10.7
Accidents, suicide and homicide (b) (E800-E999)	1 283	68.0	7.2	Tuberculosis, all forms (001-019)	3 182	89.4	9.3
Certain diseases of early infancy (760-776)	987	52.3	5.5	Malignant neoplasms (140-205)	2 259	63.5	6.6
Influenza and pneumonia (480-483, 490-493)	930	49.3	5.2	UNITED STATES (1959) - All causes	1 660 187	937.3	100.0
Vascular lesions affecting central nervous system (330-334)	469	24.9	2.6	Diseases of the heart (410-443)	641 338	362.1	38.6
MEXICO (1960) - All causes	411 277	1177.7	100.0	Malignant neoplasms (140-205)	260 632	147.1	15.7
Gastritis, enteritis, etc. (543,571,572)	59 553	170.5	14.5	Vascular lesions affecting central nervous system (330-334)	191 664	108.2	11.5
Influenza and pneumonia (480-483, 490-493)	56 784	162.6	13.8	Accidents (E800-E962)	92 287	52.1	5.6
Certain diseases of early infancy (760-776)	46 792	134.0	11.4	Certain diseases of early infancy (760-776)	68 214	38.5	4.1
Diseases of the heart (410-443)	23 731	68.0	5.8	URUGUAY (1959) - All causes	23 523	842.5	100.0
Accidents (E800-E962)	13 602	38.9	3.3	Diseases of the heart (410-443)	4 457	159.6	18.9
NICARAGUA (1960) - All causes	11 935	808.1	100.0	Malignant neoplasms (140-205)	4 396	157.4	18.7
Gastritis, enteritis, etc. (543,571,572)	1 482	100.3	12.4	Vascular lesions affecting central nervous system (330-334)	2 719	97.4	11.6
Certain diseases of early infancy (760-776)	1 282	86.8	10.7	Certain diseases of early infancy (760-776)	1 705	61.1	7.2
Malaria (110-117)	731	49.5	6.1	Accidents (E800-E962)	943	33.8	4.0
Influenza and pneumonia (480-483, 490-493)	603	40.8	5.1	VENEZUELA (1960) - All causes	55 019	766.1	100.0
Accidents (E800-E962)	450	30.5	3.8	Certain diseases of early infancy (760-776)	5 250	73.1	9.5
PANAMA (1960) - All causes	8 427	798.8	100.0	Diseases of the heart (410-443)	4 895	68.2	8.9
Gastritis, enteritis, etc. (543, 571,572)	688	65.2	8.2	Gastritis, enteritis, etc. (543,571,572)	4 468	62.2	8.1
Certain diseases of early infancy (760-776)	561	53.2	6.7	Malignant neoplasms (140-205)	3 830	53.3	7.0
Diseases of the heart (410-443)	545	51.7	6.5	Accidents (E800-E962)	3 217	44.8	5.8
Influenza and pneumonia (480-483, 490-493)	513	48.6	6.1	BRITISH GUIANA (1957) - All causes	5 955	1149.6	100.0
Malignant neoplasms (140-205)	471	44.6	5.6	Certain diseases of early infancy (760-776)	686	132.4	11.5
PARAGUAY (1960) (e) - All causes	9 467	1049.6	100.0	Gastritis, enteritis, etc. (543,571,572)	556	107.3	9.3
Gastritis, enteritis, etc. (543,571,572)	748	82.9	7.9	Diseases of the heart (410-443)	543	104.8	9.1
Certain diseases of early infancy (760-776)	588	65.2	6.2	Vascular lesions affecting central nervous system (330-334)	346	66.8	5.8

* International Statistical Classification of Diseases, Injuries, and Causes of Death, World Health Organization, Geneva, 1955.

(b) Data available only for entire group of accidents and violence which includes accidents (E800-E962).

(d) Deaths incomplete, mainly from hospitals.

(e) Incomplete - data for Area of Information only.

(f) Principal cities only.

TABLE 9. FIRST FIVE PRINCIPAL CAUSES* OF DEATH WITH RATES PER 100,000 POPULATION IN THE AMERICAS, RECENT YEARS (Continued)

Area and causes of death	Number	Rate	Per cent of total deaths	Area and causes of death	Number	Rate	Per cent of total deaths
BRITISH GULANA (Continued)				PUERTO RICO (Continued)			
Influenza and pneumonia (480-483, 490-493)	331	63.9	5.6	Certain diseases of early infancy (760-776)	1 657	71.4	10.5
JAMAICA (1956) - All causes	14 670	953.8	100.0	Gastritis, enteritis, etc. (543,571,572)..	1 003	43.2	6.3
Diseases of the heart (410-443)	1 335	86.8	9.1	Vascular lesions affecting central nervous system (330-334)	995	42.9	6.3
Malignant neoplasms (140-205)	797	51.8	5.4	TRINIDAD AND TOBAGO (1960)			
Certain diseases of early infancy (760-776)	757	49.2	5.2	All causes	6 608	792.3	100.0
Vascular lesions affecting central nervous system (330-334)	731	47.5	5.0	Diseases of the heart (410-443)	1 279	153.3	19.4
Influenza and pneumonia (480-483, 490-493)	653	42.5	4.5	Certain diseases of early infancy (760-776)	841	100.8	12.7
PUERTO RICO (1959) - All causes	15 818	681.2	100.0	Vascular lesions affecting central nervous system (330-334)	618	74.1	9.4
Diseases of the heart (410-443)	2 575	110.9	16.3	Malignant neoplasms (140-205)	485	58.2	7.3
Malignant neoplasms (140-205)	1 799	77.5	11.4	Gastritis, enteritis, etc. (543,571,572) .	475	57.0	7.2

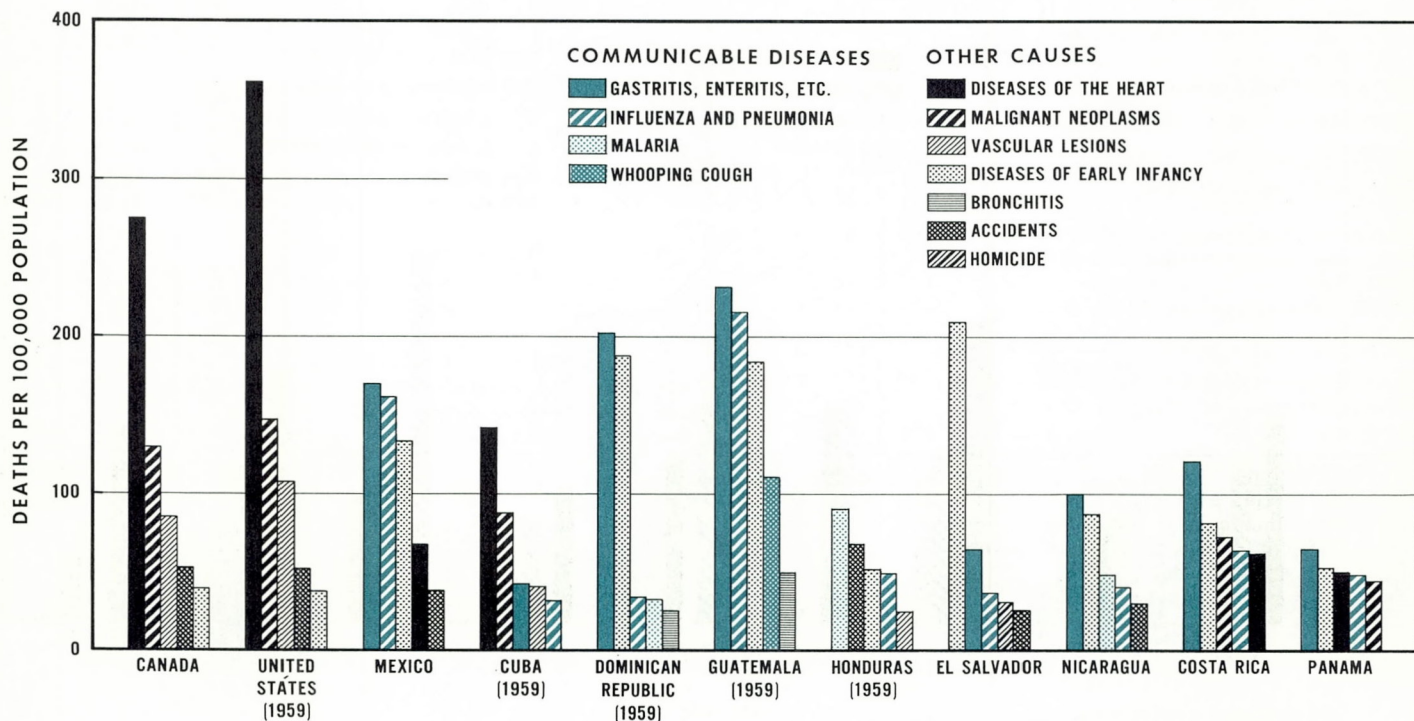
* International Statistical Classification of Diseases, Injuries, and Causes of Death, World Health Organization, Geneva, 1955.

first two principal causes are diseases of the heart and malignant neoplasms. Several of these countries had relatively high proportions of their populations in the age group 55 years and over according to the censuses around 1950 (Argentina, 10.2 per cent, Canada, 15.4 per cent, the United States, 17.0 per cent

and Cuba, 9.2 per cent). A census had not been taken recently in Uruguay.

In eight countries the group, gastritis, enteritis, etc., was the leading cause of death with certain diseases of early infancy most frequently in the second place as a leading cause. Influenza and pneumonia

FIGURE 6
FIRST FIVE PRINCIPAL CAUSES OF DEATH PER 100,000 POPULATION IN ELEVEN COUNTRIES OF NORTH AMERICA, 1960



was the leading cause in three countries, certain diseases of early infancy in two, malaria in one, and diseases of the heart in the Brazilian capitals. The group, certain diseases of early infancy, includes many deaths stated to be due to toxicosis which is a term often used in Spanish-speaking countries to signify a specific clinical entity essentially the result of severe and rapid dehydration from diarrheal disease. However, according to the rules of the International Classification of Diseases when toxicosis is stated as the cause of death for children under 1 year, the cause is assigned to the group ill-defined diseases peculiar to early infancy. The inclusion of deaths due to toxicosis in the title, certain diseases of early infancy, has undoubtedly contributed to high death rates from certain diseases of early infancy in several countries.

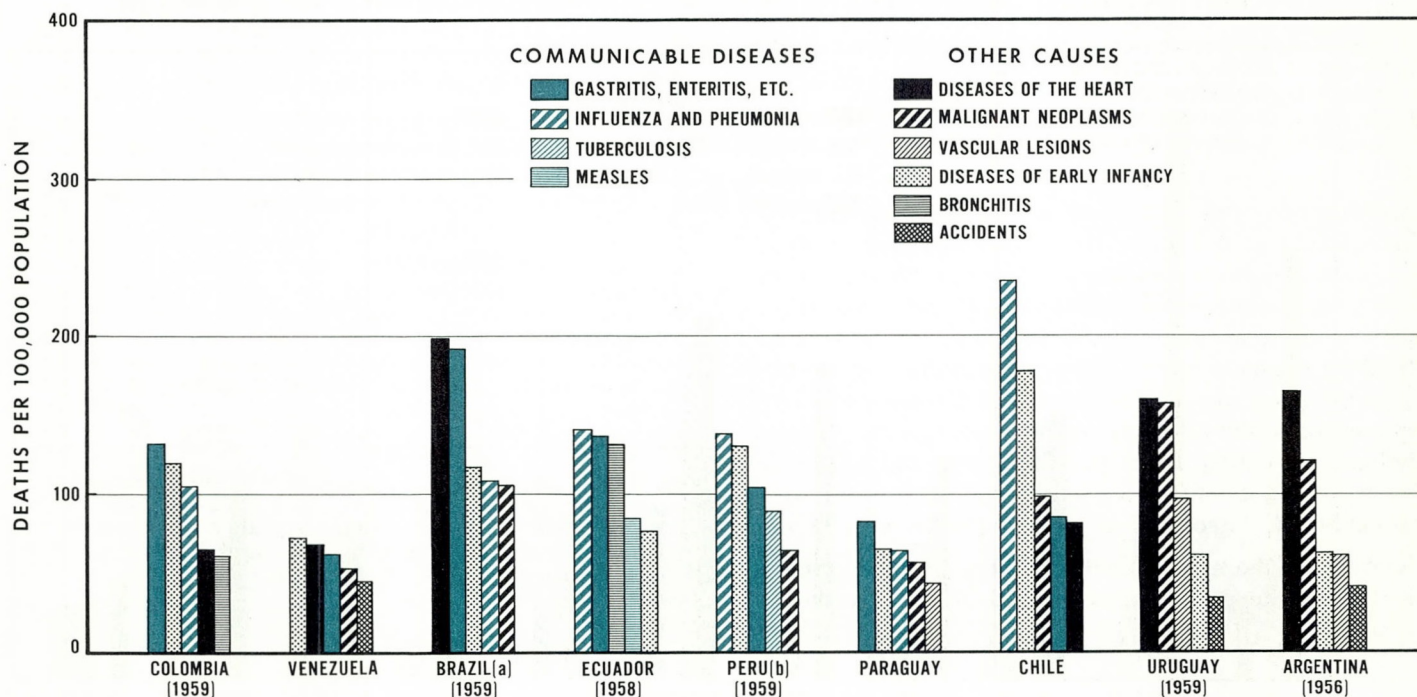
In Table 10 the five principal causes of death in 1952 and in 1960 in the American countries are summarized. In 1960, the group, certain diseases of early infancy, was listed as one of the principal causes in 20 out of the 21 countries. The importance of this cause is believed to be exaggerated because of the inclusion of ill-defined terms signifying diarrheal disease or nutritional deficiency states. This section of

the Classification was intended to relate particularly to the causes of illness and death occurring within the first 28 days of life and peculiar to early infancy, but the use of the ill-defined terms has unfortunately made it appear as an increasingly important cause. The group, gastritis, enteritis, etc., which includes the diarrheal diseases due to infectious agents such as *Shigella*, *Salmonella*, etc., was the principal cause of death in eight countries and among the four leading causes in eight others. Thus, it appears as a principal cause in all except five of these countries providing data for a recent year. Diseases of the heart and malignant neoplasms were each included in 12 of the 21 countries.

When the leading causes in 1960 (or recent year) are compared with those in 1952, the reduction in tuberculosis is evident. While it was one of the principal causes in 10 out of 18 countries in 1952, it appeared for only two out of 21 countries in 1960. Malignant neoplasms was a principal cause in 12 out of 21 in 1960 in contrast to only seven of 18 in 1952.

Health programs have been usually directed first to the prevention and control of communicable diseases and in some countries deaths from these diseases have been markedly reduced. The first section of the

FIGURE 7
FIRST FIVE PRINCIPAL CAUSES OF DEATH PER 100,000 POPULATION IN NINE COUNTRIES OF SOUTH AMERICA, 1960



(a) Capitals only, excluding Manaus, Goiania, Rio Branco, Boa Vista and Porto Velho.

(b) Principal cities only.

TABLE 10. FIVE PRINCIPAL CAUSES OF DEATH BY RANK ORDER IN 18 AMERICAN COUNTRIES, 1952 AND IN 21 AMERICAN COUNTRIES, 1960

Cause of death	Total	First	Second	Third	Fourth	Fifth
18 countries 1952						
Heart disease or circulatory system	13	3	3	1	3	3
Gastritis, enteritis, etc.	12	8	2	1	-	1
Influenza and pneumonia	10	5	2	2	1	-
Tuberculosis	10	-	2	2	4	2
Certain diseases of early infancy	9	-	-	5	1	3
Malignant neoplasms	7	1	3	2	-	1
Bronchitis	6	-	1	-	1	4
Malaria	6	1	3	1	1	-
Vascular lesions affecting central nervous system	5	-	-	4	-	1
Accidents or external causes	4	-	-	-	4	-
Whooping cough	2	-	1	-	1	-
Other causes (a)	6	-	1	-	2	3
21 countries in 1960 or recent year						
Certain diseases of early infancy	20	3	8	5	1	3
Gastritis, enteritis, etc.	16	8	4	3	1	-
Influenza and pneumonia	15	3	2	4	5	1
Diseases of the heart	12	6	1	1	2	2
Malignant neoplasms	12	-	5	2	2	3
Accidents	9	-	1	-	2	6
Vascular lesions affecting central nervous system	7	-	-	3	2	2
Malaria	3	1	-	1	1	-
Bronchitis	4	-	-	1	-	3
Tuberculosis	2	-	-	1	1	-
Other causes (b)	5	-	-	-	4	1

(a) Includes: Avitaminosis and anemias, dropsy, dysentery, helminths, intestinal infections, and syphilis.

(b) Includes: Avitaminosis and other metabolic diseases, homicide, measles, tetanus, and whooping cough.

International Classification of Diseases⁽⁴⁾ entitled "Infective and Parasitic Diseases" includes most of the communicable diseases. However, deaths from infectious diseases are also assigned to other sections, for example, pneumonia and influenza to diseases of the respiratory system, and diarrheal diseases to diseases of the digestive system and diseases of early infancy when the etiologic agent is not known. Nevertheless, mortality from the infectious and parasitic diseases can be used as a gross indicator of the significance of infectious diseases (Table 11). In the countries of the Americas death rates from this group as well as the percentages of all deaths due to these

diseases vary widely. The rates range from 9.6 per 100,000 population to a rate 50 times as large, approximately 500 per 100,000 population. Since relatively high proportions of these deaths occur in childhood, countries with high death rates from the group of infectious and parasitic diseases are the ones with high death rates of children under 5 years of age. Information regarding deaths from selected infectious diseases is included in Chapter III with data on reported cases of notifiable diseases.

The extent of medical facilities in a country influences the quality of mortality statistics. According to Regulations of WHO^(4a) each Member State should adopt a form of medical certificate of cause of death which conforms as far as possible with the recommended international model. A copy of this form ap-

TABLE 11. DEATHS FROM INFECTIOUS AND PARASITIC DISEASES (001-138) WITH RATES PER 100,000 POPULATION IN COUNTRIES OF THE AMERICAS, RECENT YEARS

Country	Year	Population	Deaths			
			All causes	Infectious and parasitic diseases		
				Number	Rate	Per cent of total deaths
Argentina	1956	19 494 000	157 169	6 695	34.3	4.3
Brazil (a)	1959	10 020 000	140 356	18 329	182.9	13.1
Canada	1960	17 814 000	139 693	1 703	9.6	1.2
Chile	1960	7 628 000	93 625	8 186	107.3	8.7
Colombia	1959	13 824 000	176 834	19 316	139.7	10.9
Costa Rica	1960	1 171 000	10 063	1 204	102.8	12.0
Cuba	1959	6 661 000	43 423	2 267	34.0	5.2
Dominican Republic	1959	2 894 000	30 288	3 173	109.6	10.5
Ecuador	1958	4 049 000	60 950	12 259	302.8	20.1
El Salvador	1960	2 612 000	28 775	2 852	109.2	9.9
Guatemala	1959	3 652 000	63 010	18 398	503.8	29.2
Haiti (b)	1959	...	8 104	1 547	...	19.1
Honduras	1959	1 887 000	17 815	3 486	184.7	19.6
Mexico	1960	34 923 000	411 277	53 012	151.8	12.9
Nicaragua	1960	1 477 000	11 935	2 321	157.1	19.4
Panama	1960	1 055 000	8 427	1 166	110.5	13.8
Paraguay (c)	1960	902 000	9 467	885	98.1	9.3
Peru (d)	1959	3 560 000	34 337	5 323	149.5	15.5
United States	1959	177 131 000	1 660 187	22 465	12.7	1.4
Uruguay	1959	2 792 000	23 523	1 108	39.7	4.7
Venezuela	1960	7 182 000	55 019	3 985	55.5	7.2

(a) State of Guanabara and capitals of other states excluding Manaus, Goiania, Rio Branco, Boa Vista and Porto Velho.

(b) Incomplete - mainly deaths in hospitals and institutions.

(c) Area of information including approximately one-half of population of country.

(d) Principal cities.

^{4/} Op. cit. WHO, Volume I, page 3.

^{4a/} Op. cit. WHO, page 392 (Article 9).

TABLE 12. DEATHS FROM ILL-DEFINED AND UNKNOWN CAUSES (780-795) WITH RATES PER 100,000 POPULATION IN COUNTRIES OF THE AMERICAS, RECENT YEARS

Country	Year	Population	Deaths			
			All causes	Ill-defined and unknown causes		
				Number	Rate	Per cent of total deaths
Argentina	1956	19 494 000	157 169	26 930	138.1	17.1
Brazil (a)	1959	10 020 000	140 356	9 785	97.7	7.0
Canada	1960	17 814 000	139 693	1 357	7.6	1.0
Chile	1960	7 628 000	93 625	8 174	107.2	8.7
Colombia	1959	13 824 000	176 834	35 519	256.9	20.1
Costa Rica	1960	1 171 000	10 063	1 421	121.3	14.1
Cuba	1959	6 661 000	43 423	1 750	26.3	4.0
Dominican Republic	1959	2 894 000	30 288	7 690	265.7	25.4
Ecuador	1958	4 049 000	60 950	15 191	375.2	24.9
El Salvador	1960	2 612 000	28 775	8 117	310.8	28.2
Guatemala	1959	3 652 000	63 010	8 776	240.3	13.9
Haiti (b)	1959	...	8 104	2 200	...	27.1
Honduras	1959	1 887 000	17 815	5 869	311.0	32.9
Mexico	1960	34 923 000	411 277	45 534	130.4	11.1
Nicaragua	1960	1 477 000	11 935	2 797	189.4	23.4
Panama	1960	1 055 000	8 427	1 691	160.3	20.1
Paraguay (c)	1960	902 000	9 467	3 361	372.6	35.5
Peru (d)	1959	3 560 000	34 337	1 217	34.2	3.5
United States	1959	177 131 000	1 660 187	19 089	10.8	1.1
Uruguay	1959	2 792 000	23 523	1 788	64.0	7.6
Venezuela	1960	7 182 000	55 019	16 679	232.2	30.3

- (a) State of Guanabara and capitals of other states excluding Manaus, Goiania, Rio Branco, Boa Vista and Porto Velho.
 (b) Incomplete - mainly deaths in hospitals and institutions.
 (c) Area of information including approximately one-half of population of country.
 (d) Principal cities.

pears in the section on Medical Certification and Rules for Classification in the first volume of the International Classification of Diseases. It is recommended that the completion of the medical certificate should be the responsibility of the attending physician. In many rural areas in the Americas, many persons die without medical attention at the time of death and thus, the causes of death have been unknown. Deaths without specific causes stated are assigned to the ill-defined and unknown rubrics. The death rates as well as the percentages of total deaths from this group are given in Table 12 for countries of the Americas. In ten countries 20 per cent or more of all deaths were classified in this way. As a result the death rates from specific causes are not known accurately.

Chapter II

MATERNAL AND CHILD HEALTH

In the summaries prepared by the countries for the four-year period information was presented on total mortality in infancy and early childhood and on maternal mortality. Causes of mortality in infancy and childhood were not a part of the summaries and thus selected data from other official reports of the countries are being used to emphasize the importance of certain causes of death in early life in the Americas. The experience in some countries has already illus-

trated the excellent possibilities for reduction of mortality in childhood with the extension of health programs (including environmental health). Decline in mortality among children results in an increase in life expectancy at birth. Full understanding of the health problems affecting infants and young children is important for planning for accelerating the progress in the reduction of morbidity and mortality.

INFANT MORTALITY

FIGURE 8
INFANT MORTALITY PER 1,000 LIVE BIRTHS IN COUNTRIES IN THE THREE REGIONS OF THE AMERICAS, 1951-1960

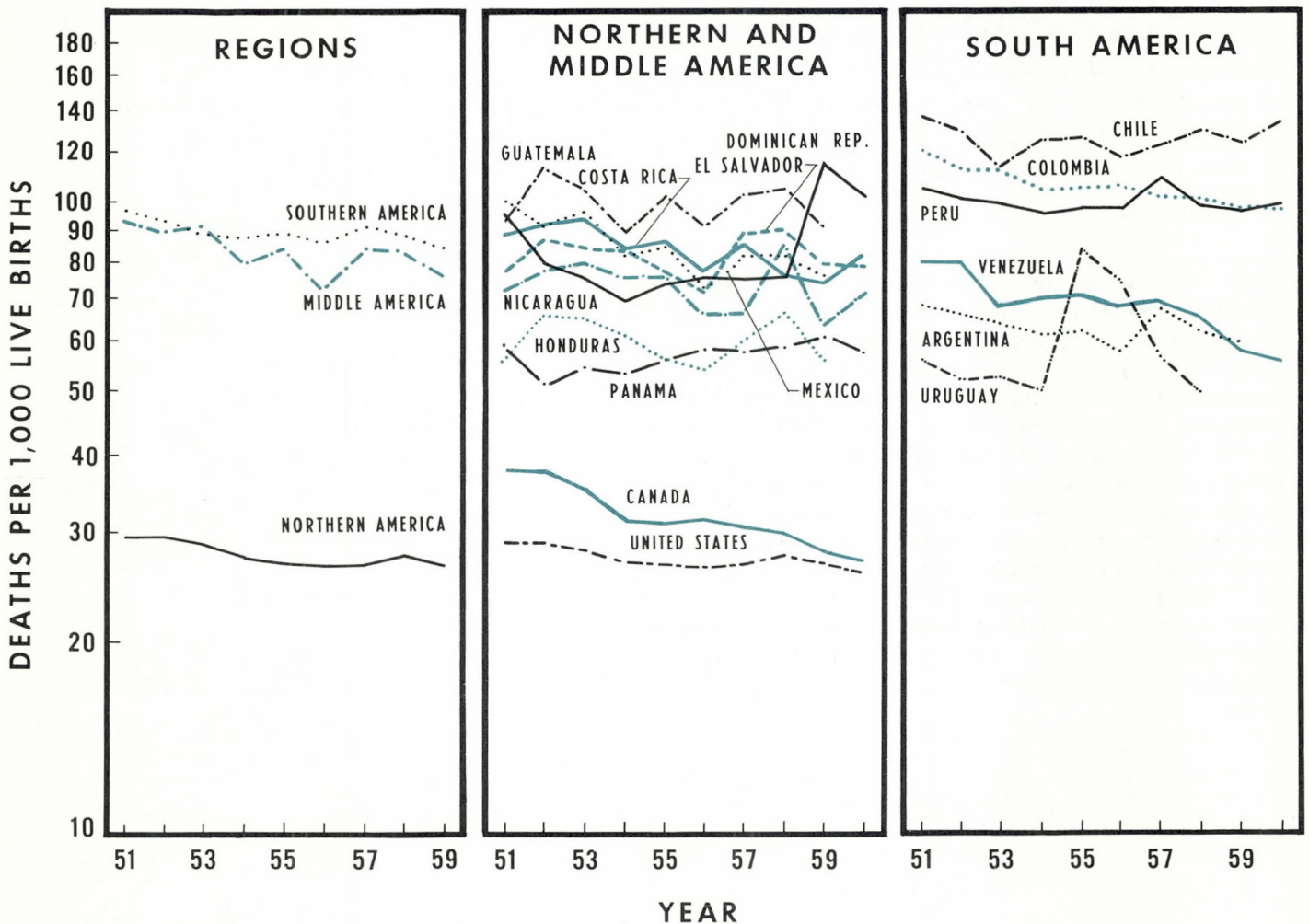


TABLE 13. NUMBER OF INFANT DEATHS WITH RATES PER 1,000 LIVE BIRTHS
IN THE AMERICAS, 1957-1960

Area	Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960
Argentina	31781	28931	27663	...	66.7	61.2	58.6	...
Bolivia	...	...	...	...	...	...	...	...
Brazil (a)	45193	47091	42153	...	130.9	137.7	107.5	...
Canada	14517	14178	13595	13077	30.9	30.2	28.4	27.3
Chile	30008	31914	31043	34003	122.5	129.3	124.3	132.5
Colombia	56554	58553	58996	57225	100.4	100.0	96.9	96.1
Costa Rica	4155	3711	3904	4034	85.2	75.2	72.9	*80.3
Cuba	5471	5357	6026	...	...	...	...	...
Dominican Republic	8262	8870	13034	11064	74.8	76.8	113.2	100.5
Ecuador	19600	19671	...	...	102.8	105.8	...	...
El Salvador	9996	10216	9034	9416	87.0	88.7	78.1	77.6
Guatemala	17115	17954	16302	...	100.5	103.9	89.7	...
Haiti	...	...	...	...	...	...	...	...
Honduras	4536	5116	4216	...	59.4	65.1	53.5	...
Mexico	118935	116010	118150	...	80.1	80.1	74.3	...
Nicaragua	3853	4803	3974	4269	67.3	84.2	62.8	70.9
Panama	2129	2186	2398	2352	56.4	57.9	59.5	56.8
Paraguay (b)	2222	2388	2444	2496	96.0	102.0	105.9	*104.0
Peru	35431	33731	34918	35997	108.1	97.2	95.0	*97.9
United States	112801	114448	112418	...	26.4	27.1	26.4	...
Uruguay	3009	2771	3232	...	55.0	49.1	...	...
Venezuela	19091	18224	18101	17887	68.1	64.4	57.7	55.2
Bahama Islands	126	190	193	...	40.3	62.7	61.2	...
Bermuda	45	37	45	...	41.5	35.2	38.1	...
British Guiana	1561	1459	1390	...	67.9	61.7	56.8	...
British Honduras	334	331	268	...	92.4	83.0	66.7	...
Canal Zone	20	18	17	17	19.4	22.0	22.3	22.1
Falkland Islands	-	2	-	1	-	43.5	-	18.5
French Guiana	31	45	52	65	31.2	47.5	51.3	62.4
Guadeloupe	459	456	463	493	48.5	46.1	47.1	47.1
Martinique	512	575	472	506	48.8	55.9	45.2	48.7
Netherlands Antilles	161	115	111	...	24.5	17.6	17.2	...
Puerto Rico	3825	4058	3577	...	50.3	53.2	48.2	...
St. Pierre and Miquelon	4	2	2	4	35.7	19.6	18.9	40.8
Surinam	447	370	476	477	42.3	32.5	40.5	38.9
Virgin Islands (U. K.)	30	42	36	...	94.6	133.3	117.6	...
Virgin Islands (U. S.)	52	50	48	...	50.1	44.3	44.2	...
West Indies Federation								
Antigua	117	149	122	...	66.3	82.0	66.6	...
Barbados	639	586	506	...	87.4	82.4	71.2	...
Dominica	280	295	284	320	109.5	108.3	102.5	113.7
Grenada	229	316	277	...	49.1	74.3	67.3	...
Jamaica	3284	3865	4393	3527	54.0	62.3	67.8	51.0
Montserrat	40	51	53	...	107.2	135.3	135.5	...
St. Kitts-Nevis-Anguilla	194	285	174	...	71.9	113.1	69.3	...
St. Lucia	375	456	457	...	95.6	115.4	111.2	...
St. Vincent	394	606	559	...	92.5	154.2	138.0	...
Trinidad and Tobago	1631	1860	1902	...	56.5	62.7	62.2	...
Northern America	127367	128665	126060	...	26.8	27.4	26.6	...
Middle America (c)	181683	183170	184924	...	78.0	79.5	74.9	...
South America (d)	199735	198059	175083	...	91.0	88.5	84.5	...

* Provisional.

(a) Data on the number of infant deaths are for State of Guanabara and capitals of other states excluding Boa Vista and Porto Velho in 1957 and 1958 and 1959 and Manaus, Goiania, and Rio Branco in 1959. However, rates also exclude other capitals for which the data on births were not available. (b) Area of information only. (c) Excluding Cuba and Haiti.

(d) Excluding Bolivia and Brazil, 1957-1959 and Ecuador and Uruguay, 1959.

The wide variation in infant mortality in the Americas (Table 13) is due to many factors. Registration of deaths is probably more incomplete in infancy than in any other age period. In some countries death of an infant occurring before the birth is registered is not counted. The distinction between a live birth (with some evidence of life) and a fetal death is also not uniformly observed. Thus, it is probable that in many areas the infant death rate should be higher than that appearing in the official figures. Despite these limitations the data are sufficient, however, to delineate major health problems in this age period.

Trends in infant mortality in the decade 1951-1960 are difficult to interpret (Figure 8). In a few countries the death rates have declined but in many they are at

TABLE 14. DEATHS OF INFANTS UNDER 28 DAYS WITH RATES PER 1,000 LIVE BIRTHS IN THE AMERICAS, 1957-1960

Area	Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960
Argentina	11 797	11 448	10 404	...	24.8	24.2	22.0	...
Canada	9 480	9 055	8 841	8 410	20.2	19.3	18.4	17.6
Chile	9 502	9 452	9 694	9 965	38.8	38.3	38.8	38.8
Colombia	21 221	21 975	22 110	...	37.7	37.5	36.3	...
Costa Rica	1 186	1 159	1 334	1 371	24.3	23.5	24.9	*27.3
Ecuador	6 967	6 810	...	...	36.6	36.6	...	...
El Salvador	3 692	3 559	3 315	...	32.1	30.9	28.7	...
Guatemala	5 950	6 128	6 363	...	34.9	35.5	35.0	...
Honduras	1 171	1 277	1 164	...	15.3	16.3	14.8	...
Mexico	40 858	41 143	44 604	...	27.5	28.4	28.1	...
Nicaragua	930	1 029	967	1 109	16.2	18.0	15.3	18.4
Panama	976	929	1 063	...	25.9	24.6	26.4	...
Paraguay (a)	1 263	1 242	1 261	1 172	54.6	53.0	54.6	*48.8
Peru	13 091	12 912	13 534	14 002	40.0	37.2	36.8	*38.1
United States	81 576	82 274	81 102	...	19.1	19.5	19.0	...
Uruguay	1 259	...	...	...	23.0	...	...	...
Venezuela	7 936	7 549	7 944	8 441	28.3	26.7	25.3	26.0
Canal Zone	...	...	...	15	...	...	...	19.5
Falkland Islands	-	2	-	1	-	43.5	-	18.5
French Guiana	5	13	14	12	5.0	13.7	13.8	11.5
Guadeloupe	214	224	...	...	22.6	22.7	...	...
Puerto Rico	1 905	2 008	1 880	...	25.0	26.3	25.3	...
Surinam	147	177	185	190	13.9	15.5	15.7	15.5
Virgin Islands (U.S.)	28	27	...	...	27.0	23.9	...	...
Northern America	91 056	91 329	89 943	...	19.2	19.4	19.0	...
Middle America (b)	56 910	57 483	60 690	...	27.4	28.1	27.6	...
South America (c)	73 188	71 580	65 146	...	33.7	33.2	31.8	...

* Provisional.

(a) Area of Information only.

(b) Including only countries and territories above.

(c) Including only countries and territories above with exception of Uruguay 1958-1959, and Ecuador 1959.

TABLE 15. NEONATAL AND POST-NEONATAL DEATH RATES IN THE AMERICAS, RECENT YEAR

Country	Year	Rates per 1,000 live births			Per cent under 28 days
		Total	Under 28 days	28 days - 11 months	
Argentina	1959	58.6	22.0	36.6	37.6
Canada	1960	27.3	17.6	9.7	64.3
Chile	1960	132.5	38.8	93.7	29.3
Colombia	1959	96.9	36.3	60.6	37.5
Costa Rica	1959	72.9	24.9	48.0	34.2
Ecuador	1958	105.8	36.6	69.2	34.6
El Salvador	1959	78.1	28.7	49.4	36.7
Guatemala	1959	89.7	35.0	54.7	39.0
Honduras	1959	53.5	14.8	38.7	27.6
Mexico	1959	74.3	28.1	46.2	37.8
Nicaragua	1960	70.9	18.4	52.5	26.0
Panama	1959	59.5	26.4	33.1	44.3
Paraguay (a)*	1960	104.0	48.8	55.2	47.0
Peru *	1960	97.9	38.1	59.8	38.9
United States	1959	26.4	19.0	7.4	72.1
Uruguay	1957	55.0	23.0	32.0	41.8
Venezuela	1960	55.2	26.0	29.2	47.2
Northern America	1959	26.6	19.0	7.6	71.4
Middle America (b)	1959	73.5	27.6	45.9	27.6
South America (b)	1959	84.8	31.8	53.0	37.5

* Provisional.

(a) Area of Information only.

(b) Includes countries and territories as shown in Table 14.

the same level in 1959 or 1960 as in 1951. Incomplete registration of infant deaths in the early part of the period may have obscured in part progress in reducing infant mortality in some countries.

Infant deaths are usually divided by age into two groups—the neonatal deaths which occur under 28 days and the post-neonatal, those occurring during the remainder of the first year of life. Deaths in the neonatal period are principally due to conditions present at birth while the deaths occurring in the latter period are usually related to environmental conditions. Neonatal death rates for the four years 1957-1960 are given in Table 14. The variation among countries in neonatal death rates is not as great as that in the post-neonatal death rates. For the last year for which data are available for 17 countries the neonatal death rates vary from 14.8 to 48.8 per 1,000 live births. Some of the neonatal death rates may be low due to incomplete registration. The variation in the post-neonatal death rates for the 17 countries is from 7.4 to 93.7 per 1,000 live births (Table 15). The percentages of infant deaths in the neonatal period which are given in this table vary from 26 to 72. As environmental conditions improve the post-neonatal death rate can be reduced to a small proportion of the total infant death rate.

MORTALITY UNDER 5 YEARS OF AGE

That mortality in early childhood (1-4 years) can be reduced to very low rates of the order of 1 per 1,000 population has been demonstrated in several countries. In childhood as in the post-neonatal period, unfavorable environmental conditions result in high morbidity and mortality rates. The deaths and death rates in the age group 1-4 years during 1957-1960 are provided by country in Table 16. Death rates for this age group for the 10-year period 1951-1960 for these countries show that in many these death rates are declining (Figure 9). In Table 17 a summary of mortality of children under 5 years is given for a recent year. It is in the age group 1-4 years that the range of mortality by country is greatest and it is likely that in this age group reductions can be effected rapidly.

Because of the emphasis being placed on reduction of mortality in children under 5 years of age, data have been assembled from reports of the countries, either published by them or sent to the United Nations, on the principal causes of mortality in infancy and early childhood (Table 18). Data were available only from the Abbreviated List of 50 causes of the International Classification (B List). This List does not include several infectious diseases such as tetanus or avitaminosis and other deficiency states which would be principal causes in several countries if the larger list of causes shown in Table 7 could have been used. Analysis of causes of mortality serves to point out which activities may accomplish the greatest reductions in morbidity and mortality and decrease child mortality by one-half in accordance with the Charter of Punta del Este.⁽¹⁾ Since one of the goals of the Charter of Punta del Este is to reduce the present mortality of children under 5 years by at least one-half in the present decade, it will be possible to use this information as a base line on which to measure progress toward this goal.

In the 15 countries for which recent information was available three groups of diseases were included in the leading causes: for children under five years of age, gastritis, enteritis, etc. (543,571,572) was the leading cause in six and among the first five in all 15; certain diseases of early infancy (760-776) was the leading cause in six and the second leading cause in nine; influenza and pneumonia was the leading cause in two and among the other leading causes in the remaining 13. In addition to these large groups of diseases, malaria was the leading cause in one country and appeared as a leading cause in two others.

Other important causes were whooping cough which was reported among the first five leading causes in eight countries, bronchitis in nine countries, congenital malformations in four, accidents in four, and measles in two. Other infectious diseases which are not given separately in the Abbreviated List of the International Classification and also avitaminosis and other deficiency states, would be leading causes if data were available.

The variation among countries in these death rates from all causes as well as the principal causes was very great. Since this variation in mortality is greater for children 1-4 years than for those under 1 year, the deaths under five years have been subdivided by leading causes to show separately the five leading causes among children under one year and in the age group 1-4 years.

TABLE 16. NUMBER OF DEATHS 1-4 YEARS OF AGE WITH RATES PER 1,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Number of deaths				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960
Argentina	8 488	...	...	...	4.9	...	...	...
Canada	2 374	2 149	2 076	2 067	1.5	1.3	1.2	1.2
Chile	7 833	8 288	7 803	8 793	10.6	10.9	10.1	11.1
Colombia	34 534	32 758	32 942	...	20.0	18.6	18.3	...
Costa Rica	1 548	1 314	1 219	1 337	11.7	9.5	8.5	8.9
Cuba	1 850	1 926	2 054	...	2.8	2.9	3.0	...
Dominican Republic	4 710	4 974	5 666	5 250	12.5	12.8	14.1	12.6
Ecuador	12 896	14 987	...	...	25.3	28.5	...	...
El Salvador	7 940	7 685	6 512	...	28.5	26.6	21.8	...
Guatemala	19 258	21 707	15 380	...	42.5	46.6	32.0	...
Honduras	4 064	4 641	3 587	...	19.1	21.1	15.7	...
Mexico	83 041	76 381	82 641	...	21.6	19.3	20.2	...
Nicaragua	1 995	2 498	1 944	1 806	12.3	15.0	11.2	10.1
Panama	1 309	1 327	1 460	...	10.5	10.4	11.1	...
Paraguay(a,b)	830	991	1 113	1 124	...	...	...	...
Peru	25 699	22 418	22 986	23 389	21.7	18.4	18.3	18.0
United States	17 312	17 656	17 168	...	1.1	1.1	1.1	...
Uruguay (b)	351	344	451	...	...	...	...	...
Venezuela	9 374	8 813	7 147	6 212	11.0	10.0	7.8	6.5
Northern America	19 686	19 805	19 244	...	1.2	1.1	1.1	...
Middle America(c)	125 715	122 453	120 443	...	20.1	19.0	18.2	...
South America(d)	98 824	87 264	70 878	...	14.6	16.9	14.9	...

* Provisional.

(a) Area of Information only.

(b) Rates not calculated since population data not available.

(c) Includes only countries above.

(d) Includes countries above with exception of Uruguay and Paraguay 1957-1959, Argentina 1958-1959 and Ecuador 1959.

TABLE 17. DEATHS AND DEATH RATES PER 1,000 POPULATION AMONG CHILDREN UNDER 5 YEARS OF AGE IN COUNTRIES OF THE AMERICAS, RECENT YEAR

Country	Year	Number of deaths			Death rates		
		Under 1 year	1-4 years	Under 5 years	Under 1 year (a)	1-4 years	Under 5 years
<u>Northern America</u>		126 013	19 244	145 257	26.6	1.1	6.6
Canada	1959	13 595	2 076	15 671	28.4	1.2	7.2
United States	1959	112 418	17 168	129 586	26.4	1.1	6.5
<u>Middle America *</u>		169 337	119 889	295 252	75.9	18.0	35.2
Costa Rica	1959	3 904	1 219	5 123	72.9	8.5	27.4
Cuba	1959	6 026	2 054	8 080	...	3.0	9.6
Dominican Republic	1960	11 064	5 250	16 314	100.5	12.6	31.0
El Salvador	1959	9 034	6 512	15 546	78.1	21.8	39.6
Guatemala	1959	16 302	15 380	31 682	89.7	32.0	51.5
Honduras	1959	4 216	3 567	7 783	53.3	15.7	26.2
Mexico	1959	118 150	82 641	200 791	74.3	20.2	39.1
Nicaragua	1960	4 269	1 806	6 075	70.9	10.1	25.7
Panama	1959	2 398	1 460	3 858	59.5	11.1	23.2
<u>South America *</u>		242 984	94 811	293 146	92.2	13.3	31.8
Argentina	1957	31 781	8 488	40 269	66.7	4.9	18.0
Brazil (b)	1959	42 153	...	...	107.5	...	...
Chile	1960	34 003	8 793	42 796	132.5	11.1	42.6
Colombia	1959	58 996	32 942	91 938	96.9	18.3	39.9
Ecuador	1958	19 671	14 987	34 658	105.8	28.5	51.4
Paraguay (c)	1960	2 496	1 124	3 620	d) 104.0	...	...
Peru	1960	35 997	23 389	59 386	e) 97.9	18.0	31.2
Venezuela	1960	17 887	6 212	24 099	55.2	6.5	19.9

* Totals for deaths under one year of age in Middle America do not include Cuba. Brazil and Paraguay not included in regional totals for deaths 1-4 years and under five years of age.

(a) Rates per 1,000 live births.

(b) Data for capital cities and State of Guanabara, with certain exclusions.

(c) Data for Area of Information only.

(d) Rate given in country report.

(e) Provisional.

The group, certain diseases of early infancy (760-776) is the leading cause of death of children under one year of age in all 15 countries. This group is intended for deaths from causes peculiar to early infancy and according to the rules of the Classification it is restricted principally to deaths of infants under one year of age. As pointed out earlier, many deaths of infants under one year of age, due essentially to nutritional deficiency and to diarrheal diseases, are assigned because of the terminology used to categories 772, nutritional maladjustment, and to 773, ill-defined diseases peculiar to early infancy. This group is responsible for from 17 to 60 per cent of the deaths of infants under one year of age. Gastritis, enteritis, etc., is usually the second leading cause in Latin American countries.

In the age period 1-4 years, gastritis, enteritis, etc., and influenza and pneumonia were leading causes in all countries, but gastritis, enteritis, etc., ranked first in 10, and the group influenza and pneumonia was

first in only two. Measles was a leading cause in 11 countries and whooping cough in nine. The fact that these communicable diseases of childhood are leading causes of death stresses the need for preventive programs. For Canada and the United States the leading five causes were the same with accidents first, followed by influenza and pneumonia, congenital malformations, malignant neoplasms, and gastritis, enteritis, etc. In other countries the diarrheal, communicable and respiratory diseases were frequently the leading causes.

In many countries gastritis, enteritis, etc., ranked among the leading causes of death for the total population, as well as for children under five years. However, it is primarily a problem among young children for a very large part of these deaths, at least 80 per cent in 11 out of 15 countries, occur in the age group under five years (Table 19). The death rates at all ages from gastritis, enteritis, etc., for the years 1957-1960 are given in Table 20 for the Americas.

TABLE 18. FIRST FIVE PRINCIPAL CAUSES OF DEATH AMONG CHILDREN UNDER 5 YEARS OF AGE, UNDER 1 YEAR AND 1-4 YEARS WITH RATES PER 100,000 POPULATION IN THE AMERICAS, RECENT YEARS

Country and principal causes	Under 5 years				Under 1 year				1 - 4 years			
	Rank order	Number	Rate	Per cent	Rank order	Number	Rate (a)	Per cent	Rank order	Number	Rate	Per cent
CANADA (1959) - All causes		15 671	715.9	100.0		13 595	2836.6	100.0		2 076	121.4	100.0
Certain diseases of early infancy (760-776)	1	7 453	340.5	47.6	1	7 452	1554.8	54.8	.	1	0.1	0.0
Congenital malformations (750-759) ...	2	2 375	108.5	15.2	2	2 149	448.4	15.8	3	226	13.2	10.9
Influenza and pneumonia (480-483, 490-493)	3	1 857	84.8	11.8	3	1 564	326.3	11.5	2	293	17.1	14.1
Accidents (E800-E962)	4	1 228	56.1	7.8	4	559	116.6	4.1	1	669	39.1	32.2
Gastritis,enteritis,etc.(543,571,572) ...	5	577	26.4	3.7	5	493	102.9	3.6	5	84	5.0	4.0
Malignant neoplasms (140-205) .....	.	242	11.1	1.5	.	36	7.5	0.3	.	206	12.0	9.9
CHILE (1958)- All causes		40 202	4179.0	100.0		31 914	12931.3	100.0		8 288	1092.0	100.0
Influenza and pneumonia (480-483, 490-493)	1	12 059	1253.5	30.0	2	9 012	3651.6	28.2	1	63 047	401.4	36.8
Certain diseases of early infancy (760-776)	2	11 328	1177.5	28.2	1	10 962	4441.7	34.3	5	366	48.2	4.4
Gastritis,enteritis,etc.(543,571,572) ...	3	6 877	714.9	17.1	3	5 481	2220.9	17.2	2	13 396	183.9	16.8
Measles (085)	4	1 520	158.0	3.8	4	629	254.9	2.0	3	891	117.4	10.8
Accidents (E800-E962)	5	662	68.8	1.6	.	163	66.0	0.5	d	499	65.7	6.0
Congenital malformations (750-759) ...	.	634	65.9	1.6	5	588	238.3	1.8	.	46	6.1	0.6
Whooping cough (056) .....	.	423	44.0	1.1	.	292	118.3	0.9	.	131	17.3	1.6
COLOMBIA (1959) - All causes ...		91 938	3986.8	100.0		58 996	9692.6	100.0		32 942	1828.9	100.0
Gastritis,enteritis,etc.(543,571,572) ...	1	16 753	726.5	18.2	2	9 977	1639.1	16.9	1	6 776	376.2	20.6
Certain diseases of early infancy (760-776)	2	16 526	716.7	18.0	1	16 526	2715.1	28.0	.	-	-	-
Influenza and pneumonia (480-483, 490-493)	3	9 575	415.2	10.4	3	5 915	971.8	10.0	2	3 660	203.2	11.1
Bronchitis (500-502)	4	7 791	337.9	8.5	4	4 843	795.7	8.2	3	2 948	163.7	8.9
Whooping cough (056)	5	2 653	115.0	2.9	5	1 354	222.5	2.3	4	1 299	72.1	3.9
Non-meningococcal meningitis (340) ...	.	1 758	76.2	1.9	.	1 128	185.3	1.9	.	630	35.0	1.9
Measles (085) .....	.	1 495	64.8	1.6	.	401	65.9	0.8	5	1 094	60.7	3.3
COSTA RICA (1959) - All causes ...		5 123	2739.6	100.0		3 904	7294.3	100.0		1 219	846.5	100.0
Gastritis,enteritis,etc.(543,571,572) ...	1	1 270	679.1	24.8	2	966	1804.9	24.7	1	304	211.1	24.9
Certain diseases of early infancy (760-776)	2	986	527.3	19.2	1	986	1842.3	25.2	.	-	-	-
Influenza and pneumonia (480-483, 490-493)	3	643	343.9	12.6	3	450	840.8	11.5	2	193	134.0	15.8
Bronchitis (500-502)	4	225	120.3	4.4	4	162	302.7	4.1	3	63	43.7	5.2
Congenital malformations (750-759) ...	5	125	66.8	2.4	5	119	222.3	3.0	.	6	4.2	0.5
Accidents (E800-E962) .....	.	56	29.9	1.1	.	27	50.4	0.7	5	29	20.1	2.4
Measles (085) .....	.	55	29.4	1.1	.	23	43.0	0.6	4	32	22.2	2.6
DOMINICAN REPUBLIC (1959) All causes		18 700	3673.9	100.0		13 034	11319.1	100.0		5 666	1406.0	100.0
Gastritis,enteritis,etc.(543,571,572) ...	1	5 556	1091.6	29.7	2	3 873	3363.4	29.7	1	1 683	417.6	29.7
Certain diseases of early infancy (760-776)	2	5 444	1069.5	29.1	1	5 444	4227.7	41.8	.	-	-	-
Bronchitis (500-502)	3	655	128.7	3.5	4	338	293.5	2.6	2	317	78.7	5.6
Influenza and pneumonia (480-483, 490-493)	4	613	120.4	3.3	3	339	294.4	2.6	4	274	68.0	4.8
Malaria (110-117)	5	526	103.3	2.8	5	246	213.6	1.9	3	280	69.5	4.9
Accidents (E800-E962) .....	.	115	22.6	0.6	.	27	23.4	0.2	5	88	21.8	1.6

(a) Rate per 1,000 live births. (b) Includes total diseases of respiratory system. (c) Includes total diseases of digestive system. (d) Includes total deaths due to accidents and violence.

TABLE 18. FIRST FIVE PRINCIPAL CAUSES OF DEATH AMONG CHILDREN UNDER 5 YEARS OF AGE, UNDER 1 YEAR AND 1-4 YEARS WITH RATES PER 100,000 POPULATION IN THE AMERICAS, RECENT YEARS (continued)

Country and principal causes	Under 5 years				Under 1 year				1 - 4 years			
	Rank order	Number	Rate	Per cent	Rank order	Number	Rate (a)	Per cent	Rank order	Number	Rate	Per cent
EL SALVADOR (1958) - All causes .		17901	4723.2	100.0		10216	8871.6	100.0		7685	2659.2	100.0
Certain diseases of early infancy (760-776)	1	5745	1515.8	32.1	1	5745	4989.0	56.2	.	-	-	-
Gastritis,enteritis,etc.(543,571,572)...	2	3507	925.3	19.6	2	2008	1743.8	19.7	1	1499	518.7	19.5
Bronchitis (500-502)	3	758	200.0	4.2	3	491	426.4	4.8	4	267	92.4	3.5
Influenza and pneumonia (480-483, 490-493)	4	717	189.2	4.0	4	400	347.4	3.9	2	317	109.7	4.1
Whooping cough (056)	5	530	139.8	3.0	5	235	204.1	2.3	3	295	102.1	3.8
Measles (085) .....	.	317	83.6	1.8	.	74	64.3	0.7	5	243	84.1	3.2
GUATEMALA (1959) - All causes ..		31682	5151.5	100.0		16302	8970.0	100.0		15380	3204.2	100.0
Certain diseases of early infancy (760-776)	1	6726	1093.7	21.2	1	6726	3700.9	41.3	.	-	-	-
Gastritis,enteritis,etc.(543,571,572)...	2	5558	903.7	17.5	2	2266	1246.8	13.9	1	3292	685.8	21.4
Influenza and pneumonia (480-483, 490-493)	3	3867	628.8	12.2	3	1944	1069.7	11.9	3	1923	400.6	12.5
Whooping cough (056)	4	3624	589.3	11.4	4	1610	885.9	9.9	2	2014	419.6	13.1
Bronchitis (500-502)	5	1457	236.9	4.6	5	890	489.7	5.5	5	567	118.1	3.7
Measles (085) .....	.	1034	168.1	3.3	.	259	142.5	1.9	4	775	161.5	5.0
HONDURAS (1958) - All causes		9757	3387.8	100.0		5116	6511.5	100.0		4641	2109.5	100.0
Malaria (110-117)	1	914	317.4	9.4	3	408	519.3	8.0	1	506	230.0	10.9
Certain diseases of early infancy (760-776)	2	912	316.7	9.3	1	870	1107.3	17.0	.	42	19.1	0.9
Influenza and pneumonia (480-483, 490-493)	3	729	253.1	7.5	2	431	548.6	8.4	2	298	135.5	6.4
Whooping cough (056)	4	548	190.3	5.6	4	302	384.4	5.9	4	246	111.8	5.3
Gastritis,enteritis,etc.(543,571,572)...	5	508	176.4	5.2	5	258	328.4	5.0	3	250	113.6	5.4
Measles (085) .....	.	238	82.6	2.4	.	66	84.0	1.3	5	172	78.2	3.7
MEXICO (1958) - All causes		192391	3857.1	100.0		116010	8014.1	100.0		76381	1926.4	100.0
Gastritis,enteritis,etc.(543,571,572)...	1	50227	1007.0	26.1	2	24852	1716.8	21.4	1	25375	640.0	33.2
Certain diseases of early infancy (760-776)	2	42490	851.8	22.1	1	42490	2935.2	36.6	.	-	-	-
Influenza and pneumonia (480-483, 490-493)	3	38181	765.5	19.8	3	24518	1693.7	21.1	2	13663	344.6	17.9
Bronchitis (500-502)	4	9209	184.6	4.8	4	6597	455.7	5.7	.	2612	65.9	3.4
Whooping cough (056)	5	6448	129.3	3.4	.	2595	179.3	2.2	3	3853	97.2	5.0
Malaria (110-117) .....	.	5330	106.9	2.8	.	1999	138.1	1.7	5	3331	84.0	4.4
Measles (085) .....	.	4824	96.7	2.5	.	1061	73.3	0.9	4	3763	94.9	4.9
Congenital malformations (750-759) ...	.	3161	63.4	1.6	5	2728	188.5	2.4	.	433	10.9	0.6
NICARAGUA (1959) - All causes ...		5918	2595.6	100.0		3974	6278.3	100.0		1944	1123.7	100.0
Gastritis,enteritis,etc.(543,571,572)...	1	1433	628.5	24.2	2	997	1575.1	25.1	1	436	252.0	22.4
Certain diseases of early infancy (760-776)	2	1085	475.9	18.3	1	1085	1714.1	27.3	.	-	-	-
Malaria (110-117)	3	508	222.8	8.6	3	329	519.8	8.1	2	179	103.5	9.2
Influenza and pneumonia (480-483, 490-493)	4	364	159.6	6.2	4	252	398.1	6.9	3	112	64.7	5.8
Whooping cough (056)	5	192	84.2	3.2	5	101	159.6	2.5	5	91	52.6	4.7
Measles (085) .....	.	142	62.3	2.4	.	45	71.1	1.1	4	97	56.1	5.0

(a) Rate per 1,000 live births.

TABLE 18. FIRST FIVE PRINCIPAL CAUSES OF DEATH AMONG CHILDREN UNDER 5 YEARS OF AGE, UNDER 1 YEAR AND 1-4 YEARS WITH RATES PER 100,000 POPULATION IN THE AMERICAS, RECENT YEARS (Continued)

Country and principal causes	Under 5 years				Under 1 year				1 - 4 years			
	Rank order	Number	Rate	Per cent	Rank order	Number	Rate (a)	Per cent	Rank order	Number	Rate	Per cent
PANAMA (1959) - All causes		3 858	2324.1	100.0		2 398	5951.0	100.0		1 460	1114.5	100.0
Gastritis,enteritis,etc.(543,571,572) ...	1	694	418.1	18.0	2	443	1099.4	18.5	1	251	191.6	17.2
Certain diseases of early infancy (760-776)	2	591	356.0	15.3	1	591	1466.6	24.6	.	-	-	-
Bronchitis (500-502)	3	348	209.6	9.0	3	231	573.3	9.6	4	117	89.3	8.0
Influenza and pneumonia (480-483, 490-493)	4	328	197.6	8.5	4	182	451.7	7.9	3	146	111.5	10.0
Measles (085)	5	229	138.0	5.9	.	43	106.7	1.8	2	186	142.0	12.7
Whooping cough (056) .....	.	108	65.1	2.8	.	54	134.0	2.3	5	54	41.2	3.7
Congenital malformations (750-759) ...	.	70	42.2	1.8	5	65	161.3	2.7	.	5	3.8	0.3
PARAGUAY (1959) (e) All causes...		3 557	...	100.0		2 444	10590.2	100.0		1 113	...	100.0
Certain diseases of early infancy (760-776)	1	585	...	16.4	1	585	2534.9	23.9	.	-	-	-
Gastritis,enteritis,etc.(543,571,572)...	2	469	...	13.2	2	260	1126.6	10.6	1	209	...	18.8
Influenza and pneumonia (480-483, 490-493)	3	341	...	9.6	3	216	936.0	8.8	2	125	...	11.2
Bronchitis (500-502)	4	105	...	3.0	4	65	281.7	2.7	3	40	...	3.6
Whooping cough (056)	5	53	...	1.5	5	35	151.7	1.4	.	18	...	1.6
Accidents (E800-E962) .....	.	41	...	1.2	.	6	26.0	0.2	4	35	...	3.1
Dysentery, all forms (045-048) .....	.	34	...	1.0	.	7	30.3	0.3	5	27	...	2.4
PERU (1959) - All causes		57 904	3140.1	100.0		34 918	9503.8	100.0		22 986	1825.7	100.0
Influenza and pneumonia (480-483, 490-493)	1	14 016	760.1	24.2	2	7 896	2149.1	22.6	1	6 120	486.1	26.6
Certain diseases of early infancy (760-776)	2	11 524	624.9	19.9	1	11 524	3136.5	33.0	.	-	-	-
Gastritis,enteritis,etc.(543,571,572)...	3	6 213	336.9	10.7	4	3 257	886.4	9.3	2	2 956	234.8	12.9
Whooping cough (056)	4	6 202	336.3	10.7	3	3 468	943.9	9.9	3	2 734	217.2	11.9
Bronchitis (500-502)	5	3 248	176.1	5.6	5	2 120	577.0	6.1	5	1 128	89.6	4.9
Measles (085) .....	.	2 455	133.1	4.2	.	677	184.3	1.9	4	1 778	141.2	7.7
UNITED STATES (1959) - All causes		129 586	649.0	100.0		112 418	2637.7	100.0		17 168	107.7	100.0
Certain diseases of early infancy (760-776)	1	68 205	341.6	52.6	1	68 196	1600.1	60.7	.	9	0.1	0.1
Congenital malformations (750-759) ...	2	17 588	88.1	13.6	2	15 635	366.9	13.7	3	1 953	12.3	11.4
Influenza and pneumonia (480-483, 490-493)	3	12 223	61.2	9.4	3	9 775	229.4	8.7	2	2 448	15.4	14.3
Accidents (E800-E962)	4	8 774	43.8	6.8	4	3 866	90.7	3.4	1	4 908	30.8	28.6
Gastritis,enteritis,etc.(543,571,572) ...	5	3 098	15.5	2.4	5	2 555	59.9	2.3	5	543	3.4	3.2
Malignant neoplasms (140-205) .....	.	1 985	9.9	1.5	.	280	6.6	0.3	4	1 705	10.7	9.9
VENEZUELA (1959) - All causes ..		25 248	2163.5	100.0		18 101	5772.6	100.0		7 147	780.2	100.0
Certain diseases of early infancy (760-776)	1	4 760	407.9	18.9	1	4 758	1517.4	26.3	.	2	0.2	0.0
Gastritis,enteritis,etc.(543,571,572) ...	2	4 218	361.4	16.7	2	3 052	973.3	16.9	1	1 166	127.3	16.3
Influenza and pneumonia (480-483, 490-493)	3	2 614	224.0	10.4	3	1 810	577.2	10.0	2	804	87.8	11.2
Congenital malformations (750-759) ...	4	595	51.0	2.4	4	546	174.1	3.0	.	49	5.3	0.7
Accidents (E800-E962)	5	469	40.2	1.9	.	122	38.9	0.7	3	347	37.9	4.9
Bronchitis (500-502) .....	.	391	33.5	1.5	5	265	84.5	1.5	.	126	13.8	1.8
Whooping cough (056) .....	.	297	25.4	1.2	.	170	54.2	0.9	5	127	13.9	1.8
Measles (085) .....	.	222	19.0	0.9	.	67	21.4	0.4	4	155	16.9	2.2

(a) Rate per 1,000 live births. (e) Area of information only; populations under 5 year and 1-4 year not available for calculation of rates.

TABLE 18. FIRST FIVE PRINCIPAL CAUSES OF DEATH AMONG CHILDREN UNDER 5 YEARS OF AGE, UNDER 1 YEAR AND 1-4 YEARS WITH RATES PER 100,000 POPULATION IN THE AMERICAS, RECENT YEARS (Continued)

Country and principal causes	Under 5 years				Under 1 year				1 - 4 years			
	Rank order	Number	Rate	Per cent	Rank order	Number	Rate a)	Per cent	Rank order	Number	Rate	Per cent
BRITISH GUIANA (1958) -												
All causes		2 033	2053.5	100.0		1 459	6227.6	100.0		574	726.6	100.0
Certain diseases of early infancy (760-776)	1	612	618.2	30.1	1	612	2612.3	41.9	.	-	-	-
Gastritis, enteritis, etc. (543, 571, 572) ...	2	446	450.5	21.9	2	337	1438.4	23.1	1	109	138.0	19.0
Influenza and pneumonia (480-483, 490-493)	3	223	225.3	11.0	3	146	623.2	10.0	2	77	97.5	13.4
Bronchitis (500-502)	4	108	109.1	5.3	4	74	315.9	5.1	4	34	43.0	5.9
Accidents (E800-E962)	5	70	70.7	3.4	.	9	38.4	0.2	3	61	77.2	10.6
Dysentery, all forms (045-048) .....	.	34	34.3	1.7	.	20	85.4	1.4	5	14	17.7	2.4
Congenital malformations (750-759) ...	.	31	31.3	1.5	5	28	119.5	1.9	.	3	3.8	0.5
PUERTO RICO (1958) - All causes..		5 056	1412.3	100.0		4 058	5318.6	100.0		998	324.0	100.0
Certain diseases of early infancy (760-776)	1	1 675	467.9	33.1	1	1 674	2194.0	41.3	.	1	0.3	0.1
Gastritis, enteritis, etc. (543, 571, 572) ...	2	1 142	319.0	22.6	2	921	1207.1	22.7	1	221	71.8	22.1
Influenza and pneumonia (480-483, 490-493)	3	545	152.2	10.8	3	353	462.7	8.7	2	192	62.3	19.2
Congenital malformations (750-759) ...	4	342	95.5	6.8	4	306	401.1	7.5	4	36	11.7	3.6
Accidents (E800-E962)	5	103	28.8	2.0	.	53	69.5	1.3	3	50	16.2	5.0
Bronchitis (500-502) .....	.	76	21.2	1.5	5	56	73.4	1.4	.	20	6.5	2.0
Measles (085) .....	.	29	8.1	0.6	.	4	5.2	0.1	5	25	8.1	2.5
TRINIDAD AND TOBAGO (1959) -												
All causes		2 262	1639.1	100.0		1 902	6217.3	100.0		360	330.3	100.0
Certain diseases of early infancy (760-776)	1	1 029	745.7	45.5	1	1 025	3350.5	53.9	.	4	3.7	1.1
Gastritis, enteritis, etc. (543, 571, 572) ...	2	521	377.5	23.0	2	417	1363.1	21.9	1	104	95.4	28.9
Influenza and pneumonia (480-483, 490-493)	3	212	153.6	9.4	3	146	477.2	7.7	2	66	60.6	18.3
Congenital malformations (750-759) ...	4	97	70.3	4.3	4	92	300.7	4.8	.	5	4.6	1.4
Bronchitis (500-502)	5	51	37.0	2.3	5	34	111.1	1.8	4	17	15.6	4.7
Accidents (E800-E962) .....	.	33	23.9	1.5	.	10	32.7	0.5	3	23	21.1	6.4
Nephritis and nephrosis (590-594) .....	.	14	10.1	0.6	.	5	16.3	0.3	5	9	8.3	2.5

(a) Rate per 1,000 live births.

TABLE 19. DEATHS FROM GASTRITIS, ENTERITIS, ETC. AT ALL AGES AND UNDER 5 YEARS OF AGE IN COUNTRIES OF THE AMERICAS, RECENT YEAR

Country	Year	Number of deaths		Per cent under 5 years
		All ages	Under 5 years	
Brazil (a)	1959	3 526	3 283	93.1
Canada	1959	995	577	58.0
Colombia	1959	18 373	16 753	91.2
Costa Rica	1959	1 384	1 270	91.8
Dominican Republic	1959	5 862	5 556	94.8
El Salvador	1958	4 106	3 507	85.4
Guatemala	1959	8 518	5 558	65.3
Honduras	1958	634	508	80.1
Mexico	1958	64 351	50 227	78.1
Nicaragua	1959	1 458	1 443	99.0
Panama	1959	752	694	92.3
Paraguay (b)	1959	536	469	87.5
Peru	1959	6 999	6 213	88.8
United States	1959	7 780	3 098	39.8
Venezuela	1959	4 585	4 218	92.0

(a) State of Guanabara.

(b) Area of Information.

For the most recent year for which information was available, the rates for 19 countries varied from 4.4 per 100,000 to over 200 per 100,000 population. In three-fourths of the countries the rates were in excess

TABLE 20. DEATHS FROM GASTRITIS, ENTERITIS, ETC. (543,571,572) WITH RATES PER 100,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960
Brazil (a)	21 239	21 464	19 239	...	217.9	214.6	192.0	...
Canada	869	1 070	995	974	5.2	6.3	5.7	5.5
Chile	6 337	7 074	6 386	6 613	89.0	96.9	85.5	86.7
Colombia	16 638	18 153	18 373	...	125.8	134.2	132.9	...
Costa Rica	1 582	1 260	1 384	1 408	153.1	117.1	122.9	120.2
Cuba	2 468	2 784	2 887	...	38.6	42.7	43.3	...
Dominican Republic	2 399	3 351	5 862	...	88.7	119.8	202.6	...
Ecuador	5 256	5 517	...	...	133.8	136.3	...	...
El Salvador	3 963	4 106	2 370	1 714	168.6	168.7	94.0	65.6
Guatemala	9 901	10 056	8 518	...	286.9	283.6	233.2	...
Honduras	...	634	468	...	...	34.7	24.8	...
Mexico	68 254	64 351	54 239	59 553	217.2	198.9	162.9	170.5
Nicaragua	1 486	2 036	1 458	1 482	111.6	147.8	102.4	100.3
Panama	606	764	752	688	62.3	76.4	73.2	65.2
Paraguay (b)	248	473	536	748	32.4	59.6	63.1	82.9
Peru (c)	1 217	2 876	3 685	...	44.7	91.5	103.4	...
United States	8 015	7 870	7 780	...	4.7	4.5	4.4	...
Uruguay	581	386	517	...	21.3	14.0	18.5	...
Venezuela	5 480	5 776	4 585	4 468	85.3	86.6	66.2	62.2
Bermuda	1	1	5	-	2.4	2.4	11.9	-
British Guiana	556	...	...	...	107.3	...	...	...
British Honduras	147	111	77	103	177.1	129.1	87.5	113.2
Canal Zone	-	2	-	1	-	4.7	-	2.4
Falkland Islands	-	-	-	-	-	-	-	-
French Guiana	...	1	9	5	...	3.2	29.0	16.1
Netherlands Antilles	10	17	11	...	5.4	9.1	5.9	...
Puerto Rico	1 173	1 258	1 003	...	51.9	54.7	43.2	...
St. Pierre-Miquelon	-	-	-	-	-	-	-	-
Surinam	47	26	45	48	19.7	10.5	17.4	17.8
Virgin Islands (U.K.)	10	4	5	2	142.9	57.1	71.4	28.6
Virgin Islands (U.S.)	11	8	13	...	37.9	26.7	41.9	...
West Indies Federation								
Antigua	55	50	70	75	105.8	94.3	129.6	136.4
Barbados	81	90	85	96	36.2	39.6	37.0	41.2
Grenada	123	194	138	164	144.7	225.6	156.8	184.3
St. Kitts-Nevis-Anguilla	91	130	79	...	168.5	236.4	141.1	...
St. Lucia	188	192	130	166	226.5	228.6	152.9	193.0

- (a) State of Guanabara and capitals of other States.
 (b) Area of Information.
 (c) Principal cities.

TABLE 21. DEATHS FROM AVITAMINOSIS AND OTHER METABOLIC DISEASES (280-289) WITH RATES PER 100,000 POPULATION IN THE AMERICAS, 1957-1960

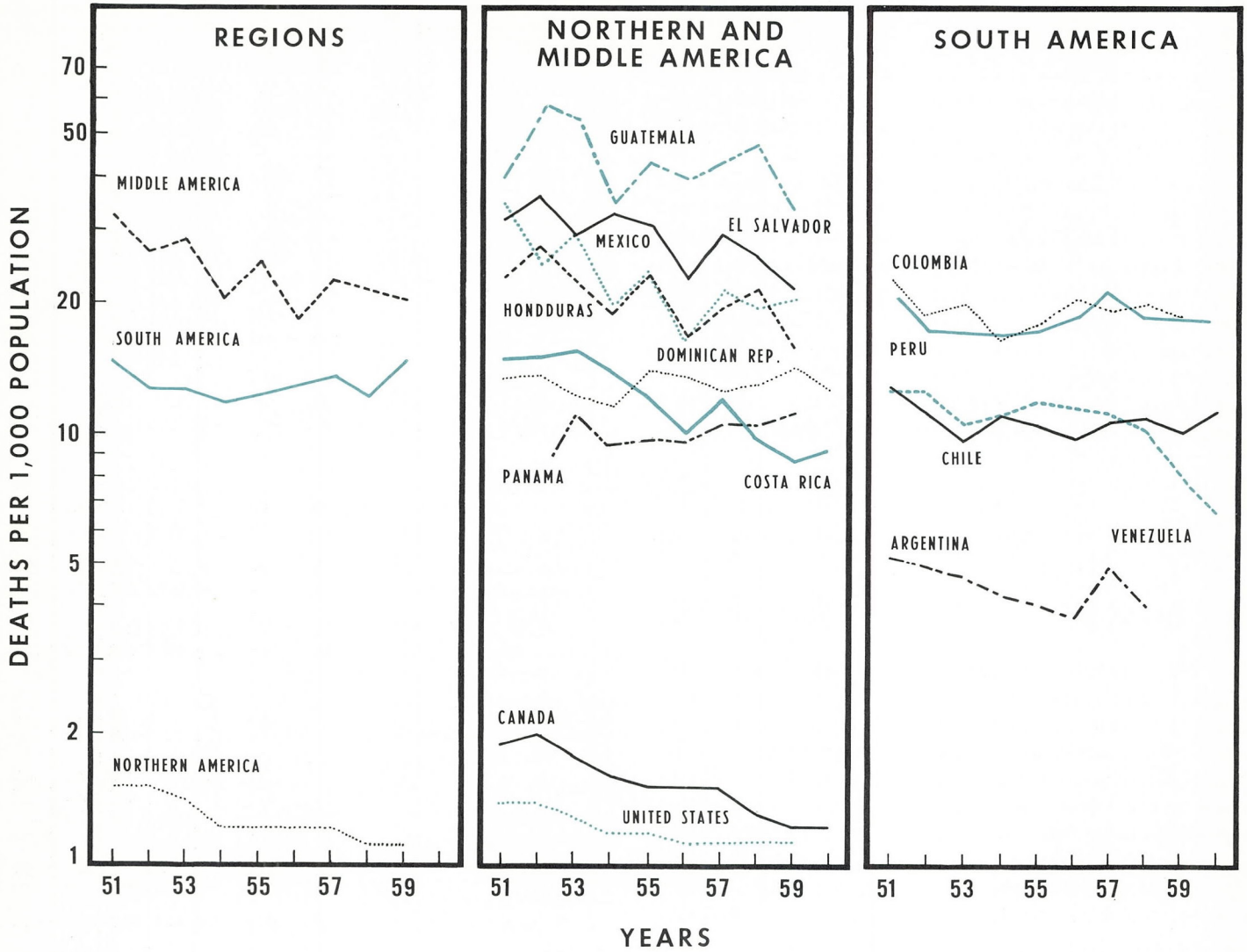
Country	Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960
Canada	179	219	233	231	1.1	1.3	1.3	1.3
Chile	720	236	194	132	10.1	3.2	2.6	1.7
Colombia (a)	3 741	4 339	4 594	...	28.3	32.1	33.2	...
Costa Rica	73	63	65	85	7.1	5.9	5.8	7.3
Ecuador	252	280	...	...	6.4	6.9	...	...
El Salvador	534	702	417	376	22.7	28.8	16.5	14.4
Guatemala	934	928	735	...	27.1	26.2	20.1	...
Honduras	...	359	432	...	...	19.6	22.9	...
Mexico	6 212	5 821	5 332	...	19.8	18.0	16.0	...
Nicaragua	15	31	30	20	1.1	2.2	2.1	1.4
Paraguay (b)	15	18	32	51	2.0	2.3	3.8	5.7
United States (c)	1 314	2 270	3 431	...	0.8	1.3	1.9	...
Uruguay (a)	31	27	31	...	1.1	1.0	1.1	...
Venezuela	893	764	599	514	13.9	11.5	8.7	7.2

- (a) Avitaminosis and other nutritional deficiency states (280-286).
 (b) Data for Area of Information only.
 (c) Data for Alaska and Hawaii not available.

of 50 per 100,000 population. Some of the changes in the period are probably due to improvement or to changes in methods of classification of causes.

Measurement of nutritional deficiency is difficult from mortality statistics. The child suffering from a nutritional deficiency state may die from a concurrent communicable disease, from pneumonia, or on the death certificate the death may be ascribed to diarrheal disease. The number of deaths classified as due to causes in the group, avitaminosis and other nutritional deficiency states, categories 280-286 of the International Classification is small. Actually within this group deaths are usually in the category other avitaminosis and nutritional deficiency states (286). For example, in Venezuela in 1960 of the 514 deaths in the larger group, 487 or 95 per cent were classed as "286." Of these deaths 169 were specifically attributed to kwashiorkor (síndrome pluricarenal infantil). Moreover, deaths of infants due to nutritional deficiencies are often assigned to diseases of early infancy in category 772. Although presentation of the total effect of nutritional deficiency states on mortality is impossible, data in Table 21 show that even the limited information available under the present Classification procedures indicate the importance of nutritional deficiency as a health problem in several countries such as those in Central America and in tropical South America.

FIGURE 9
 DEATHS 1-4 YEARS OF AGE PER 1,000 POPULATION IN COUNTRIES IN THE THREE REGIONS
 OF THE AMERICAS, 1951- 1960



MATERNAL MORTALITY

TABLE 22. NUMBER OF MATERNAL DEATHS WITH RATES PER 1,000 LIVE BIRTHS IN THE AMERICAS, 1957-1960

Area	Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960
Brazil (a)	897	876	755	...	2.6	2.6	2.1	...
Canada	255	263	263	215	0.5	0.6	0.5	0.4
Chile	767	824	799	845	3.1	3.3	3.2	3.3
Colombia	1 645	1 684	1 537	...	2.9	2.9	2.5	...
Costa Rica	100	72	76	72	2.1	1.5	1.4	1.4
Dominican Republic	106	98	147	130	1.0	0.8	1.3	1.2
Ecuador	690	555	...	...	3.6	3.0	...	...
El Salvador	205	209	188	210	1.8	1.8	1.6	1.7
Guatemala	485	432	422	...	2.8	2.5	2.3	...
Honduras	...	223	212	...	...	2.8	2.7	...
Mexico	3 217	2 997	3 115	2 076	2.2	2.1	2.0	...
Nicaragua	106	122	111	103	1.9	2.1	1.8	1.7
Panama	88	79	97	...	2.3	2.1	2.4	...
Paraguay (b)	109	109	99	90	4.7	4.6	4.3	3.8
Peru	361	308	...	...	1.1	0.9	...	...
United States	1 752	1 587	1 592	...	0.4	0.4	0.4	...
Uruguay	93	76	69	...	1.7	1.3	...	...
Venezuela	380	394	408	353	1.4	1.4	1.3	1.1
Bermuda	3	2	2	-	2.8	1.9	1.7	-
British Guiana	89	...	...	...	3.9	...	...	...
British Honduras	10	4	8	6	2.8	1.0	2.0	...
Canal Zone	...	...	...	1	...	...	...	1.3
Falkland Islands	-	-	-	-	-	-	-	-
French Guiana	...	3	4	3	...	3.2	3.9	2.9
Martinique	6	9	3	4	0.6	0.9	0.3	0.4
Netherlands Antilles	8	4	4	...	1.2	0.6	0.6	...
Puerto Rico	69	62	60	...	0.9	0.8	0.8	...
St. Pierre - Miquelon	1	-	-	-	8.9	-	-	-
Surinam	16	18	10	16	1.5	1.6	0.8	1.3
Virgin Islands(US)	1	1	2	...	1.0	0.9	1.8	...
West Indies Fed.	8	8	7	10	4.5	4.4	3.8	5.0
Antigua	16	21	16	17	2.2	3.0	2.3	2.2
Barbados	12	5	5	5	2.6	1.2	1.2	...
Grenada	10	4	5	...	3.7	1.6	2.0	...
St. Kitts-Nevis-Anguilla	8	4	10	14	2.0	1.0	2.4	3.3
St. Lucia	56	65	51	43	1.9	2.2	1.7	...
Trinidad and Tobago	2 011	1 852	1 857	...	0.4	0.4	0.4	...
Northern America	4 511	4 419	4 539	...	2.1	2.0	1.9	...
Middle America(c)	5 047	4 847	3 612	...	2.4	2.3	2.3	...
South America(c)								

(a) State of Guanabara and capitals of other states with exceptions.

(b) Area of information only.

(c) Including countries and territories above except in specific years those with no information available.

Maternal deaths are those due to complications of pregnancy, childbirth and the puerperium and are classified under title numbers 640-689 of the International Classification of Diseases. Since accurate assignment of deaths to the categories 640-689 is dependent on information regarding the pregnancy or delivery, in areas with limited medical personnel and facilities, these facts may not be known. The underlying cause of a hemorrhage, septicemia or toxemia may be overlooked and thus the maternal death rates may be incomplete. The data in Table 22 indicate that in general the maternal death rates are high and are in excess of one death per 1,000 live births in Middle and South America. For these regions, the maternal death rates were five to six times the rates for North America.

ACTIVITIES IN MATERNAL AND CHILD HEALTH

Measurement of activities directed to the reduction of maternal mortality and the improvement of child health is incomplete without the inclusion of those in communicable disease prevention and control and in environmental health, which contribute towards such goals. However, only information on selected activities of health centers organized for mothers and children was obtained and this is presented in Table 23. Efforts are made to give care in the prenatal period, and in one of the countries over half and in two others over 40 per cent of the mothers received such care through health centers. This proportion was estimated from the number of persons receiving prenatal care in relation to the registered number of live births. However, in other countries, health centers were available or were used for such care for only a small number. For example, in the United States where private physicians are the source of medical care for a high proportion of the population only 4.7 per cent of the live births are estimated to be to mothers receiving prenatal care through health centers.

From information in the questionnaire, the number of infants who received care through health centers and the corresponding proportions of the live births have been obtained. The ratios of the number receiving pre-school care to the number receiving care in in-

fancy have also been calculated. Since in some areas children in this age group, as well as in infancy, suffer excessive morbidity and mortality, their care is an important activity of health services.

TABLE 23. ACTIVITIES IN MATERNAL AND CHILD HEALTH IN HEALTH CENTERS
IN THE AMERICAS, 1960

Area	Centers	Live births	Number receiving care					Ratio to infant care
			Prenatal care		Infant care		Pre-school care	
			Number	Per 100 live births	Number	Per 100 live births	Number	
Bolivia	15	85 230	3 659	4.3	8 280	9.7	25 550	3.1
Chile	607	256 674	...	...	...	...	...	...
Colombia (a)	797	595 305	150 680	25.3	98 998	16.6	120 115	1.2
Costa Rica	68	b) 53 521	21 672	40.5	16 713	31.2	25 028	1.5
Cuba	46	...	...	...	...	...	...	...
Dominican Republic	2	110 102	48 986	44.5	...	...	...	...
Ecuador	20	b) 199 500	19 746	9.9	...	...	...	...
El Salvador	66	121 350	28 094	23.2	23 833	19.6	12 959	0.5
Guatemala	58	b) 181 740	4 883	2.7	2 379	1.3	2 361	1.0
Honduras	12	b) 78 874	4 208	5.3	...	...	...	...
Mexico	1 186	b) 1 589 606	231 290	14.6	c) 47 079	3.0	1 050 361	22.3
Nicaragua	37	60 235	5 736	9.5	...	...	29 558	...
Panama	13	41 434	11 047	26.7	8 413	20.3	14 008	1.7
Paraguay	56	44 525	24 014	53.9	16 619	37.3	24 391	1.5
Peru	94	367 862	33 661	9.2	104 338	28.4	117 872	1.1
United States (b)	...	4 261 896	200 254	4.7	613 201	14.4	856 500	1.4
Venezuela	524	324 132	115 652	35.7	83 418	25.7	26 438	0.3
Bahama Islands	2	b) 3 154	1 877	59.5	...	...	...	...
Bermuda	10	b) 1 182	238	20.1	...	...	606	...
British Guiana	130	b) 24 458	10 660	43.6	12 009	49.1	15 551	1.3
British Honduras	24	b) 4 016	3 291	81.9	3 395	84.5	...	...
Falkland Islands	1	54	54	100.0	...	...	...	...
French Guiana	1	1 042	430	41.3	...	...	...	...
Guadeloupe	35	10 474	1 820	17.4	1 872	17.9	...	...
Martinique	55	10 400	9 212	88.6	10 629	102.2	5 060	0.5
Puerto Rico	...	d) 76 298	b) 49 686	65.1	b) 23 214	30.4	b) 24 636	1.1
St. Pierre and Miquelon	-	98	104	106.1	168	171.4	202	1.2
Virgin Islands (U.S.) (b)	...	1 085	1 110	102.3	844	77.8	1 365	1.6
West Indies Federation								
Antigua	11	b) 1 831	711	38.8	1 099	60.0	...	...
Barbados	3	b) 7 110	1 387	19.5	2 565	36.1	...	...
Dominica	3	2 815	1 076	38.2	...	...	...	...
St. Kitts-Nevis-Anguilla (b)	24	2 512	2 115	84.2	...	...	e) 8 751	...
St. Lucia (b)	15	4 108	3 194	77.8	...	...	f) 1 663	...

(a) Agencies of public health administrations and hospitals. (b) 1959. (c) Data of 589 establishments. (d) 1958.
(e) Under 4 years of age. (f) Under 6 years of age.

COMMUNICABLE DISEASES

The principal causes of death and the proportions of deaths due to infectious diseases in Chapter I indicate the continuing loss of life from communicable diseases in many areas of the Americas. In addition to mortality statistics, reports of notifiable diseases are useful in considering the progress of control or eradication programs. Detailed data regarding notifiable diseases are given in publications of the Organization^(1,2) which contain descriptions of reporting areas and analysis and interpretation of trends of reported cases. Since the National Health Services were the sources of data for these reports and for this document, the information already published is being used here. Only data for selected diseases for the four-year period, with trends of mortality and morbidity as revealed by reported cases, are presented.

Completeness of reporting depends on many factors, including availability of medical facilities and health services and severity of the disease. With the development of eradication and control programs, case-finding procedures are extended and as a result reporting is usually improved. Thus, data should be interpreted only in relation to local situations.

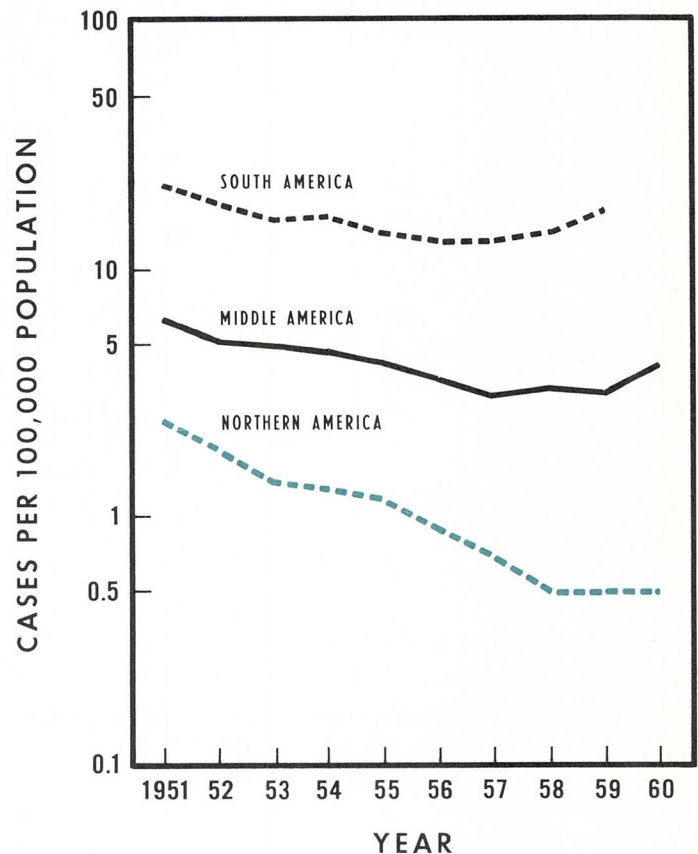
DIPHTHERIA

Diphtheria continues to produce many cases and deaths in the Americas. The number of reported cases and deaths in the four-year period indicate that in general no marked reduction is occurring in South and Middle American countries (Table 24). In a few, as Chile, an increase occurred in the four-year period, from a case rate of 14.4 per 100,000 population in 1957 to 38.9 in 1960. The death rate in 1960 of 5.3 per 100,000 population is indicative of a problem requiring attention in Chile and also in other areas. As seen in a later table, immunizations against diphtheria in Chile increased from 120,000 in 1957 to 470,000 in 1960. In Argentina a slight increase in the reported case rate occurred; the number of immunizations more than doubled in 1960.

The trend of rates of reported cases of diphtheria for Northern, Middle, and South America for the ten-year period is seen in Table 25 and Figure 10. The slight upward trend in South and Middle America in

FIGURE 10

REPORTED CASES OF DIPHTHERIA PER 100,000 POPULATION, IN THREE REGIONS OF THE AMERICAS, 1951-1960



NOTE: EXCLUDING AREAS WITHOUT DATA

the last few years requires constant awareness of the problem of diphtheria throughout the Region and extension of the immunization program.

Information regarding diphtheria deaths was not available for all of the areas throughout the ten-year period. However, rates have been obtained for five countries of South America (Chile, Colombia, Peru,

^{1/} *Reported Cases of Notifiable Diseases in the Americas, 1949-1958*, Scientific Publications No. 48, PASB, 1960.

^{2/} *Reported Cases of Notifiable Diseases in the Americas, 1959-1960*, Scientific Publications No. 58, PAHO, 1962.

TABLE 24. NUMBER OF REPORTED CASES AND DEATHS FROM DIPHTHERIA WITH RATES PER 100,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Cases								Deaths							
	Number				Rate				Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960
Total	12 275	12 999	15 675	13 934												
Argentina	2 207	2 181	2 446	2 852	11.1	10.8	11.9	13.6	...	...	...	...	...	...	...	...
Bolivia	16	8	12	5	0.5	0.2	0.4	0.1	...	...	...	...	...	...	...	...
Brazil (a)	2 649	3 324	5 367	1 904	27.8	33.9	52.7	19.3	298	425	550	...	3.1	4.2	5.5	...
Canada (b)	142	66	38	53	0.9	0.4	0.2	0.3	20	7	-	7	0.1	0.0	-	0.0
Chile	1 027	1 209	2 009	2 966	14.4	16.6	26.9	38.9	155	210	326	405	2.2	2.9	4.4	5.3
Colombia (c)	1 724	1 926	1 536	1 321	14.3	15.8	12.2	9.8	461	562	472	482	3.5	4.2	3.4	3.4
Costa Rica	165	152	124	136	16.0	14.1	11.0	11.6	21	21	23	39	2.0	2.0	2.0	3.3
Cuba	224	156	316	551	3.5	2.4	4.7	8.1	41	37	62	...	0.6	0.6	0.9	...
Dominican Republic	320	590	371	449	11.8	21.1	12.8	15.0	68	88	67	...	2.5	3.1	2.3	...
Ecuador	441	432	354	351	11.2	10.7	8.5	8.1	117	144	...	...	3.0	3.6	...	...
El Salvador (c)	85	105	113	138	7.4	8.3	8.6	9.4	26	26	24	19	1.1	1.1	1.0	0.7
Guatemala	44	22	38	56	1.3	0.6	1.0	1.5	53	78	51	43	1.5	2.2	1.4	1.1
Haiti	15	60	55	65	0.4	1.8	1.6	1.9	...	...	...	...	...	...	...	...
Honduras	...	...	1	5	...	...	0.1	0.3	6	9	11	10	0.3	0.5	0.6	0.5
Mexico	700	635	679	767	2.2	2.0	2.0	2.2	447	425	446	624	1.4	1.3	1.3	1.8
Nicaragua	34	47	64	126	2.6	3.4	4.5	8.5	-	8	8	13	-	0.6	0.6	0.9
Panama	28	29	28	33	2.9	2.9	2.7	3.1	13	8	11	13	1.3	0.8	1.1	1.2
Paraguay (c,d)	43	29	62	66	4.2	2.6	3.6	3.7	11	15	29	18	1.4	1.9	3.4	2.0
Peru (c,e)	199	139	161	84	4.2	2.9	3.0	1.5	22	26	27	...	0.8	0.8	0.8	...
United States	1 217	918	936	918	0.7	0.5	0.5	0.5	82	74	72	...	0.0	0.0	0.0	...
Uruguay	55	42	84	68	2.0	1.5	3.0	2.4	4	5	6	...	0.1	0.2	0.2	...
Venezuela (c)	653	641	615	661	18.1	17.2	15.9	16.5	72	70	54	58	1.1	1.0	0.8	0.8
Bahama Islands	1	-	-	-	1.0	-	-	-	-	-	-	...	-	-	-	...
Bermuda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
British Guiana	23	74	23	11	4.4	13.9	4.2	1.9	11	16	...	...	2.1	3.0	...	...
British Honduras	1	6	12	15	1.2	7.0	13.6	16.5	1	1	5	2	1.2	1.2	5.7	2.2
Canal Zone	-	10	-	4	-	23.3	-	9.5	-	-	-	-	-	-	-	-
Falkland Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
French Guiana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Guadeloupe	9	-	2	2	3.6	-	0.8	0.7	-	-	2	1	-	-	0.8	0.4
Martinique	-	9	12	-	-	3.4	4.4	-	-	-	4	1	-	-	1.5	0.4
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antilles	3	4	10	8	1.6	2.1	5.3	4.2	-	-	-	...	-	-	-	...
Puerto Rico	62	55	74	142	2.7	2.4	3.2	6.0	11	5	11	...	0.5	0.2	0.5	...
St. Pierre and Miquelon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surinam	62	17	11	4	26.1	6.9	4.2	1.5	6	-	2	-	2.5	-	0.8	-
Virgin Islands (U.K.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Virgin Islands (U.S.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West Indies Fed.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antigua	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barbados	8	2	-	-	3.6	0.9	-	-	4	1	-	-	1.8	0.4	-	-
Dominica	-	3	-	-	-	5.2	-	-	-	1	-	-	-	1.7	-	-
Grenada	-	-	-	1	-	-	-	1.1	-	-	-	1	-	-	-	1.1
Jamaica	34	38	22	77	2.2	2.4	1.4	4.8	...	...	...	...	...	...	...	...
Montserrat	...	...	...	...	...	...	...	...	...	-	...	-	...	-	...	-
St. Kitts-Nevis-Anguilla	1	4	2	1	1.9	7.3	3.6	1.8	-	1	1	-	-	1.8	1.8	-
St. Lucia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Vincent	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trinidad and Tobago	83	66	98	94	10.8	8.4	12.1	11.3	5	5	7	8	0.7	0.6	0.9	1.0

(a) State of Guanabara and capitals of other states, with exceptions. Data of reported cases incomplete for 1960.

(b) Excluding Northwest Territories 1957 and 1958, for case data. (c) Reporting area, for case data.

(d) Area of Information, for death data. (e) Principal cities, for death data.

TABLE 25. NUMBER OF REPORTED CASES OF DIPHTHERIA WITH RATES PER 100,000 POPULATION IN THREE REGIONS OF THE AMERICAS, 1951-1960 (a)

Year	Number of cases			Rate		
	Northern America	Middle America	South America	Northern America	Middle America	South America
1951	4240	3210	12721	2.5	6.4	22.3
1952	3277	2670	10871	1.9	5.2	18.9
1953	2493	2602	9764	1.4	5.0	16.1
1954	2251	2505	10103	1.3	4.7	16.8
1955	2123	2306	9104	1.2	4.2	14.1
1956	1710	2022	8885	0.9	3.6	13.2
1957	1359	1817	9099	0.7	3.1	13.2
1958	984	1993	10022	0.5	3.3	14.3
1959	974	2021	12680	0.5	3.2	17.4
1960	971	2670	b) ...	0.5	4.1	b) ...

(a) Excluding areas without data.

(b) Incomplete for Brazil.

Uruguay, and Venezuela), for countries of Middle America, excluding Cuba and Haiti, and for the two countries of Northern America. From death rates for

the three regions, on the basis of data from these 15 countries, it is clear that the rate for Northern America has declined to a very low level; in Middle America, the decline has been at a relatively high level; while in South America, the decline occurred in the first five years to a low in 1955 which was followed by a slight increase (Figure 11). From a low in 1954-1955, increases in death rates occurred in Chile and Colombia.

The number of persons immunized against diphtheria in the four-year period are shown in Table 26. In many of these countries persons were given diphtheria immunization in combination with tetanus, pertussis or typhoid and paratyphoid vaccine. In several countries immunizations against diphtheria apparently increased in the four-year period.

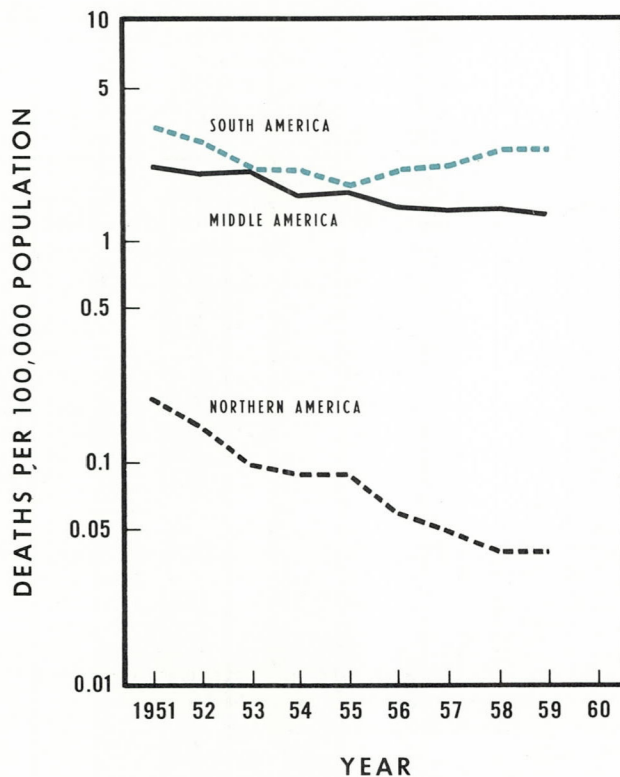
TABLE 26. PERSONS IMMUNIZED AGAINST DIPHTHERIA IN THE AMERICAS, 1957-1960

Area	1957	1958	1959	1960
Argentina	...	...	244 207	634 226
Brazil (a)	...	39 937	34 889	27 405
Canada	1 103 300	1 209 200	1 628 300	1 203 000
Chile	120 099	182 004	222 906	469 823
Colombia	127 318	268 760	342 120	340 474
Costa Rica	2 827	4 696	4 261	9 344
Cuba	...	...	...	80 017
Dominican Republic	30 794	126	9	131
Ecuador	5 388	8 436	16 452	11 381
El Salvador	16 914	13 503	16 219	15 147
Guatemala	47 240	40 682	30 063	28 837
Haiti	581	210	596	596
Honduras	...	5 281	20 843	20 636
Mexico	344 320	326 703	337 129	416 324
Nicaragua	2 244	2 876	4 291	28 713
Panama	...	...	1 009	1 651
Paraguay	2 797	5 077	5 731	3 329
Peru	33 074	117 298	3 042	82 727
United States (b)	2 920 585	3 121 328	3 882 810	...
Venezuela	114 248	71 997	138 450	263 713
Bermuda (b)	205	970	1 045	1 345
British Guiana	115	7	71	32
British Honduras	6 547	7 222	7 875	8 420
Canal Zone	...	...	...	4 206
Falkland Islands	17	19	36	24
French Guiana	484	781	682	1 009
Guadeloupe	9 400	9 500	15 870	20 156
Martinique	10 630	14 947	14 132	8 952
Puerto Rico (b)	45 844	59 277	62 721	...
St. Pierre and Miquelon	80	178	130	160
Surinam	...	...	...	3 750
Virgin Islands (U.K.)	...	...	...	55
Virgin Islands (U.S.)(b)	510	794	741	...
West Indies Fed.	...	...	...	2 181
Antigua	...	...	...	5 218
Barbados (b)	1 937	2 237	4 466	37 757
Jamaica	...	...	...	...

(a) Data for 13 cities in 1958; 10 in 1959 and 1960.

(b) Governmental only.

FIGURE 11
DEATHS FROM DIPHTHERIA PER 100,000 POPULATION, IN COUNTRIES OF THREE REGIONS OF THE AMERICAS, 1951-1960

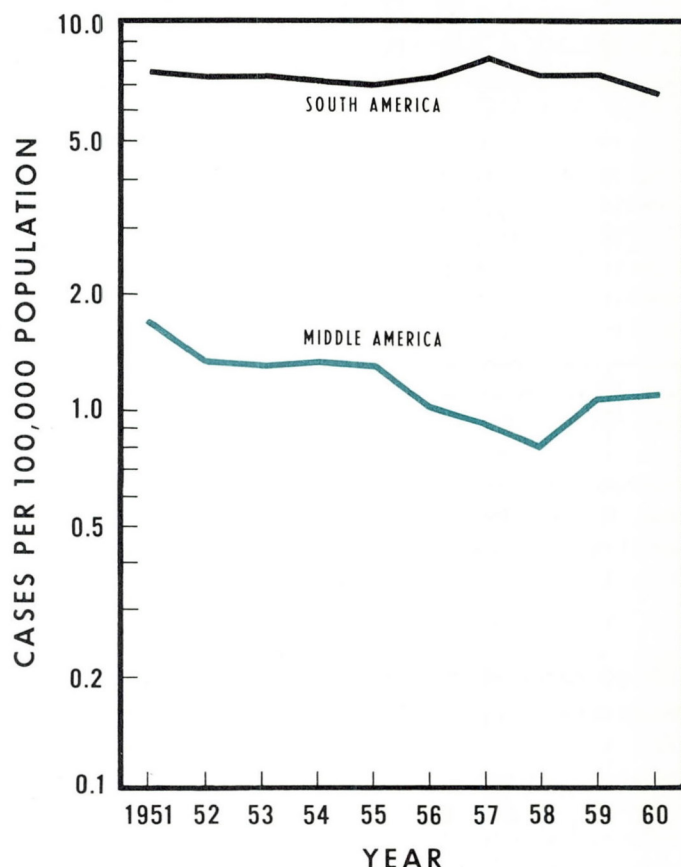


NOTE: EXCLUDING 2 COUNTRIES OF MIDDLE AMERICA AND 5 OF SOUTH AMERICA

FIGURE 12
 REPORTED CASES OF LEPROSY PER 100,000
 POPULATION IN MIDDLE AND SOUTH AMERICA,
 1951-1960

LEPROSY

Cases of leprosy continue to be reported each year in nearly every area of the Americas. The total number of newly-diagnosed cases reported per year has varied from 8,522 in 1951 to 10,304 in 1957. Although some variation occurs from year to year, probably due in part to extent of case-finding activities, in general it is evident that the number of reported cases per 100,000 population remains relatively constant for Middle and South America (Figure 12). The number of reported cases for the four-year period, with rates per 100,000 population, are given in Table 27. Rates based on reported cases have usually been 10.0 or more per 100,000 population in Brazil, Paraguay, Venezuela, British Guiana, French Guiana, Guadeloupe, Martinique, and Surinam.



NOTE: EXCLUDING AREAS WITHOUT DATA

TABLE 27. NUMBER OF REPORTED CASES OF LEPROSY WITH RATES PER 100,000
 POPULATION IN COUNTRIES OF THE AMERICAS, 1957-1960

Area	Number of cases				Rate				Area	Number of cases				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960		1957	1958	1959	1960	1957	1958	1959	1960
Argentina	455	356	438	442	2.3	1.8	2.1	2.1	British Guiana	121	76	...	...	23.4	14.3	...	...
Bolivia	4	12	109	33	0.1	0.4	3.2	1.0	British Honduras	-	-	-	-	-	-	-	-
Brazil	7 068	7 129	7 468	6 696	11.0	10.8	11.0	9.5	Canal Zone	1	-	-	1	1.9	-	-	2.4
Canada (a)	3	2	-	2	0.0	0.0	-	0.0	Falkland Islands	-	-	-	-	-	-	-	-
Chile	-	-	18	16	-	-	0.2	0.2	French Guiana	38	41	38	64	126.7	132.3	122.6	206.5
Colombia (b)	825	740	594	526	6.9	6.1	4.7	3.9	Guadeloupe	74	54	60	41	29.5	21.0	22.7	15.2
Costa Rica	44	34	35	57	4.3	3.2	3.1	4.9	Martinique	110	123	75	53	42.6	46.6	27.7	19.1
Cuba	32	27	190	134	0.5	0.4	2.9	2.0	Netherlands Antilles	3	7	3	2	1.6	3.7	1.6	1.1
Dominican Republic	9	78	40	42	0.3	2.8	1.4	1.4	Puerto Rico	2	1	-	2	0.1	0.0	-	0.1
Ecuador	...	...	...	...	...	...	...	...	St. Pierre and Miquelon	-	-	-	-	-	-	-	-
El Salvador (b)	25	8	50	10	2.2	0.6	3.8	0.7	Surinam	271	139	112	119	113.9	56.0	43.2	44.1
Guatemala	3	...	4	1	0.1	...	0.1	0.0	Virgin Islands (U. K.)	-	-	-	-	-	-	-	-
Haiti	5	1	6	9	0.1	0.0	0.2	0.3	Virgin Islands (U. S.)	1	-	2	-	3.4	-	6.5	-
Honduras	-	-	-	2	-	-	-	-	West Indies Fed.	-	-	-	-	-	-	-	-
Mexico	119	71	111	115	0.4	0.2	0.3	0.3	Antigua	1	2	3	4	1.9	3.8	5.6	7.3
Nicaragua	11	13	12	138	0.8	0.9	0.8	9.3	Barbados	3	-	2	-	1.3	-	0.9	-
Panama	7	3	-	4	0.7	0.3	-	0.4	Dominica	3	-	-	-	5.3	-	-	-
Paraguay (b)	404	240	221	285	39.6	21.4	12.8	16.1	Grenada	...	...	5	-	...	...	5.7	-
Peru (b)	97	75	63	162	2.0	1.5	1.2	2.9	Jamaica	34	23	28	16	2.2	1.5	1.8	1.0
United States	49	57	50	54	0.0	0.0	0.0	0.0	Montserrat	...	...	...	...	...	...	...	...
Uruguay	12	10	19	23	0.4	0.4	0.7	0.8	St. Kitts-Nevis-Anguilla	2	-	5	-	3.7	-	8.9	-
Venezuela (b)	392	263	408	403	10.9	7.1	10.6	10.1	St. Lucia	2	2	3	-	2.4	2.4	3.5	-
Bahama Islands	1	-	1	-	1.0	-	1.0	-	St. Vincent	1	1	1	2	1.3	1.3	1.3	2.5
Bermuda	-	-	-	-	-	-	-	-	Trinidad and Tobago	76	38	56	109	9.9	4.8	6.9	13.1

(a) Excluding Northwest Territories, 1957 and 1958. (b) Reporting area.

MALARIA

An account of the malaria eradication program in the Americas is contained in a separate document.⁽³⁾ The extent of case-finding programs in each country and the number of laboratory confirmations of malaria from examination of blood smears appear in that report, by single years, since initiation of the malaria eradication program.

Official data on notifiable diseases are the source of information on the numbers of reported cases of malaria in countries; official vital statistics provide data on malaria certified as the cause of death. These official statistics on malaria will be used for this report. In several countries, laboratory confirmation is required for reporting of cases of malaria. However, often the statement of the certifier as to cause of death is accepted without laboratory evidence of the disease. Thus, it is possible that many cases and deaths are reported as malaria without sufficient confirmation of the diagnosis.

To obtain accurate data on morbidity and mortality from malaria, coordination of activities in the program of malaria eradication, with reporting of notifiable diseases and registration of deaths will be needed. When the number of cases and deaths have been drastically reduced, investigations can be carried out to ensure that all cases reported as malaria have been confirmed by laboratory examination and that the diagnosis of malaria is justified for all deaths certified as due to this disease.

In the surveillance phase of a malaria eradication program and after eradication is completed, personnel employed in case reporting and death registration systems must be constantly alert to the importance of a newly-reported case or death from malaria which would require immediate investigation.

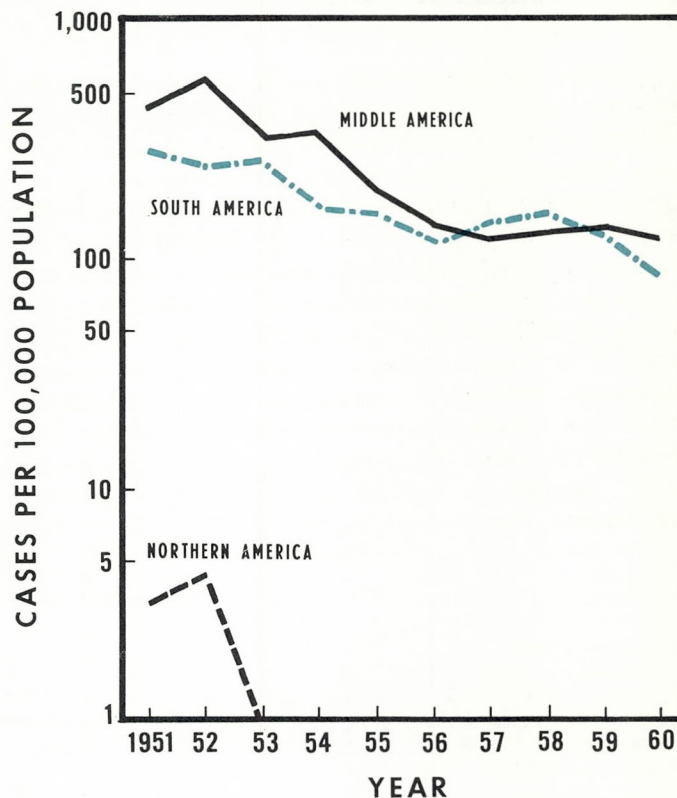
Inaccuracies in official case-reporting systems, due to incompleteness of reporting because of lack of medical facilities and health services, are continuing problems which necessitate introduction of special case-finding procedures in malaria eradication programs.

Irrespective of deficiencies in data of deaths attributed to malaria as well as of case reports, information available from these two systems serves a valuable function. The importance of improving the systems will become increasingly evident as the malaria eradication program enters its final phases.

The number of reported cases and deaths for the four-year period, with rates per 100,000 population,

FIGURE 13

REPORTED CASES OF MALARIA PER 100,000 POPULATION, IN THREE REGIONS OF THE AMERICAS, 1951-1960



NOTE: EXCLUDING BRAZIL AND AREAS WITHOUT DATA

are shown in Table 28. Interpretation of changes in each country or area is dependent in large part on understanding the activities in the malaria eradication program. Notwithstanding extension of case-finding, declines have occurred in many areas which are reflected in case and death rates. Although comparisons are difficult, for the reasons explained, the total number of reported cases of malaria in the Americas has declined; the total for 1960 was 169,339.

Case rates calculated for the three regions of the Americas are shown in Table 29 and Figures 13 and 14. The decline in Northern America was from 3.4 to 0.04 per 100,000 population. By the end of the period the rates were negligible in this region. The reported case rate for Middle America decreased from approximately 464 to 124 per 100,000 population, while in South America it fell from 289 to 81 per 100,000

^{3/} Report on the Status of Malaria Eradication in the Americas, X Report, CSP16/20. XVI Pan American Sanitary Conference, PAHO, 1962.

TABLE 28. NUMBER OF REPORTED CASES AND DEATHS FROM MALARIA WITH RATES PER 100,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Cases								Deaths							
	Number				Rate				Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960
Total	183 518	205 446	213 168	169 339												
Argentina	791	1 096	5 351	1 975	4.0	5.4	26.0	9.4	...	...	...	...	...	...	...	...
Bölvia	740	1 774	943	614	22.3	52.8	27.7	17.8	...	...	...	...	...	...	...	...
Brazil (a)	b) 18 488	b) 22 908	c) 42 072	c) 30 960	b) 28.8	b) 34.7	c) 61.8	c) 44.1	154	123	70	...	1.6	1.2	0.7	...
Canada (d)	1	2	-	5	0.0	0.0	-	0.0	1	-	-	2	0.0	-	-	0.0
Chile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Colombia (e)	76 596	79 554	60 459	37 273	636.9	650.8	480.4	275.8	1 576	1 492	1 308	1 224	11.9	11.0	9.5	8.7
Costa Rica	1 699	2 544	c) 1 900	c) 1 995	164.5	236.4	c) 168.7	c) 170.4	98	24	31	15	9.5	2.2	2.8	1.3 ✓
Cuba	270	128	141	f) 1 290	4.2	2.0	2.1	19.0	15	26	27	...	0.2	0.4	0.4	...
Dominican Republic	1 533	2 676	c) 4 491	c) 5 548	56.7	95.7	c) 155.2	c) 185.3	1 162	949	950	...	43.0	33.9	32.8	...
Ecuador	1 655	4 945	c) 5 532	c) 9 337	42.1	122.1	c) 132.1	c) 216.3	1 087	898	...	...	27.7	22.2	...	...
El Salvador (b)	6 661	9 351	17 521	10 066	283.4	384.2	695.3	385.4	719	704	530	444	30.6	28.9	21.0	17.0 ✓
Guatemala	11 066	13 224	c) 7 894	c) 3 387	320.7	372.9	c) 216.2	c) 90.0	6 570	6 238	5 225	...	190.4	175.9	143.1	...
Haiti	15 219	25 943	31 184	38 586	449.7	757.7	900.2	1 100.9	...	...	...	...	...	...	...	...
Honduras	4 856	14 366	14 650	6 303	274.5	785.9	776.4	322.7	1 839	2 009	1 704	727	104.0	109.9	90.3	37.2
Mexico	20 333	7 092	1 416	2 709	64.7	21.9	4.3	7.8	16 653	14 575	9 398	6 426	53.0	45.1	28.2	18.4
Nicaragua (c)	746	1 154	1 875	7 528	56.0	83.7	131.7	509.7	779	844	727	731	58.5	61.2	51.1	49.5
Panama	7 130	5 216	c) 5 017	c) 4 463	732.8	521.6	c) 488.5	c) 423.0	186	106	84	73	19.1	10.6	8.2	6.9
Paraguay (e, g)	461	260	448	388	45.2	15.0	25.9	21.9	13	14	4	5	1.7	1.8	0.5	0.6
Peru (e, h)	8 874	8 409	4 796	2 487	186.0	172.8	89.5	44.5	22	28	28	...	0.8	0.9	0.8	...
United States	138	86	72	72	0.1	0.0	0.0	0.0	14	6	7	...	0.0	0.0	0.0	...
Uruguay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Venezuela	782	816	911	1 674	12.2	12.2	13.2	23.3	12	3	3	5	0.2	0.0	0.0	0.1
Bahama Islands	-	-	-	-	-	-	-	-	-	-	-	...	-	-	-	...
Bermuda	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
British Guiana	4	114	175	676	0.8	21.4	31.9	119.6	4	4	...	...	0.8	0.8	...	...
British Honduras	234	288	c) 1 017	c) 196	281.9	334.9	c) 155.7	c) 215.4	7	7	4	3	8.4	8.1	4.5	3.3
Canal Zone	70	103	26	20	134.6	239.5	61.9	47.6	-	-	-	-	-	-	-	-
Falkland Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
French Guiana	23	6	6	7	76.7	19.4	19.4	22.6	-	-	-	1	-	-	-	3.2
Guadeloupe	-	3	-	2	-	1.2	-	0.7	32	25	24	13	12.7	9.7	9.1	4.8
Martinique	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands Antilles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puerto Rico	1	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-
St. Pierre and Miquelon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surinam	288	146	c) 2 703	c) 997	121.0	58.9	c) 103.6	c) 369.3	13	5	1	4	5.5	2.0	0.4	1.5
Virgin Islands (U. K.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Virgin Islands (U. S.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West Indies Federation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antigua	-	j) 2	-	-	-	j) 3.8	-	-	-	-	-	-	-	-	-	-
Barbados	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dominica	55	71	c) 46	c) 7	64.7	122.4	c) 78.0	c) 11.7	-	1	3	-	-	1.7	5.1	-
Grenada	...	...	c) 2	-	...	...	c) 2.3	-	1	2	-	-	1.2	2.3	-	-
Jamaica	4 239	2 966	2 420	761	272.1	188.0	151.3	47.0	...	...	...	...	...	...	...	...
Montserrat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Kitts-Nevis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anguilla	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
St. Lucia	295	67	c) 3	-	355.4	79.8	c) 3.5	-	16	4	1	-	19.3	4.8	1.2	-
St. Vincent	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trinidad and Tobago	270	138	c) 97	c) 13	35.2	17.5	c) 12.0	c) 1.6	6	4	-	2	0.8	0.5	-	0.2

(a) Case data refer to whole country, death data to State of Guanabara and capitals of other states, with exception. Data are incomplete for 1960. (b) Positive slides, for case data. (c) Confirmed cases. (d) Excluding Northwest Territories 1957 and 1958, for case data. (e) Reporting area, for case data. (f) Reports of 1625 positive slides were received from the National Malaria Eradication Service for 1960. (g) Area of information, for death data. (h) Principal cities, for death data. (i) Deaths not medically certified (5101) were included to provide comparable data. (j) Imported.

TABLE 29. NUMBER OF REPORTED CASES OF MALARIA WITH RATES PER 100,000 POPULATION, IN THREE REGIONS OF THE AMERICAS, 1951-1960 (a)

Year	Number			Rate		
	Northern America	Middle America	South America	Northern America	Middle America	South America
1951	5 658	236 302	139 481	3.37	464.4	289.3
1952	7 138	270 677	117 784	4.18	518.7	245.4
1953	1 421	172 512	134 866	0.82	332.2	261.2
1954	723	192 643	95 865	0.41	351.6	176.9
1955	525	109 977	94 879	0.29	195.8	163.5
1956	242	80 624	82 907	0.13	139.9	137.4
1957	139	74 677	90 214	0.07	122.6	145.5
1958	88	85 332	97 120	0.05	136.4	153.2
1959	72	89 700	81 324	0.04	139.4	123.4
1960	77	82 874	55 428	0.04	124.2	81.4

(a) Excluding Brazil; excluding areas for which data were not available, for certain years.

population. Data for Brazil have been excluded since the change from reporting all cases to only confirmed cases resulted in a drop from over 383,000 in 1955 to 18,000 in 1956.

FIGURE 14

REPORTED CASES OF MALARIA PER 100,000 POPULATION IN NORTHERN AMERICA, 1951-1960

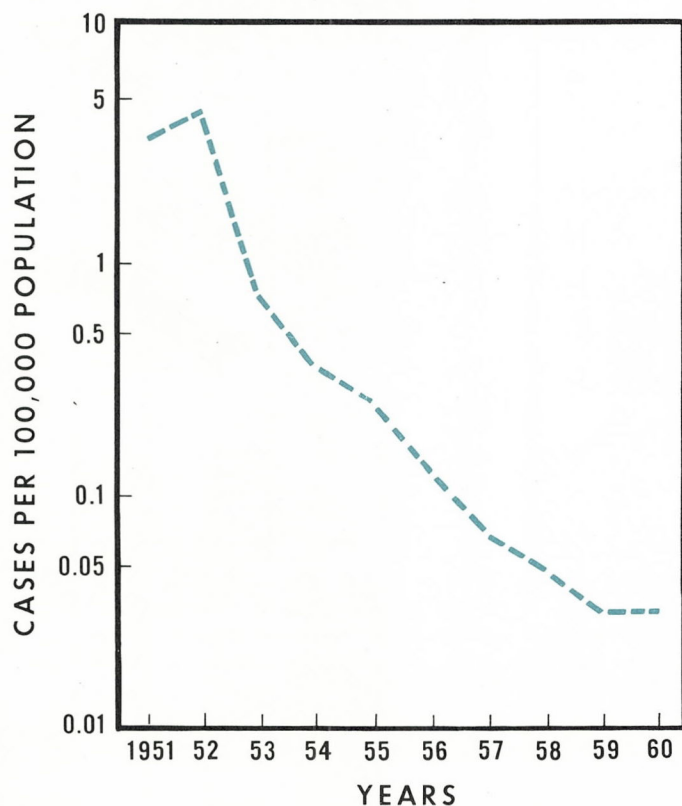
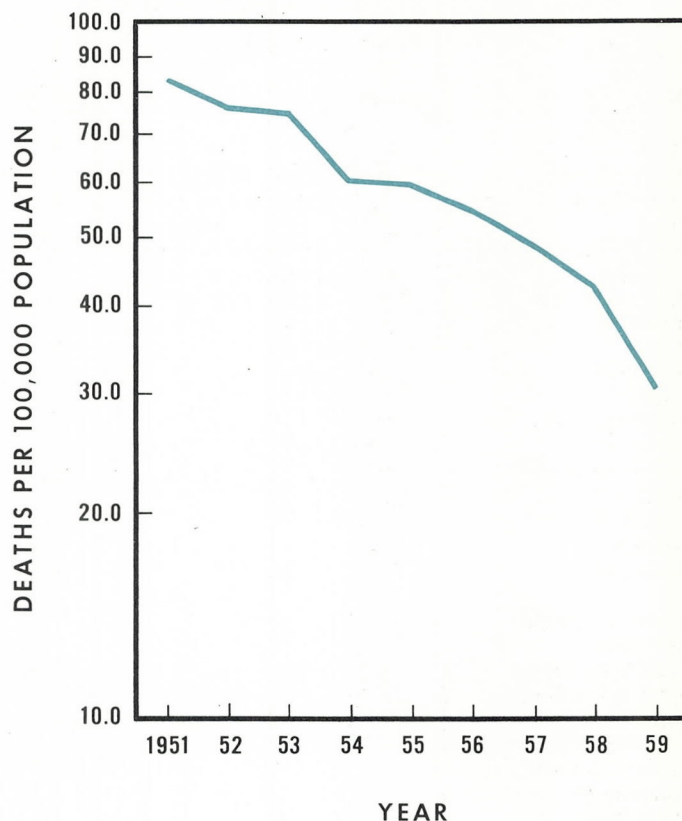


FIGURE 15

DEATHS FROM MALARIA PER 100,000 POPULATION IN EIGHT COUNTRIES OF LATIN AMERICA, 1951-1959



Presentation of data on mortality from malaria for the decade is difficult because of lack of information from several countries with large malaria problems, such as Brazil, Ecuador, Haiti, and Peru. Although data were available for Chile, Uruguay, and Venezuela, the disease was already eradicated from Chile, and never was present in Uruguay, and only a few deaths from malaria occur each year in Venezuela. Thus, the numbers of deaths from malaria were added for seven countries in Middle America and for Colombia in South America for study of the trend of mortality in countries with malaria. All of these countries now have programs for eradication of the disease under way. The trend of malaria mortality in the eight countries for 1951-1959 is shown in Figure 15. The death rate for this area decreased from approximately 85 deaths per 100,000 population in 1951 to 31 per 100,000 population in 1959, a decline of more than 60 per cent in eight years.

TABLE 30. NUMBER OF REPORTED CASES AND DEATHS FROM MEASLES WITH RATES PER 100,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Cases								Deaths							
	Number				Rate				Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960
Total	747 599	977 826	589 057	655 171												
Argentina	66 419	13 855	18 122	29 978	334.2	68.4	87.9	143.1	...	...	...	...	...	...	...	...
Bolivia	479	801	416	413	14.4	23.8	12.2	12.0	...	...	...	...	...	...	...	...
Brazil (a)	4 335	5 093	4 142	2 707	45.4	51.9	40.7	27.5	575	717	702	539	5.9	7.2	7.0	8.0
Canada (b)	49 612	35 531	*	*	299.4	208.7	*	*	108	93	84	53	0.7	0.5	0.5	0.3
Chile	12 588	28 320	14 596	32 720	176.8	338.1	195.5	428.9	677	1 575	1 147	2 116	9.5	21.6	15.4	27.7
Colombia (c)	33 198	38 201	39 393	38 226	276.1	312.5	313.0	282.9	1 890	1 612	1 788	1 985	14.3	11.9	12.9	14.0
Costa Rica	1 696	1 350	1 600	2 220	164.2	125.5	142.1	189.6	83	41	62	131	8.0	3.8	5.5	11.2
Cuba	184	681	684	728	2.9	10.4	10.3	10.7	10	28	38	...	0.2	0.4	0.6	...
Dominican Republic	881	1 722	2 631	2 701	32.6	61.6	90.9	90.2	3	18	30	...	0.1	0.6	1.0	...
Ecuador	...	...	...	...	...	...	...	...	1 628	3 390	...	...	41.4	83.7	...	...
El Salvador (c)	4 206	3 002	5 011	4 371	367.0	237.9	380.5	298.2	925	354	753	552	39.4	14.5	29.9	21.1
Guatemala	1 238	387	522	1 630	35.9	10.9	14.3	43.3	1 182	3 638	1 379	1 828	34.2	102.6	37.8	48.6
Haiti	361	242	917	876	10.7	7.1	26.5	25.0	...	...	...	...	...	...	...	...
Honduras	233	...	...	1 585	13.2	...	...	81.2	205	304	264	396	11.6	16.6	14.0	20.3
Mexico	48 373	40 524	38 019	47 367	153.9	125.3	114.2	136.8	9 116	5 801	6 060	6 334	29.0	17.9	18.2	18.1
Nicaragua	550	662	453	186	41.3	48.0	31.8	12.6	322	460	158	67	24.2	33.4	11.1	4.5
Panama	649	1 204	1 976	835	66.7	120.4	192.4	79.1	89	138	346	107	9.1	13.8	33.7	10.1
Paraguay (c, d)	2 248	832	977	1 705	220.2	74.2	56.5	96.4	31	9	7	30	4.1	1.1	0.8	3.3
Peru (c, e)	9 539	12 684	13 126	17 860	200.0	260.7	244.9	319.4	419	438	467	...	15.4	13.9	13.1	...
United States	492 339	764 965	410 825	441 703	287.7	439.5	231.9	245.4	391	559	385	...	0.2	0.3	0.2	...
Uruguay	1 631	1 514	6 344	467	59.9	54.9	227.2	16.5	25	19	86	...	0.9	0.7	3.1	...
Venezuela (c)	10 104	18 449	21 807	20 710	280.7	495.4	564.9	517.0	176	360	255	199	2.7	5.4	3.7	2.8
Bahama Islands	30	305	8	68	30.6	302.0	7.8	64.8	-	-	-	...	-	-	-	...
Bermuda	6	35	68	404	14.6	85.4	161.9	961.9	-	-	-	-	-	-	-	-
British Guiana	186	1 641	*	*	35.9	307.9	*	*	-	9	...	...	-	1.7	...	...
British Honduras	435	23	57	534	524.1	26.7	64.8	586.8	-	-	-	3	-	-	-	3.3
Canal Zone	46	142	166	155	88.5	330.2	395.2	369.0	-	-	-	1	-	-	-	2.4
Falkland Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
French Guiana	3	176	...	150	10.0	567.7	...	483.9	-	-	-	-	-	-	-	-
Guadeloupe	11	-	9	15	4.4	-	3.4	5.6	-	-	-	2	-	-	-	0.7
Martinique	3	108	-	104	1.2	40.9	-	37.5	-	-	-	-	-	-	-	-
Netherlands Antilles	*	*	*	*	*	*	*	*	2	-	-	...	1.1	-	-	...
Puerto Rico	2 455	3 347	2 331	1 411	108.6	145.6	100.4	59.8	26	32	33	...	1.2	1.4	1.4	...
St. Pierre and Miquelon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surinam	*	*	...	...	*	*	...	...	-	1	-	-	-	0.4	-	-
Virgin Islands (U. K.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Virgin Islands (U. S.)	88	-	-	3	1257.1	-	-	42.9	1	-	-	...	3.4	-	-	...
West Indies Federation																
Antigua	42	928	52	8	80.8	1750.9	96.3	14.5	-	-	1	-	-	-	1.9	-
Barbados	*	*	*	*	*	*	*	*	6	-	-	-	2.7	-	-	-
Dominica	96	443	56	36	166.7	763.8	94.9	60.0	-	3	-	-	-	5.2	-	-
Grenada	...	...	4	-	...	...	4.5	-	-	-	-	1	-	-	-	1.1
Jamaica	41	304	4 316	290	2.6	19.3	269.9	17.9	...	...	...	...	...	...	...	...
Montserrat	14	6	...	...	107.7	46.2	...	...	...	-	...	-	...	-	...	-
St. Kitts-Nevis- Anguilla	596	157	90	711	1103.7	285.5	160.7	1247.4	4	-	-	-	7.4	-	-	-
St. Lucia	2 325	-	-	-	2801.2	-	-	-	-	-	-	-	-	-	-	-
St. Vincent	-	171	242	263	-	222.1	306.3	328.8	...	...	...	...	...	...	...	...
Trinidad and Tobago	360	21	97	2 031	47.0	2.7	12.0	243.5	5	-	-	5	0.7	-	-	0.6

(a) State of Guanabara and capitals of other states, with exceptions. Data of reported cases incomplete for 1960. (b) Excluding Northwest Territories 1957 and 1958, for case data. (c) Reporting area, for case data. (d) Area of information, for death data. (e) Principal cities, for death data.

* Disease not notifiable.

MEASLES

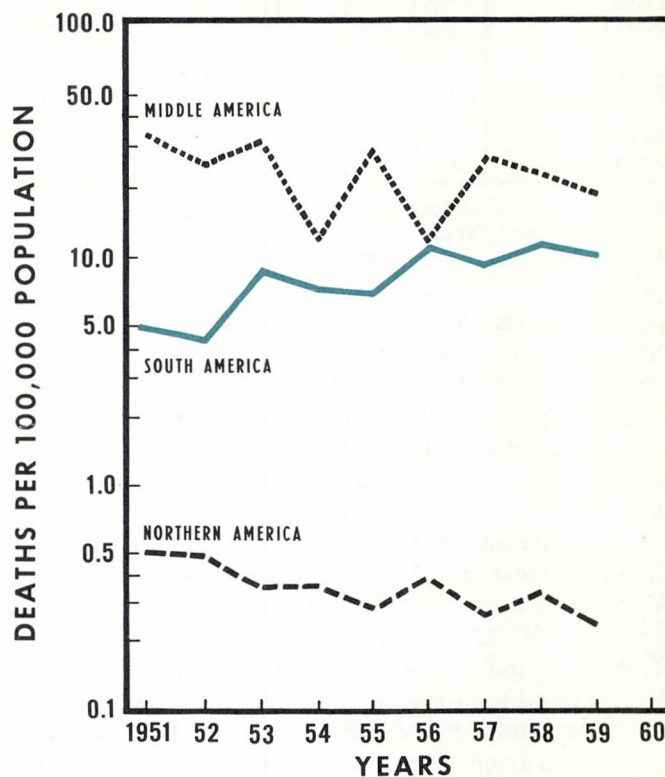
Measles, an important communicable disease of childhood, deserves careful consideration in a program for prevention of mortality in children under 5 years of age. Although it is expected that around 95 per cent of the population will have measles during childhood, fatality is usually thought to be low when the disease occurs in children from 3 to 10 years of age. Emphasis has been placed on the seriousness of the disease in the infant and very young child. Table 30 provides data on reported cases and deaths from measles for the four-year period 1957-1960.

High rates are noted even though reporting of cases is incomplete in many areas. In many countries, including several in Middle America and Chile, Ecuador, and Colombia in South America, death rates from measles are excessive and indicate that this common disease contributes to excessive mortality of children. Although information on mortality is not available for all countries, in 1958 nearly 20,000 deaths from measles were recorded.

Age distribution of reported cases appears to vary by countries in the Americas. In Table 31, the distribution of cases by age is given for several countries of the three regions in 1960. In Canada, only 4.6 per cent of the cases were of children under one year of age, while 29.3 per cent were of children 1-4 years of age, and over half (63.7 per cent) of school age children 5-14 years of age. The same type of distribution was noted for the three-year period 1956-1958

FIGURE 16

DEATHS FROM MEASLES PER 100,000 POPULATION IN COUNTRIES OF THREE REGIONS OF THE AMERICAS, 1951-1960



NOTE: EXCLUDING THREE COUNTRIES OF MIDDLE AMERICA AND FIVE OF SOUTH AMERICA

TABLE 31. NUMBER OF REPORTED CASES OF MEASLES BY AGE GROUP FOR SELECTED COUNTRIES IN THREE REGIONS OF THE AMERICAS, 1960

Region and country	Number						Per cent					
	All ages (a)	Under 1 year	1-4 years	5-9 years	10-14 years	15 years and over	All ages (a)	Under 1 year	1-4 years	5-9 years	10-14 years	15 years and over
Northern America												
Canada (b, c)	8 341	383	2 441	5 312		205	100	4.6	29.3		63.7	2.5
Middle America												
Costa Rica	2 183	292	1 198	588		105	100	13.4	54.9		26.9	4.8
Mexico (d)	12 805	1 882	8 040	1 422	799	662	100	14.7	62.8	11.1	6.2	5.2
Panama	823	55	348	238	82	100	100	6.7	42.3	28.9	10.0	12.1
South America												
Argentina	6 616	770	3 375	1 592	428	451	100	11.6	51.0	24.1	6.5	6.8
Bolivia	409	42	258	55	22	32	100	10.3	63.1	13.4	5.4	7.8
Chile	31 563	6 543	19 386	3 846	919	869	100	20.7	61.4	12.2	2.9	2.8
Colombia (b)	37 486	24 175		11 659		1 652	100	64.5		31.1		4.4
Paraguay	1 705	271	787	298	349		100	15.9	46.2	17.5	20.5	
Peru (b, e)	12 584	1 729	7 826	2 249	464	316	100	13.7	62.2	17.9	3.7	2.5
Venezuela (f)	4 542	598	2 908	774	138	124	100	13.2	64.0	17.0	3.0	2.7

(a) Cases with age known. (b) Reporting area. (c) Year 1958. (d) Year 1956. (e) Year 1959.
(f) Organized Reporting Area.

TABLE 32. AVERAGE ANNUAL DEATHS FROM MEASLES PER 100,000 POPULATION BY AGE FOR SELECTED COUNTRIES IN THREE REGIONS OF THE AMERICAS, 1957-1959

Region	All ages	Under 1 year	1-4 years	5-9 years	10-14 years	15-19 years	20 years and over
Northern America (U.S.)	0.3	2.2	1.4	0.5	0.1	0.1	0.0
Middle America (a)	24.5	104.5	125.8	19.6	5.0	2.0	0.9
South America (b)	10.9	78.2	52.5	6.4	1.5	0.3	0.2

(a) Costa Rica, Dominican Republic, Guatemala, Mexico, Nicaragua and Panama.

(b) Chile, Colombia and Venezuela.

for Canada when only 3.3 per cent of cases of measles were of children under 1 year of age. Although data for the United States as a whole were not available, the same pattern of age distribution was observed in a state in the southern part (Tennessee), with the maximum frequency of cases in children six years of age.

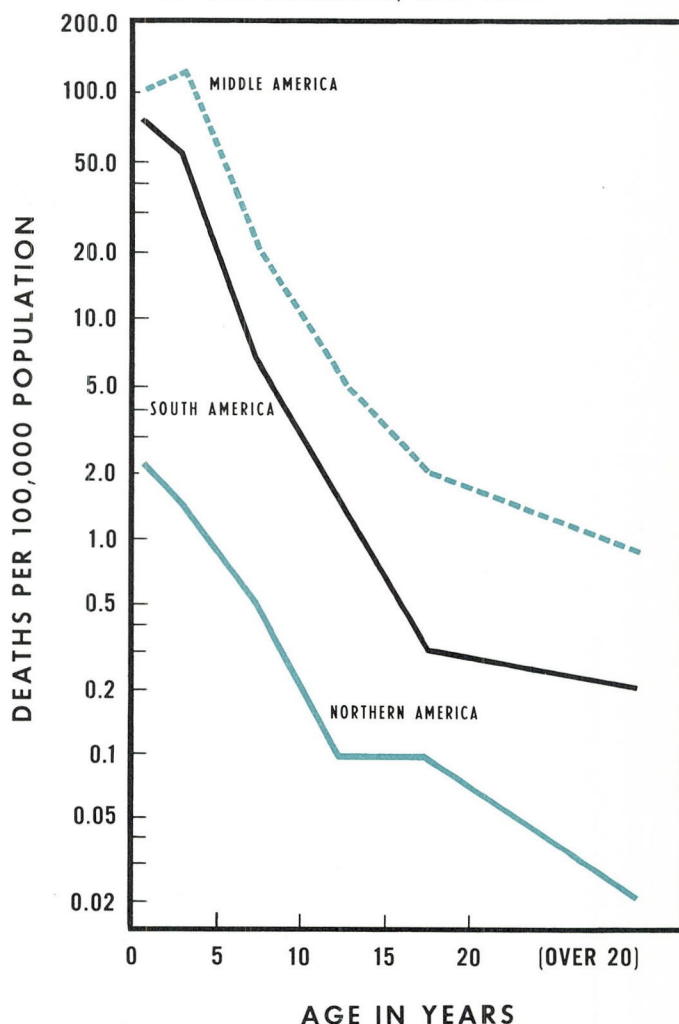
In contrast, in Latin American countries a much higher percentage of cases occurred in infants under one year and in children 1-4 years of age. In Chile, for example, 82 per cent of the reported cases were of children under five years of age while in Canada the comparable percentage was 34 for 1960.

Using data for 15 countries of the Americas, death rates from measles have been calculated for the regions for the nine-year period 1951-1959 (Figure 16). In Northern America the death rates are low and have declined. In Middle America, however, they were very high and showed variation from year to year but not a definite decline. Likewise for South America, the rates were high and appeared to increase in the period. This increase may be due in part to improvement in the statement of underlying cause of death. For example, deaths might formerly have been certified as due to pneumonia, which is a complication of measles. According to the principles of medical certification, the underlying cause of death which initiated the train of morbid events leading to death should be stated and used for tabulation of cause of death. The underlying cause of some deaths due to pneumonia is measles. The international form of medical certificate of cause of death was designed to elicit the underlying cause of death when two or more causes are known.

Data were available for calculation of death rates by age group for 10 countries of the three regions of the Americas for 1957-1959. The measles death rate for five countries of Middle America was nearly 100 times the rate for the United States, and the death rate for South America was over 40 times that in the

United States. Although mortality from measles is excessive in infancy in both Middle and South America, it is mortality of children in the period 1-4 years of age that shows the greatest difference between the regions (Figure 17). In Middle America, the measles death rate for children 1-4 years of age was higher than for infants. In some areas a relatively high proportion of children in the age period 1-4 years suffer from protein deficiency, and the relationship between nutritional deficiency and infectious diseases is under study. Other factors which may be responsible for the younger age distribution of reported cases and the excessive mortality also deserve study in order to understand the epidemiology of measles in Latin America. The high death rates from measles indicate that prevention of mortality from this infectious disease is an important problem in many areas of the Americas.

FIGURE 17
AVERAGE ANNUAL DEATHS FROM MEASLES PER 100,000 POPULATION BY AGE IN THREE REGIONS OF THE AMERICAS, 1957-1959



PLAGUE

During the ten-year period 1951-1960, cases of plague were reported in seven countries of the Americas (Table 33). However, the problem was centered principally in Bolivia, Brazil, Ecuador, and Peru, with only two cases reported in Argentina, nine in the United States, and 12 in Venezuela.

TABLE 33. REPORTED CASES OF PLAGUE
IN THE AMERICAS, 1951-1960

Country	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Total	95	191	264	171	87	115	154	97	93	258
Argentina	-	1	-	-	-	-	-	1	-	-
Bolivia	10	55	-	9	45	3	-	-	-	12
Brazil	20	65	10	6	27	4	37	25	16	28
Ecuador	33	44	90	81	7	80	79	22	40	77
Peru	23	26	163	75	8	24	37	49	33	139
United States	1	-	-	-	-	1	1	-	4	2
Venezuela	8	-	1	-	-	3	-	-	-	-

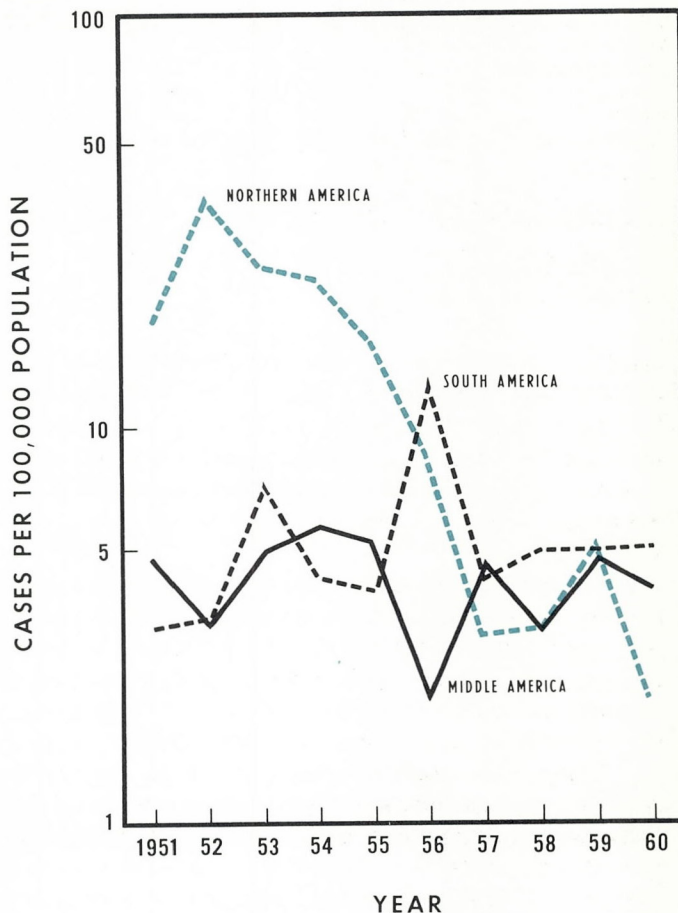
POLIOMYELITIS

Understanding of the incidence of poliomyelitis in the Americas is difficult, partly because of the increasing attention placed on the disease as vaccines have become available. There is no doubt that reporting has been improved; larger numbers of cases of poliomyelitis have been diagnosed and cases of non-paralytic poliomyelitis may now be diagnosed and reported. Epidemics have occurred. Thus interpretation of the situation requires consideration of all these factors. For the four-year period 1957-1960, the number of reported cases and deaths with rates per 100,000 population are given in Table 34. These data indicate great variation in case and death rates from year to year, both in countries and in other areas of the Americas.

In order to analyze the trend of the disease in the past decade, Table 35 and Figure 18 show changes in case rates for the three regions. The striking decline in case rates in Northern America is known to be due to extensive vaccination programs. In general, reporting of cases has appeared to vary from year to year in Middle and South America and several epidemics have occurred, such as the one in Argentina in 1956 and those in Jamaica in 1954 and 1957, which affect the totals. For the last three years, rates based

FIGURE 18

REPORTED CASES OF POLIOMYELITIS PER 100,000
POPULATION, IN THREE REGIONS OF THE AMERICAS,
1951-1960



NOTE: EXCLUDING AREAS WITHOUT DATA

on reported cases were of the same general size for the three regions.

The percentage distribution of poliomyelitis cases by age differs widely in countries of the Americas: in four countries and Puerto Rico, more than 80 per cent were of infants and children under five years of age; in four countries, between 70 and 80 per cent were of children under five; while in Canada and the United States, 36.9 and 39.1 per cent, respectively, were of children under five years (Figure 19).

TABLE 34. NUMBER OF REPORTED CASES AND DEATHS FROM POLIOMYELITIS WITH RATES PER 100,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Cases								Deaths							
	Number				Rate				Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960
Total	11 576	11 665	16 956	10 592												
Argentina (a)	760	842	1 030	1 097	3.8	4.2	5.0	5.2	...	...	...	...	...	...	...	...
Bolivia (a)	14	3	5	-	0.4	0.1	0.1	-	...	...	...	...	...	...	...	...
Brazil (b)	722	1 032	875	1 091	7.6	10.5	8.6	11.1	89	162	130	...	0.9	1.6	1.3	...
Canada (c)	273	323	1 886 ^{a)}	1 905 ^{a)}	1.6	1.9	10.8 ^{a)}	15.1 ^{a)}	26	26	182	83	0.2	0.2	1.0	0.5
Chile	333	328	456	546	4.7	4.5	6.1	7.2	58	78	100	101	0.8	1.1	1.3	1.3
Colombia (d)	169	230	234	233	1.4	1.9	1.9	1.7	59	40	62	54	0.4	0.3	0.4	0.4
Costa Rica	51	63	41	66	4.9	5.9	3.6	5.6	10	12	10	22	1.0	1.1	0.9	1.9
Cuba	96	103	288	330	1.5	1.6	4.3	4.9	8	7	32	...	0.1	0.1	0.5	...
Dominican Republic (a)	4	5	321	29	0.1	0.2	11.1	1.0	4	2	12	...	0.1	0.1	0.4	...
Ecuador	42	37	43	36	1.1	0.9	1.0	0.8	20	22	...	...	0.5	0.5	...	...
El Salvador (a, d)	68	43	60	48	5.9	3.4	4.6	3.3	3	2	4	6	0.1	0.1	0.2	0.2
Guatemala	107	85	159	78	3.1	2.4	4.4	2.1	46	37	34	29	1.3	1.0	0.9	0.8
Haiti	45	238	122	39	1.3	7.0	3.5	1.1	...	...	...	...	...	...	...	...
Honduras	20	87	13	27	1.1	4.8	0.7	1.4	32	22	15	19	1.8	1.2	0.8	1.0
Mexico (a)	1 562	904	1 877	1 125	5.0	2.8	5.6	3.2	206	178	224	222	0.7	0.6	0.7	0.6
Nicaragua (a)	68	255	20	211	5.1	18.5	1.4	14.3	-	15	-	8	-	1.1	-	0.5
Panama	8	11	24	29	0.8	1.1	2.3	2.7	2	6	2	2	0.2	0.6	0.2	0.2
Paraguay (d, e)	35	18	27	43	3.4	1.6	1.6	2.4	2	4	10	8	0.3	0.5	1.2	0.9
Peru (d, f)	291	491	435	453	6.1	10.1	8.1	8.1	39	58	45	...	1.4	1.8	1.3	...
United States	5 499	5 867	8 428	3 190	3.2	3.4	4.8	1.8	223	230	454	...	0.1	0.1	0.3	...
Uruguay (a)	49	162	55	15	1.8	5.9	2.0	0.5	2	8	4	...	0.1	0.3	0.1	...
Venezuela (d)	468	359	475	333	13.0	9.6	12.3	8.3	45	30	49	35	0.7	0.4	0.7	0.5
Bahama Islands	2	1	7	1	2.0	1.0	6.8	1.0	-	-	-	...	-	-	-	...
Bermuda	1	-	-	7	2.4	-	-	16.7	-	-	-	-	-	-	-	-
British Guiana	100	-	2	1	19.3	-	0.4	0.2	-	4	...	...	-	0.8	...	...
British Honduras	-	6	9	-	-	7.0	10.2	-	-	1	-	-	-	1.2	-	-
Canal Zone	-	1	1	-	-	2.3	2.4	-	-	-	-	-	-	-	-	-
Falkland Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
French Guiana	-	-	-	2	-	-	-	6.5	-	-	-	-	-	-	-	-
Guadeloupe	-	1	1	-	-	0.4	0.4	-	-	-	1	-	-	-	0.4	-
Martinique	-	-	-	2	-	-	-	0.7	-	-	-	-	-	-	-	-
Netherlands Antilles	5	3	-	1	2.7	1.6	-	0.5	-	-	-	...	-	-	-	...
Puerto Rico	44	48	21	505	1.9	2.1	0.9	21.4	2	1	2	...	0.1	0.0	0.1	...
St. Pierre and Miquelon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surinam	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Virgin Islands (U.K.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Virgin Islands (U.S.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West Indies Fed.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Antigua	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barbados	1	-	6	-	0.4	-	2.6	-	-	-	-	-	-	-	-	-
Dominica	9	-	-	-	15.8	-	-	-	-	-	2	-	-	-	3.4	-
Grenada	31	-	1	-	36.5	-	1.1	-	1	-	-	-	1.2	-	-	-
Jamaica	395	92	18	132	25.4	5.8	1.1	8.2	...	...	...	...	...	...	...	...
Montserrat	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Kitts-Nevis-Anguilla	-	-	1	1	-	-	1.8	1.8	-	-	-	-	-	-	-	-
St. Lucia	4	-	-	-	4.8	-	-	-	-	-	-	-	-	-	-	-
St. Vincent	-	-	-	2	-	-	-	2.5	...	...	...	...	...	...	...	...
Trinidad and Tobago	300	27	15	14	39.2	3.4	1.8	1.7	3	1	4	3	0.4	0.1	0.5	0.4

(a) Paralytic poliomyelitis for case data. (b) State of Guanabara and capitals of other states, with exceptions. Data of reported cases incomplete for 1960. (c) Excluding Northwest Territories 1957 and 1958, for case data. (d) Reporting area for case data. (e) Area of information, for death data. (f) Principal cities, for death data.

FIGURE 19
PERCENTAGE DISTRIBUTION OF POLIOMYELITIS
CASES BY AGE, 1960

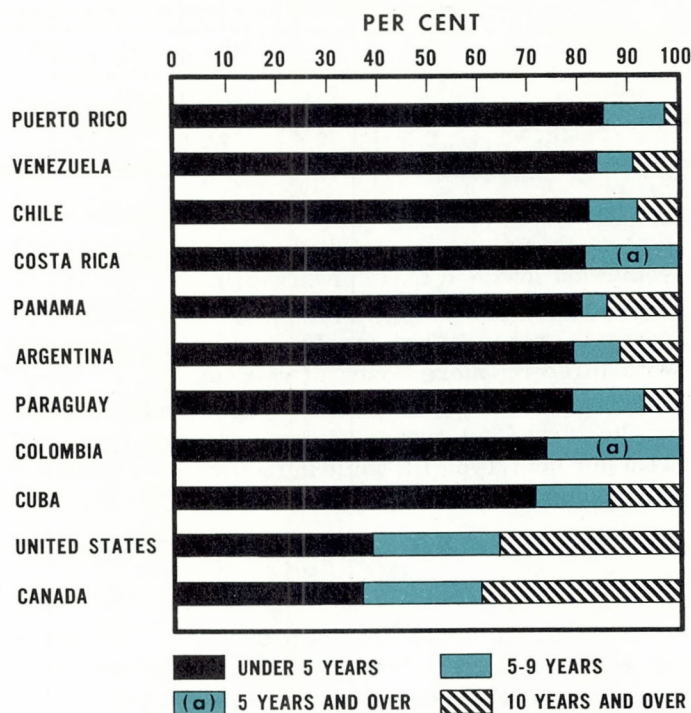


TABLE 35. REPORTED CASES OF POLIOMYELITIS WITH RATES PER 100,000 POPULATION IN THREE REGIONS OF THE AMERICAS, 1951-1960 (a)

Year	Reported cases			Rate		
	Northern America	Middle America	South America	Northern America	Middle America	South America
1951	31 006	2 239	1 842	18.4	4.8	3.2
1952	62 876	1 547	1 966	36.8	3.3	3.4
1953	44 595	2 429	4 530	25.6	5.0	7.4
1954	41 448	3 110	2 750	23.4	5.8	4.3
1955	30 248	2 911	2 598	16.7	5.3	4.0
1956	15 820	1 396	8 902	8.6	2.4	13.3
1957	5 773	2 820	2 983	3.1	4.7	4.3
1958	6 190	1 973	3 502	3.2	3.2	5.0
1959	10 314	3 005	3 637	5.3	4.8	5.0
1960	4 102	2 640	3 850	2.1	4.0	5.1

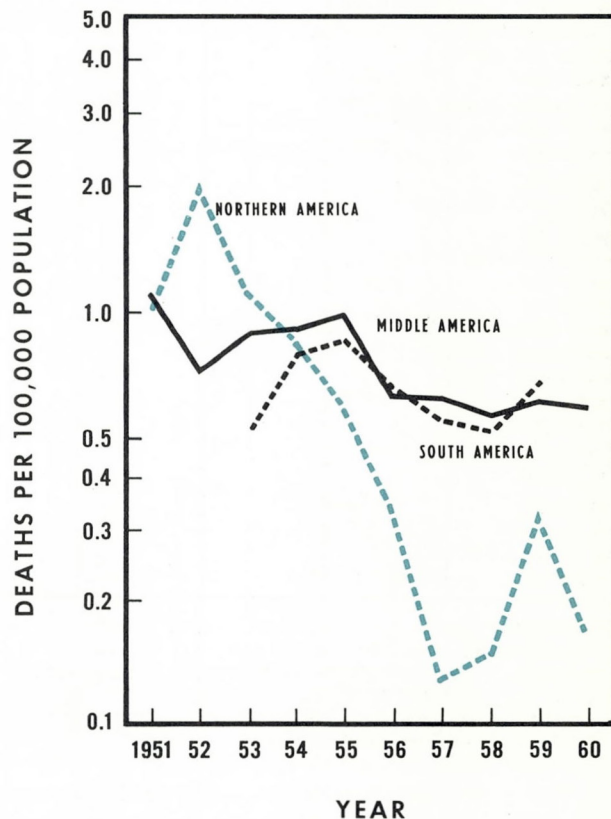
(a) Excluding areas without data.

Increases in the percentage of cases in children under five years of age in Canada and the United States, as given below, are of interest because of the vaccination programs previously carried out. It is possible that the susceptible population is becoming increasingly concentrated in children under five years of age.

Year	Percentage of cases under 5 years of age	
	Canada	United States
1956	23.6	31.6
1957	27.0	30.0
1958	32.5	39.1
1959	37.4	38.1
1960	36.9	39.1

Since many factors affect the reporting of cases, mortality has also been studied in the past decade to ascertain whether an increase or a decline has occurred. Data for the period were available for only 14 of the 22 countries and these have been used to calculate death rates (Figure 20). The rapid decline in mortality in Northern America from the high rate in 1952 is clear; this was followed by a slight increase in 1959 and a decline in 1960. In Middle and South America, rates have varied and are in general higher than in Northern America, thus suggesting that the problem of poliomyelitis in Latin America is greater than indicated by reporting of cases. It is probable from data available on cases and deaths from poliomyelitis that, although variations have occurred, the incidence of the disease has been greater than previously believed.

FIGURE 20
DEATHS FROM POLIOMYELITIS PER 100,000 POPULATION
IN COUNTRIES OF THREE REGIONS OF THE
AMERICAS, 1951-1960



NOTE: EXCLUDING THREE COUNTRIES OF MIDDLE AMERICA AND SIX OF SOUTH AMERICA

Information provided on persons immunized against poliomyelitis in the Americas shows that large programs have been carried out in several countries, with over a million persons vaccinated in Canada and Mexico in 1960, and in the United States in 1959 (Table 36). In each of several countries, such as Argentina, Colombia, Cuba, and Venezuela, over 100,000 were immunized in 1960. The type of vaccine used has varied; attenuated live virus vaccine was given in a few countries and the killed virus in Canada, the United States, and probably most of the others.

TABLE 36. PERSONS IMMUNIZED AGAINST POLIOMYELITIS IN THE AMERICAS, 1957-1960

Area	1957	1958	1959	1960
Argentina	658 273	347 800	a) 153 482	a) 368 743
Brazil (b)	...	78 112	46 038	12 427
Canada	1 990 100	2 884 700	2 898 300	2 200 000
Chile	...	80 389	46 512	26 428
Colombia	...	...	...	c) 196 635
Costa Rica	65 250	...	492 735	865
Cuba	-	-	-	182 727
Dominican Republic	-	-	14 674	3 610
Guatemala	-	d) 1 496	8 978	6 329
Haiti	-	4 192	12 055	200
Honduras	...	5 057	13 025	4 157
Mexico	223 888	183 749	387 511	1 725 307
Nicaragua	...	e) 53 561	11 884	30 135
Panama	...	...	210	1 414
Paraguay	548	95	22	21
Peru	392	1 976	1 491	1 369
United States	11 635 880	5 096 545	5 121 209	...
Venezuela	7 749	16 251	124 128	264 407
Bahama Is. (f)	...	10 000	...	3 000
Bermuda	...	345	413	10 819
British Guiana	...	...	...	44 887
British Honduras	...	...	45	16
Canal Zone (g)	21 467	15 805	9 434	8 965
Falkland Is.	-	-	-	906
French Guiana	1	5	51	h) 22
Guadeloupe	...	...	167	157
Martinique	-	17	300	10
Puerto Rico	70 914	55 140	75 573	...
St. Pierre and Miquelon	-	603	1 273	81
Virgin Is. (U.K.)	...	...	...	10
Virgin Is. (U.S.)	1 504	196	349	...
West Indies Federation	...	...	...	1 495
Barbados	...	...	...	13 032
Jamaica	81 707	-	-	-

(a) Doses distributed. (b) Data for 13 cities; 10 cities in 1959 and 1960. (c) Cox Vaccine, Bogota. (d) September-December. (e) Number receiving type II vaccine; 42 950 received type I and 48 329 received type III. (f) Approximate number of children. (g) Injections. (h) Number given 3 doses; 2 214 were given 1 dose.

For one country, Canada, additional information is available on cases and deaths from poliomyelitis, according to vaccination status summarized in the following table.

From this experience it is noted that over half of the cases (551) occurred in the non-vaccinated, and

TABLE 37. CASES AND DEATHS FROM POLIOMYELITIS ACCORDING TO VACCINATION STATUS, CANADA, 1960

	Total	None	1 or 2 doses	3 or more doses	Unknown
Cases	905	551	129	209	16
Deaths	74	54	9	11	-
Case fatality*	8.2	9.8	7.0	5.3	-

* Per cent.

that of these 9.8 per cent died. The case fatality was somewhat lower in those given vaccine. Of the 551 who were not vaccinated, 195, or only 35 per cent, recovered or had minor involvement, while of the 209 with three or more doses of vaccine, 104, or 50 per cent, recovered or had minor involvement. In 1959, of the virus isolations 88.4 per cent were Type I and 11.6 per cent Type III, while in 1960 the corresponding percentages were 58.2 and 41.8.

SMALLPOX

The progress made in the program for eradication of smallpox is seen in the reduction of the number of countries in which cases occurred (Table 38).

At the beginning of this ten-year period in 1951, 9,221 cases were reported in 12 countries and three other areas, while in 1960, 5,158 cases were reported in seven countries, with over 2,000 cases each in Brazil and in Ecuador (Figure 21). A marked reduction has occurred in Colombia, from 2,009 cases in 1958 to 209 cases in 1960 and 16 in 1961. The last case reported in Bolivia was in December 1960.

FIGURE 21

REPORTED CASES OF SMALLPOX IN THE AMERICAS, 1951-1960

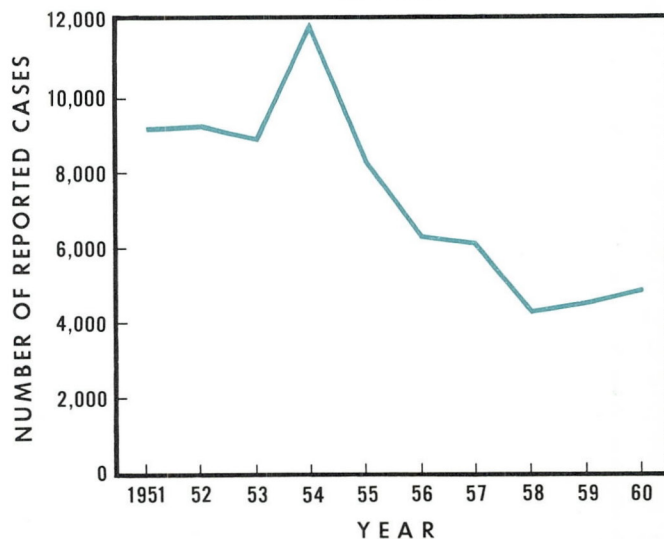


TABLE 38. REPORTED CASES OF SMALLPOX IN THE AMERICAS, 1951-1960

Area	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Total	9 221	9 301	8 930	11 979	8 348	6 389	6 220	4 343	4 763	5 158
Argentina	1 404	982	309	256	55	86	335	27	36	65
Bolivia	728	432	429	624	372	499	1 310	183	7	1
Brazil (a)	1 190	1 668	923	1 035	2 580	2 385	1 411	1 232	2 629	b)2 644
Chile	47	15	9	-	-	-	-	-	1	-
Colombia	3 844	3 235	5 526	7 203	3 404	2 572	2 145	2 009	950	209
Ecuador	174	665	708	2 516	1 831	669	913	863	1 140	2 185
Guatemala	3	1	1	-	-	-	-	-	-	-
Mexico	27	-	-	-	-	-	-	-	-	-
Panama	-	-	-	-	-	-	-	c) 8	-	-
Paraguay	282	797	770	207	57	132	103	21	-	35
Peru	1 218	1 360	172	115	-	-	-	-	-	-
United States	11	21	4	d) 9	d) 2	-	d) 1	-	-	-
Uruguay	-	16	7	1	45	42	2	-	-	e) 19
Venezuela	280	109	72	13	2	f) 4	-	-	-	-
British Guiana	11	-	-	-	-	-	-	-	-	-
Martinique	1	-	-	-	-	-	-	-	-	-
Netherlands Antilles	1	-	-	-	-	-	-	-	-	-

- (a) State of Guanabara and capitals of other states with exceptions. (b) Incomplete. (c) Including 4 imported cases. (d) These cases do not fulfill the generally accepted criteria for a diagnosis of smallpox. (e) Including 2 imported cases. (f) Clinical diagnosis not supported by epidemiological evidence.

Information was provided on the number of smallpox vaccinations for each of the four years in the questionnaires completed for this document. Since the National Health Services have also furnished information currently, data from both sources were used in order to have the information as complete as possible (Table 39). In many areas the annual number of vaccinations is large. For 1960, 20,113,132 vaccinations were reported for a population of 226,324,000, which indicates that 9 per cent of the population were vaccinated in that year. In countries such as the United States, complete information is not available because vaccinations performed by general practitioners are not reported.

SYPHILIS

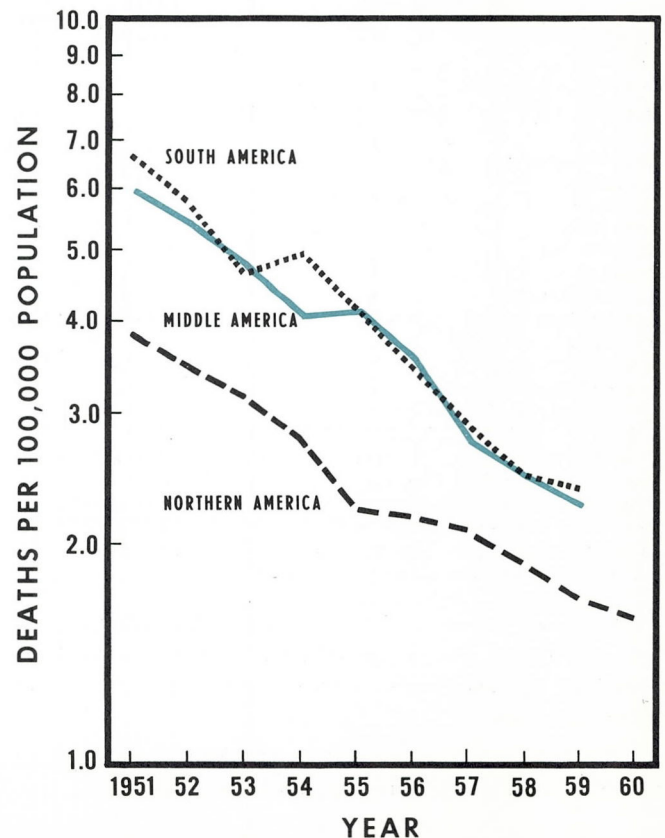
The number of reported cases of syphilis in many areas appeared to continue at the same level during the four-year period, and did not show the declines observed in several countries in the previous four-year period. The total number of reported cases for the Americas in 1960 was over 235,000. The case rates varied widely due to differences in incidence of the disease, extent of diagnostic services, stages of syphilis considered notifiable, etc. The numbers of both cases and deaths from syphilis, with rates per 100,000 population, are given in Table 40. Significant decrease was noted in mortality from syphilis in several countries.

Mortality data for syphilis have been obtained for countries of the three regions for which statistics were available throughout the period 1951-1959 (Figure 22). For this period, it is clear that mortality from

syphilis is being reduced as a result of treatment. However, case rates indicate that the problem remains large.

FIGURE 22

DEATHS FROM SYPHILIS PER 100,000 POPULATION IN COUNTRIES OF THREE REGIONS OF THE AMERICAS, 1951-1960



NOTE: INCLUDING THREE COUNTRIES OF MIDDLE AMERICA AND FIVE OF SOUTH AMERICA

TABLE 39. NUMBER OF SMALLPOX VACCINATIONS
IN THE AMERICAS, 1957-1960

Area	1957	1958	1959	1960
Total	17 534 484	22 479 944	28 016 587	20 113 132
Argentina	3 223 863	7 13 659	1 271 705	1 990 467
Bolivia	a) 453 557	1 978 629	422 945	42 603
Brazil	...	4 139 772	7 856 294	4 910 091
Canada	1 046 100	1 208 500	934 000	1 332 000
Chile	1 273 506	682 325	2 778 686	1 276 000
Colombia	2 843 532	3 899 767	3 584 421	3 195 355
Costa Rica	...	25 395	15 820	14 657
Cuba	b) 4 087	7 996	25 083	a) 38 635
Dominican Republic	b) 2 838	4 511	5 027	26 057
Ecuador	326 221	472 464	566 555	783 338
El Salvador	56 498	34 990	36 279	33 373
Guatemala	b) 114 941	b) 159 278	b) 149 696	b) 123 590
Haiti	...	c) 443 119	d) 214	b) 441
Honduras	a) 3 240	32 328	12 824	17 843
Mexico	4 245 261	2 808 416	5 287 714	3 637 334
Nicaragua	b) 10 248	10 108	10 521	8 803
Panama	...	48 610	33 108	24 835
Paraguay	159 006	594 003	589 316	122 897
Peru	746 364	1 273 017	824 055	1 049 740
United States(e)	a) 1 677 670	a) 2 275 476	a) 2 305 741	...
Uruguay	...	102 054	87 324	214 360
Venezuela	1 239 961	871 588	1 060 850	1 104 389
Bermuda (e)	275	446	557	783
British Guiana	4 368	2 487	2 506	3 165
British Honduras	3 392	4 491	3 835	3 939
Canal Zone	...	...	...	b) 9 528
Falkland Is.	68	181	222	128
French Guiana	a) 1 404	a) 1 852	a) 1 757	a) 2 204
Guadeloupe	b) 7 676	b) 20 715	b) 11 166	b) 13 567
Martinique	9 057	11 592	10 150	18 817
Netherlands Antilles	...	...	...	b) 3 665
Puerto Rico (e)	a) 37 121	a) 460 689	a) 47 374	...
St. Pierre and Miquelon	379	273	232	224
Surinam	...	...	...	6 375
Virgin Is. (U.K.)	32	1 720	41	44
Virgin Is. (U.S.)	a, b) 544	a, b) 454	339	...
West Indies Federation	1 116	15 213	1 001	1 603
Antigua	6 088	6 761	14 188	10 564
Barbados (e)	b) 232	b) 475	b) 1 356	...
Dominica	...	771	...	3 402
Grenada	33 264	62 763	60 374	79 973
Jamaica	...	...	...	1 204
Montserrat	2 575	b) 24 578	1 887	3 300
St. Kitts-Nevis-Anguilla	...	65 000	1 424	...
St. Vincent	...	...	...	...
Trinidad and Tobago	...	13 478	...	3 839

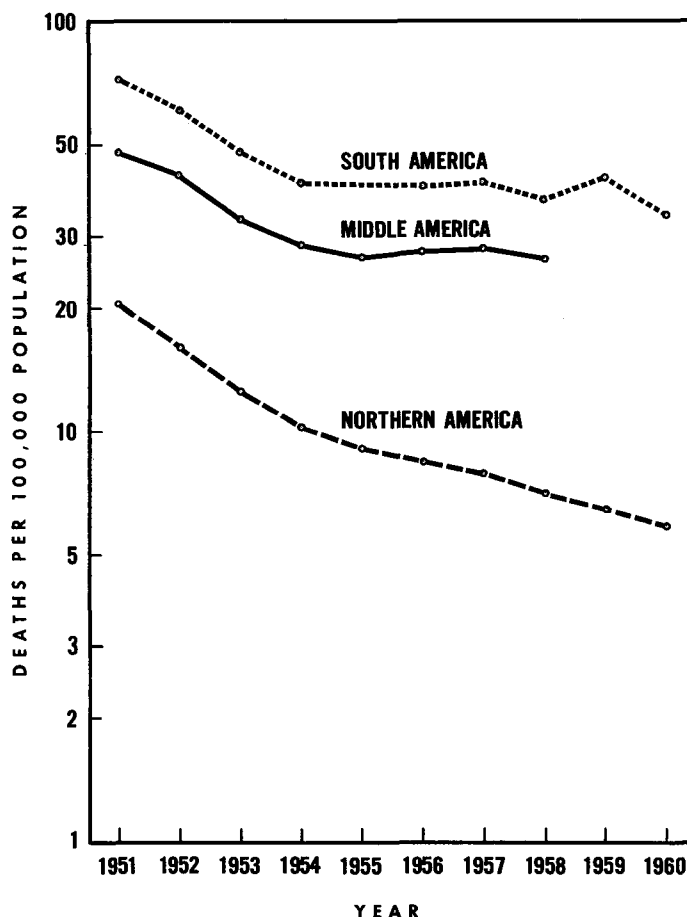
(a) Incomplete data. (b) Primary vaccination.
(c) Includes data for Sept.-Dec. 1957. (d) Revaccinations.
(e) Data exclude vaccinations done by general practitioners.

TUBERCULOSIS

The magnitude of the tuberculosis problem is clear from the fact that nearly 200,000 cases of tuberculosis were diagnosed and reported each year in the four-year period 1957-1960 (Table 41). Although, in general, significant declines have occurred in some areas of the Americas, extension of case-finding and diagnostic facilities and improvement of reporting complicate the interpretation of trends of morbidity.

In the publication *Reported Cases of Notifiable Diseases in the Americas, 1959-1960*, the number of reported cases are given for the three regions. During the decade 1951-1960 an increase occurred in the number of reported cases per 100,000 population in Middle America. In Northern America, the case rate

FIGURE 23

DEATHS FROM TUBERCULOSIS PER 100,000 POPULATION,
IN THREE REGIONS OF THE AMERICAS, 1951-1960

YEAR

TABLE 40. NUMBER OF REPORTED CASES AND DEATHS FROM SYPHILIS WITH RATES PER 100,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Cases								Deaths							
	Number				Rate				Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960
Total	230 669	211 121	231 640	235 688												
Argentina	4 693	4 261	5 040	7 310	23.6	21.0	24.4	34.9	...	...	...	...	...	...	...	...
Bolivia	87	58	818	215	2.6	1.7	24.0	6.2	...	...	...	...	...	...	...	...
Brazil (a)	7 211	7 656	8 568	12 120	74.0	76.5	84.1	122.9	1 493	1 446	1 152	...	15.3	14.5	11.5	...
Canada (b)	2 213	2 010	2 144	2 044	13.4	11.8	12.3	11.5	190	177	167	172	1.1	1.0	1.0	1.0
Chile	*	*	2 034	3 374	*	*	27.2	44.2	165	152	181	175	2.3	2.1	2.4	2.3
Colombia (c)	8 822	10 563	11 504	9 986	73.4	86.4	91.4	73.9	268	291	267	234	2.0	2.2	1.9	1.7
Costa Rica	391	326	287	475	37.9	30.3	25.5	40.6	21	37	9	12	2.0	3.4	0.8	1.0
Cuba	...	46	47	566	...	0.7	0.7	8.3	111	110	111	...	1.7	1.7	1.7	...
Dominican Republic	...	...	d)7 181	d)6 703	...	...	d)248.1	d)223.9	123	144	105	...	4.5	5.1	3.6	...
Ecuador	...	...	...	...	...	...	...	...	46	65	...	...	1.2	1.6	...	...
El Salvador (c)	4 356	4 509	6 070	6 359	380.1	357.2	460.9	433.8	81	104	115	81	3.4	4.3	4.6	3.1
Guatemala	686	2 399	1 605	1 421	19.9	67.7	43.9	37.7	12	17	8	5	0.3	0.5	0.2	0.1
Haiti	5 990	6 400	5 266	4 849	177.0	186.9	152.0	138.3	...	...	...	...	...	...	...	...
Honduras	834	1 978	3 412	1 728	47.1	108.2	180.8	88.5	25	9	5	5	1.4	0.5	0.3	0.3
Mexico	24 955	22 429	22 397	23 817	79.4	69.3	67.3	68.2	951	805	827	695	3.0	2.5	2.5	2.0
Nicaragua	1 783	2 219	644	1 019	133.8	161.0	45.2	69.0	29	6	1	2	2.2	0.4	0.1	0.1
Panama	420	317	312	168	43.2	31.7	30.4	15.9	11	13	8	7	1.1	1.3	0.8	0.7
Paraguay (c, e)	1 529	1 613	1 628	1 844	149.8	143.9	94.2	104.3	57	49	40	25	7.5	6.2	4.7	2.8
Peru (c, f)	5 061	3 945	3 865	3 197	106.1	81.1	72.1	57.2	78	59	63	...	2.9	1.9	1.8	...
United States	136 171	115 349	120 806	122 003	79.6	66.3	68.2	67.8	3 838	3 473	3 074	...	2.2	2.0	1.7	...
Uruguay	428	478	184	174	15.7	17.3	6.6	6.2	149	122	134	...	5.5	4.4	4.8	...
Venezuela (c)	10 717	9 984	10 614	10 288	297.7	268.1	275.0	256.8	265	202	200	196	4.1	3.0	2.9	2.7
Bahama Islands	19	24	28	32	19.4	23.8	27.2	30.5	1	-	-	-	1.0	-	-	-
Bermuda	15	16	6	13	36.6	39.0	14.3	31.0	1	1	2	2	2.4	2.4	4.8	4.8
British Guiana	416	371	*	*	80.3	69.6	*	*	20	14	...	...	3.9	2.6	...	...
British Honduras	112	258	539	737	134.9	300.0	612.5	809.9	-	-	2	2	-	-	2.3	2.2
Canal Zone	21	...	6	10	40.4	...	14.3	23.8	-	-	-	1	-	-	-	2.4
Falkland Islands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
French Guiana	18	43	83	80	60.0	138.7	267.7	258.1	...	...	...	...	...	...	...	...
Guadeloupe	1 133	699	866	737	451.4	272.0	328.0	273.0	4	11	3	-	1.6	4.3	1.1	-
Martinique	40	3	10	8	15.5	1.1	3.7	2.9	...	...	...	...	...	...	...	...
Netherlands Antilles	*	724	512	749	*	387.2	272.3	394.2	7	5	7	...	3.8	2.7	3.7	...
Puerto Rico	1 615	1 313	1 106	921	71.5	57.1	47.6	39.0	48	40	54	...	2.1	1.7	2.3	...
St. Pierre and Miquelon	-	-	-	-	-	-	-	-	1	-	1	-	20.0	-	20.0	-
Surinam	*	*	...	...	*	*	...	...	4	10	7	6	1.7	4.0	2.7	2.2
Virgin Islands (U. K.)	9	-	5	3	128.6	-	71.4	42.9	-	-	1	-	-	-	14.3	-
Virgin Islands (U. S.)	226	186	205	307	779.3	620.0	661.3	930.3	2	2	1	...	6.9	6.7	3.2	...
West Indies Federation																
Antigua	346	448	284	203	665.4	845.3	525.9	369.1	11	12	9	16	21.2	22.6	16.7	29.1
Barbados	*	*	*	*	*	*	*	*	41	37	24	24	18.3	16.3	10.4	10.3
Dominica	26	24	...	...	45.6	41.4	...	...	2	3	3	2	3.5	5.2	5.1	3.3
Grenada	...	...	372	921	...	...	422.7	1034.8	-	1	9	8	-	1.2	10.2	9.0
Jamaica	9 092	8 836	11 554	10 017	583.6	559.9	722.6	618.7	...	...	...	...	...	...	...	...
Montserrat	...	73	...	...	...	561.5	...	...	1	4	...	-	7.7	30.8	...	-
St. Kitts-Nevis-Anguilla	169	75	52	37	313.0	136.4	92.9	64.9	15	4	4	-	27.8	7.3	7.1	-
St. Lucia	316	576	740	608	380.7	685.7	870.6	707.0	3	1	8	6	3.6	1.2	9.4	7.0
St. Vincent	60	45	30	56	78.9	58.4	38.0	70.0	...	...	...	...	...	...	...	...
Trinidad and Tobago	689	867	816	589	89.9	110.0	100.6	70.6	32	50	41	43	4.2	6.3	5.1	5.2

(a) State of Guanabara and capitals of other states, with exceptions. Data of reported cases incomplete for 1960. (b) Excluding Northwest Territories, 1957 and 1958, for case data. (c) Reporting area, for case data. (d) Confirmed cases. (e) Area of information, for death data. (f) Principal cities, for death data.

* Disease not notifiable.

TABLE 41. NUMBER OF REPORTED CASES AND DEATHS FROM TUBERCULOSIS WITH RATES PER 100,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Cases								Deaths							
	Number				Rate				Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960
Total	191 344	177 758	185 753	182 538												
Argentina	19 647	16 508	17 387	18 865	98.9	81.5	84.3	90.0	...	...	...	...	...	...	...	...
Bolivia	596	522	1 779	1 136	18.0	15.5	52.2	32.9	...	...	...	...	...	...	...	...
Brazil (a)	13 735	7 986	14 079	9 943	204.2	115.7	138.2	100.8	8 522	7 973	8 434	...	87.4	79.7	84.2	...
Canada (b,c)	7 979	7 502	6 579	6 345	48.2	44.1	37.7	35.6	1 183	1 027	959	823	7.1	6.0	5.5	4.6
Chile	*	*	*	*	*	*	*	*	4 110	3 776	4 073	4 032	57.7	51.7	54.6	52.9
Colombia (d)	13 787	14 579	13 858	14 392	114.6	119.3	110.1	106.5	3 614	3 662	3 841	4 074	27.3	27.1	27.8	28.8
Costa Rica	605	560	649	624	58.6	52.0	57.6	53.3	217	165	163	151	21.0	15.3	14.5	12.9
Cuba	1 838	1 177	1 849	1 856	28.8	18.0	27.8	27.3	1 175	1 076	1 146	...	18.4	16.5	17.2	...
Dominican Republic	2 184	2 199	2 189	2 122	80.8	78.6	75.6	70.9	614	476	512	...	22.7	17.0	17.7	...
Ecuador	4 699	5 463	4 692	5 223	119.6	134.9	112.0	121.0	1 420	1 454	...	...	36.1	35.9	...	...
El Salvador (d)	3 011	2 918	3 872	5 251	262.7	231.2	294.0	358.2	406	432	384	408	17.3	17.7	15.2	15.6
Guatemala	1 942	1 153	3 649	3 802	56.3	32.5	99.9	101.0	1 272	1 308	1 207	1 266	36.9	36.8	33.1	33.6
Haiti	1 188	2 278	3 067	2 860	35.1	66.5	88.5	81.6	...	...	...	...	...	...	...	...
Honduras	...	1 439	1 609	4 566	...	78.7	85.3	233.8	286	244	297	265	16.2	13.3	15.7	13.6
Mexico	10 392	11 157	11 348	12 417	33.1	34.5	34.1	35.6	9 494	9 399	9 168	9 719	30.2	29.1	27.5	27.8
Nicaragua	1 014	1 330	744	581	76.1	96.5	52.2	39.3	72	97	113	123	5.4	7.0	7.9	8.3
Panama	1 878	1 385	1 673	1 487	193.0	138.5	162.9	140.9	267	266	238	288	27.4	26.6	23.2	27.3
Paraguay (d,e)	1 381	1 206	1 126	1 113	135.3	107.6	85.2	63.0	219	220	244	292	28.6	27.7	28.7	32.4
Peru (d,f)	22 552	19 336	22 796	19 485	472.8	397.5	425.3	348.4	3 224	2 627	3 182	...	118.5	83.6	89.4	...
United States (c)	67 171	63 537	57 535	55 494	39.3	36.5	32.5	30.8	13 390	12 417	11 474	...	7.8	7.1	6.5	...
Uruguay	3 164	3 134	2 134	1 928	116.2	113.6	76.4	68.2	599	519	507	...	22.0	18.8	18.2	...
Venezuela (d)	7 211	7 494	7 887	8 722	200.3	201.2	204.3	217.7	1 731	1 547	1 466	1 411	26.9	23.2	21.2	19.6
Bahama Islands	117	107	124	187	119.4	105.9	120.4	178.1	13	20	12	...	13.3	19.8	11.7	...
Bermuda	2	11	7	12	4.9	26.8	16.7	28.6	-	2	1	1	-	4.9	2.4	2.4
British Guiana	192	202	172	186	37.1	37.9	31.3	32.9	139	77	...	...	26.8	14.4	...	...
British Honduras	56	74	38	72	67.5	86.0	43.2	79.1	14	14	21	16	16.9	16.3	23.9	17.6
Canal Zone	26	28	16	8	50.0	65.1	38.1	19.0	2	1	1	-	3.8	2.3	2.4	-
Falkland Is.	3	4	3	3	150.0	200.0	150.0	150.0	-	2	-	-	-	100.0	-	-
French Guiana	21	14	...	...	70.0	45.2	...	...	7	12	8	11	23.3	38.7	25.8	35.5
Guadeloupe	...	...	459	241	...	...	173.9	89.3	73	38	55	59	29.1	14.8	20.8	21.9
Martinique	215	271	225	190	83.3	102.7	83.0	68.6	96	108	76	92	37.2	40.9	28.0	33.2
Netherlands Antilles	45	24	52	30	24.3	12.8	27.7	15.8	3	4	5	...	1.6	2.1	2.7	...
Puerto Rico	3 120	2 800	2 487	2 137	138.1	121.8	107.1	90.5	741	667	679	...	32.8	29.0	29.2	...
St. Pierre and Miquelon	10	15	17	9	200.0	300.0	340.0	180.0	2	3	5	1	40.0	60.0	100.0	20.0
Surinam	119	135	187	126	50.0	54.4	72.2	46.7	37	30	20	22	15.5	12.1	7.7	8.1
Virgin Islands (U.K.)	...	...	2	2	...	...	28.6	28.6	1	-	-	2	14.3	-	-	28.6
Virgins Islands (U. S.)	8	9	15	6	27.6	30.0	48.4	18.2	4	3	2	...	13.8	10.0	6.5	...
West Indies Federation																
Antigua	16	22	28	8	30.8	41.5	51.9	14.5	12	7	9	3	23.1	13.2	16.7	5.5
Barbados	79	72	68	43	35.3	31.7	29.6	18.5	25	18	16	16	11.2	7.9	7.0	6.9
Dominica	85	83	...	...	149.1	143.1	...	...	27	32	19	29	47.4	55.2	32.2	48.3
Grenada	...	...	34	45	...	...	38.6	50.6	18	5	7	10	21.2	5.8	8.0	11.2
Jamaica	701	574	838	629	45.0	36.4	52.4	38.9	...	...	...	...	...	...	...	...
Montserrat	6	7	...	...	46.2	53.8	...	...	6	4	...	...	46.2	30.8	...	...
St. Kitts-Nevis-																
Anguilla	22	27	70	47	40.7	49.1	125.0	82.5	6	11	14	14	11.1	20.0	25.0	24.6
St. Lucia	118	120	75	67	142.2	142.9	88.2	77.9	48	41	39	15	57.8	48.8	45.9	17.4
St. Vincent	29	15	37	35	38.2	19.5	46.8	43.8	...	...	...	...	...	...	...	...
Trinidad and Tobago	380	281	298	243	49.6	35.7	36.7	29.1	139	110	116	95	18.1	14.0	14.3	11.4

(a) State of Guanabara and capitals of other states with exceptions. Data of reported cases incomplete for 1960.

(b) Excluding Northwest Territories 1957 and 1958, for case data. (c) Newly reported active cases.

(d) Reporting area for case data. (e) Area of information, for death data. (f) Principal cities, for death data.

* Disease not notifiable.

TABLE 42. NUMBER OF REPORTED CASES AND DEATHS FROM TYPHOID FEVER WITH RATES PER 100,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Cases								Deaths										
	Number				Rate				Number				Rate						
	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960			
Total	44 314	47 009	46 828	45 307															
Argentina	2 294	1 903	1 593	1 924	11.5	9.4	7.7	9.2	...	...	...	8.1	...	...	...	...	...	...	...
Bolivia	156	209	168	64	4.7	6.2	4.9	1.9	...	...	...	...	...	...	...	...	...	...	...
Brazil (a, b)	4 315	3 978	3 315	2 251	45.2	40.6	32.5	22.8	294	319	269	...	3.0	3.2	2.7	...	...	...	...
Canada (a, c)	279	304	544	335	1.7	1.8	3.1	1.9	12	3	3	4	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Chile	5 071	a)4 695	a)3 334	a)4 548	71.2	a)64.3	a)44.7	a)59.6	169	167	195	196	2.4	2.3	2.6	2.6	...	...	...
Colombia (a, d)	11 643	12 696	12 382	13 274	96.8	103.9	98.4	98.2	999	709	675	673	7.6	5.2	4.9	4.8	...	...	...
Costa Rica	194	220	192	128	18.8	20.4	17.1	10.9	16	29	12	12	1.5	2.7	1.1	1.0	...	...	...
Cuba	457	331	865	1 191	7.2	5.1	13.0	17.5	45	27	58	...	0.7	0.4	0.9	...	...	...	...
Dominican Republic	185	574	315	376	6.8	20.5	10.9	12.6	106	84	138	218	3.9	3.0	4.8	...	...	...	...
Ecuador	1 958	2 094	2 653	2 423	49.8	51.7	63.3	56.1	891	872	...	...	22.7	21.5	...	...	...	...	...
El Salvador (d)	654	a) 771	a)1 223	a)1 005	57.1	a)61.1	a)92.9	a)68.6	46	46	23	5150	2.0	1.9	0.9	1.9	...	...	...
Guatemala	410	176	839	.888	11.9	5.0	23.0	23.6	252	446	377	330	7.3	12.6	10.3	8.8	...	...	...
Haiti	155	944	351	271	4.6	27.6	9.6	7.7	...	...	...	...	...	...	...	...	...	...	...
Honduras	...	374	672	438	...	20.5	35.6	22.4	107	113	96	107	6.0	6.2	5.1	5.5	...	...	...
Mexico	4 683	6 004	7 047	6 173	14.9	18.6	21.2	17.8	3 764	3 162	2 935	2 673	12.0	9.8	8.8	7.7	...	...	...
Nicaragua	134	351	197	352	10.1	25.5	13.8	23.8	109	151	124	154	8.2	11.0	8.7	10.4	...	...	...
Panama	47	116	72	41	4.8	11.6	7.0	3.9	2	8	2	3	0.2	0.8	0.2	0.3	...	...	...
Paraguay (a, d, e)	55	106	77	150	5.4	9.5	4.5	8.5	5	17	8	16	0.7	2.1	0.9	1.8	...	...	...
Peru (a, d, f)	7 162	6 695	6 690	5 511	150.1	137.6	124.8	98.6	199	173	164	...	7.3	5.5	4.6	...	...	...	...
United States	1 237	1 044	861	816	0.7	0.6	0.5	0.5	34	23	22	...	0.0	0.0	0.0	...	...	...	...
Uruguay	359	280	405	330	13.2	10.2	14.5	11.7	21	26	26	20	0.8	0.9	0.9	...	...	...	...
Venezuela (a, d)	1 062	1 250	1 102	1 029	29.5	33.6	28.6	25.7	64	70	63	49	1.0	1.0	0.9	0.7	...	...	...
Bahama Islands	3	4	10	10	3.1	4.0	9.7	9.5	-	1	1	...	-	1.0	1.0	...	...	...	...
Bermuda	-	-	4	-	-	-	9.5	-	-	-	1	-	-	-	-	2.4	-	-	-
British Guiana	366	422	419	574	70.7	79.2	76.3	101.6	32	22	...	...	6.2	4.1	...	...	...	...	...
British Honduras	37	18	49	38	44.6	20.9	55.7	41.8	4	4	1	1	4.8	4.7	1.1	1.1	...	...	...
Canal Zone	1	-	4	2	1.9	-	9.5	4.8	-	-	-	1	-	-	-	2.4	-	-	-
Falkland Islands	1	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
French Guiana	32	2	3	9	106.7	6.5	9.7	29.0	1	-	-	-	3.3	-	-	-	-	-	-
Guadeloupe	22	42	20	29	8.8	16.3	7.6	10.7	2	9	3	5	0.8	3.5	1.1	1.9	...	...	...
Martinique (a)	129	240	211	354	50.0	90.9	77.9	127.8	6	12	7	2	2.3	4.5	2.6	0.7	...	...	...
Netherlands Antilles	24	22	8	2	13.0	11.8	4.3	1.1	-	1	-	...	-	0.5	-	...	...	...	...
Puerto Rico	20	22	15	28	0.9	1.0	0.6	1.2	-	3	-	...	-	0.1	-	...	...	...	...
St. Pierre and Miquelon	-	-	-	-	-	-	-	-	-	-	...	...	-	-	-	-	-	-	-
Surinam	207	93	65	38	87.0	37.5	25.1	14.1	15	2	3	4	6.3	0.8	1.2	1.5	...	...	...
Virgin Islands (U. K.)	...	...	1	1	...	...	14.3	14.3	-	-	-	-	-	-	-	-	-	-	-
Virgin Islands (U. S.)	1	1	2	1	3.4	3.3	6.5	3.0	1	-	-	...	3.4	-	-	...	...	...	...
West Indies Federation																			
Antigua (a)	53	22	17	39	101.9	41.5	31.5	70.9	5	1	1	1	9.6	1.9	1.9	1.8	...	...	...
Barbados	39	9	4	10	17.4	4.0	1.7	4.3	1	2	-	-	0.4	0.9	-	-	...	...	...
Dominica (a)	89	86	...	...	156.1	148.3	...	...	9	6	3	5	15.8	10.3	5.1	8.3	...	...	...
Grenada	...	...	5	17	...	...	5.7	19.1	5	5	-	1	5.9	5.8	-	1.1	...	...	...
Jamaica	444	480	740	413	28.5	30.4	46.3	25.5	...	...	...	...	...	...	...	...	...	...	...
Montserrat	10	8	...	...	76.9	61.5	...	...	...	...	...	-	...	...	...	-	...	...	...
St. Kitts-Nevis- Anguilla	3	20	3	7	5.6	36.4	5.4	12.3	-	-	-	-	-	-	-	-	-	-	-
St. Lucia	201	91	12	37	242.2	108.3	14.1	43.0	21	22	9	4	25.3	26.2	10.6	4.7	...	...	...
St. Vincent	26	7	38	13	34.2	9.1	48.1	16.2	21	22	...	...	27.6	28.6	...	...	...	...	...
Trinidad and Tobago	96	305	301	167	12.5	38.7	37.1	20.0	12	37	25	7	1.6	4.7	3.1	0.8	...	...	...

(a) Including paratyphoid fever, for case data. (b) State of Guanabara and capitals of other states, with exceptions. Data of reported cases incomplete for 1960. (c) Excluding Northwest Territories 1957 and 1958, for case data. (d) Reporting area, for case data. (e) Area of Information, for death data. (f) Principal cities, for death data.

(newly-reported active cases) declined steadily from 56.9 per 100,000 population in 1952 to 31.3 in 1960. In South America, where the rates were very high, only a slight decrease occurred in the decade.

In several countries of the Americas, the high reported case rates indicate that cases of tuberculosis are being diagnosed and reported. For example, in El Salvador, Honduras, Peru, and Venezuela more than 200 cases were reported per 100,000 population. In five other countries, there were at least 100 cases reported per 100,000 population.

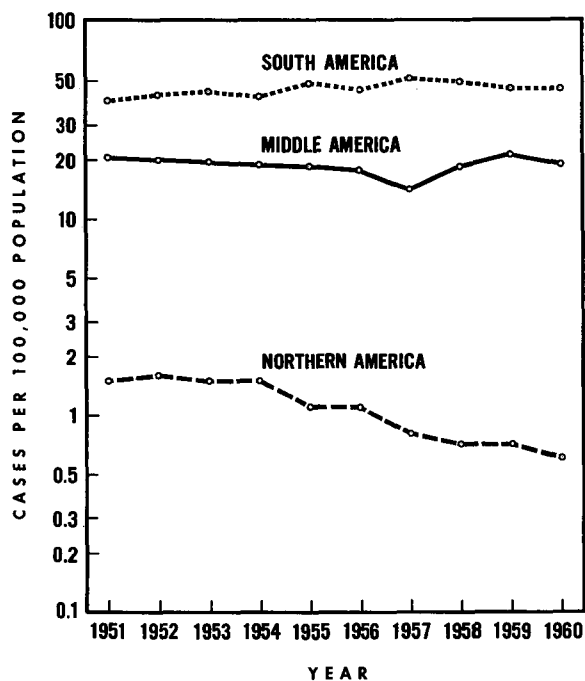
Although the apparent decrease in morbidity has been only slight in Latin America, death rates from the disease have shown rapid declines (Figure 23). In Northern America, the reduction from 1951 to 1960 was 72 per cent; in South America, 54 per cent; and in Middle America, from 1951 to 1958, 45 per cent. Of the countries of the Americas, Canada had the lowest rate in 1960 of 4.6 per 100,000 population.

TYPHOID FEVER

The continuing high case and death rates from typhoid fever in the Americas during the decade 1951-1960 are shown in the recent publication on notifiable diseases. The reported case rates are very high in both South and Middle America (Figure 24). Around

FIGURE 24

REPORTED CASES OF TYPHOID FEVER PER 100,000 POPULATION, IN THREE REGIONS OF THE AMERICAS, 1951-1960



45,000 cases of typhoid fever were reported each year in the four-year period 1957-1960 (Table 42). Provision of adequate water supplies to larger proportions of the population, as well as widespread improvement in sanitation, is needed to prevent typhoid fever.

TYPHUS

During the past decade, a marked reduction has occurred in cases of louse-borne typhus (Table 43). In the early part of the decade, over 3,000 cases were reported each year, while in 1959 there were 659, and in 1960, 668 cases reported. In nearly all countries, except Ecuador, marked reductions have occurred.

TABLE 43. REPORTED CASES OF LOUSE-BORNE TYPHUS IN THE AMERICAS, 1951-1960

Area	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Total	3 815	3 103	2 517	3 104	1 545	1 089	747	818	659	668
Argentina	10	1	2	-	-	-	-	-	4	-
Bolivia	99	85	409	1 021	397	216	66	15	29	7
Chile	a)656	a)261	a)238	-	7	90	9	5	6	10
Colombia	190	201	174	122	197	77	54	31	15	26
Ecuador	719	552	512	468	319	207	178	233	267	481
Guatemala(a)	38	13	16	9	14	3	1	8	-	-
Mexico	1 155	1 018	762	1 008	382	324	314	432	242	106
Peru	948	972	404	476	229	172	125	94	96	38

(a) Including murine and unspecified typhus.

WHOOPING COUGH

Whooping cough, a communicable disease of infancy and early childhood, continues to cause excessive morbidity in many countries of Latin America. On the average, over 200,000 cases were reported each year. The reported cases per 100,000 population were in excess of 100 in seven countries in 1960 (Table 44). Death rates, likewise, were very high in several countries.

Data for 14 countries for which information was available have been used for calculating death rates for the three regions for the decade (Figure 25). The whooping cough death rates for both Middle and South American countries remained at a high level and failed to show the same marked downward trend as in Northern America, where the rate was very low by 1960.

TABLE 44. NUMBER OF REPORTED CASES AND DEATHS FROM WHOOPING COUGH WITH RATES PER 100,000 POPULATION IN THE AMERICAS, 1957-1960

Area	Cases								Deaths							
	Number				Rate				Number				Rate			
	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960	1957	1958	1959	1960
Total	200 973	197 321	231 820	208 288												
Argentina	48 279	13 162	18 351	38 146	242.9	65.0	89.0	182.0	...	...	...	...	...	...	...	...
Bolivia	837	516	1 270	566	25.2	15.4	37.3	16.4	...	...	...	...	...	...	...	...
Brazil (a)	7 853	7 604	7 983	4 499	82.3	77.5	78.3	45.6	306	326	307	...	3.1	3.3	3.1	...
Canada (b)	7 459	6 932	7 259	6 014	45.0	40.7	41.6	33.8	63	40	46	71	0.4	0.2	0.3	0.4
Chile	4 230	12 192	6 348	5 030	59.4	167.1	85.0	65.9	188	443	527	362	2.6	6.1	7.1	4.7
Colombia (c)	34 192	34 311	34 546	42 472	284.3	280.7	274.5	314.3	3 595	2 869	2 833	4 172	27.2	21.2	20.5	29.5
Costa Rica	1 871	1 540	1 339	1 735	181.1	143.1	118.9	148.2	127	83	95	137	12.3	7.7	8.4	11.7
Cuba	45	46	699	229	0.7	0.7	10.5	3.4	17	33	83	...	0.3	0.5	1.2	...
Dominican Republic	1 907	2 694	5 801	6 476	70.5	96.3	200.4	216.3	52	30	67	...	1.9	1.1	2.3	...
Ecuador	...	...	...	...	...	...	...	...	3 367	3 021	...	...	85.7	74.6	...	...
El Salvador(c)	1 577	2 925	2 188	1 945	137.6	231.8	166.1	132.7	363	583	342	307	15.4	24.0	13.6	11.8
Guatemala	4 285	3 157	2 310	1 627	124.2	89.0	63.3	43.2	4 170	4 396	4 068	2 494	120.8	124.0	111.4	66.2
Haiti	1 407	3 050	5 438	1 649	41.6	89.1	157.0	47.0	...	...	...	...	...	...	...	...
Honduras	5 566	1 362	593	1 155	314.6	74.5	31.4	59.1	1 002	626	312	496	56.6	34.2	16.5	25.4
Mexico	27 813	38 826	39 168	24 116	88.5	120.0	117.6	69.1	7 121	7 127	8 538	5 365	22.7	22.0	25.6	15.4
Nicaragua	101	749	652	611	7.6	54.4	45.8	41.4	72	222	209	127	5.4	16.1	14.7	8.6
Panama	379	378	799	301	39.0	37.8	77.8	28.5	102	58	122	243	10.5	5.8	11.9	23.0
Paraguay(c,d)	2 387	2 275	4 975	1 571	233.8	202.9	287.9	88.9	29	23	58	34	3.8	2.9	6.8	3.8
Peru (c,e)	10 920	13 266	20 631	19 005	228.9	272.7	384.9	339.9	376	297	410	...	13.8	9.5	11.5	...
United States	28 326	32 199	40 034	14 809	16.6	18.5	22.6	8.2	183	177	269	...	0.1	0.1	0.2	...
Uruguay	674	994	4 320	1 011	24.8	36.0	154.7	35.8	21	28	112	...	0.8	1.0	4.0	...
Venezuela (c)	7 956	6 444	23 666	33 560	221.0	173.0	613.1	837.7	206	106	311	299	3.2	1.6	4.5	4.2
Bahama Islands	5	7	1 173	21	5.1	6.9	1138.8	20.0	-	-	6	...	-	-	5.8	...
Bermuda	-	10	74	2	-	24.4	176.2	4.8	-	-	-	-	-	-	-	-
British Guiana	578	680	...	...	111.6	127.6	...	...	8	1	...	...	1.5	0.2	...	...
British Honduras	19	-	7	-	22.9	-	8.0	-	1	1	1	-	1.2	1.2	1.1	-
Canal Zone	1	5	-	2	1.9	11.6	-	4.8	-	-	-	-	-	-	-	-
Falkland Is.	-	212	1	-	-	10600.0	50.0	-	-	-	-	-	-	-	-	-
French Guiana	-	1	20	6	-	3.2	64.5	19.4	-	-	-	-	-	-	-	-
Guadeloupe	...	7	16	-	...	2.7	6.1	-	-	16	22	10	-	6.2	8.3	3.7
Martinique	16	12	-	5	6.2	4.5	-	1.8	29	18	4	-	11.2	6.8	1.5	-
Netherlands Antilles	*	*	*	*	*	*	*	*	-	-	-	...	-	-	-	...
Puerto Rico	841	739	816	265	37.2	32.1	35.1	11.2	26	28	37	...	1.2	1.2	1.6	...
St. Pierre and Miquelon	-	-	...	...	-	-	...	...	-	-	-	-	-	-	-	-
Surinam	*	*	-	-	*	*	-	-	-	1	1	-	-	0.4	0.4	-
Virgin Is.(U.K.)	...	...	4	-	...	...	57.1	-	-	-	-	-	-	-	-	-
Virgin Is.(U.S.)	2	119	1	-	6.9	396.7	3.2	-	-	1	-	...	-	3.3	-	...
West Indies Federation																
Antigua	771	1 986	8	1	1482.6	3747.2	14.8	1.8	5	25	-	-	9.6	47.2	-	-
Barbados	*	*	*	*	*	*	*	*	1	-	-	1	0.4	-	-	0.4
Dominica	248	7	...	...	435.1	12.1	...	...	10	-	-	-	17.5	-	-	-
Grenada	...	...	-	26	...	...	-	29.2	-	-	-	-	-	-	-	-
Jamaica	263	2 646	1 109	149	16.9	167.7	69.4	9.2	...	...	...	...	...	...	...	...
Montserrat	1	855	...	...	7.7	657.7	...	...	-	13	...	-	-	100.0	...	-
St. Kitts-Nevis-Anguilla	3	5 325	44	4	5.6	9681.8	78.6	7.0	-	128	1	-	-	232.7	1.8	-
St. Lucia	65	18	12	8	78.3	21.4	14.1	9.3	1	-	-	-	1.2	-	-	-
St. Vincent	17	8	49	45	22.4	10.4	62.0	56.2	...	...	...	...	...	...	...	...
Trinidad and Tobago	79	62	116	1 227	10.3	7.9	14.3	147.1	7	1	1	8	0.9	0.1	0.1	1.0

(a) State of Guanabara and capitals of other states, with exceptions. Data of reported cases incomplete for 1960.

(b) Excluding Northwest Territories 1957 and 1958, for case data. (c) Reporting area, for case data.

(d) Area of information, for death data. (e) Principal cities, for death data.

* Disease not notifiable.

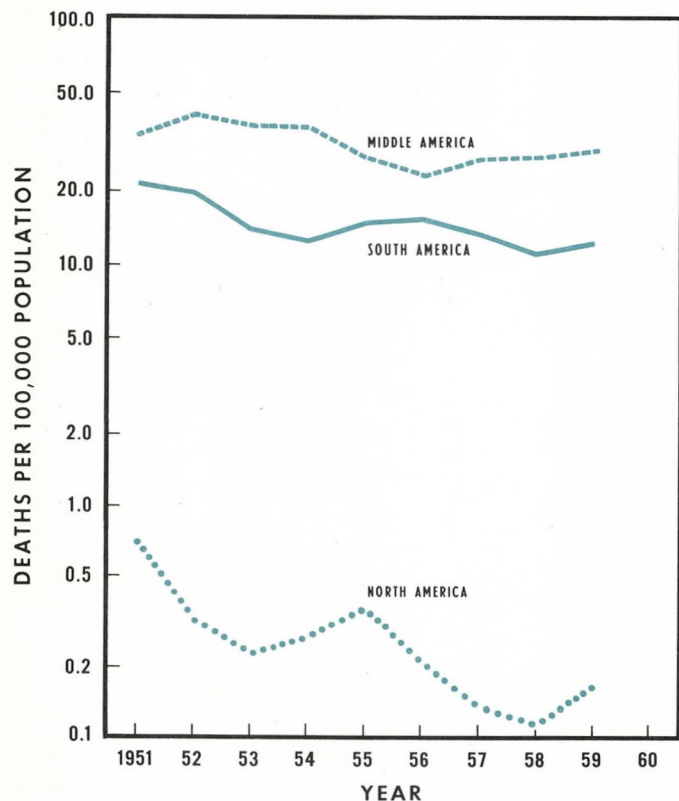
TABLE 45. NUMBER OF PERSONS IMMUNIZED AGAINST WHOOPING COUGH IN THE AMERICAS, 1957-1960

Area	1957	1958	1959	1960	Area	1957	1958	1959	1960
Argentina (a)	-	-	39916	165 294	Bermuda (a)	205	970	1 045	1 345
Bolivia	...	...	...	5 708	British Guiana	110	5	68	24
Canada	520 600	601 600	819 400	882 900	British Honduras	6 547	7 222	7 875	8 420
Chile	103 938	164 033	182 021	299 473	Canal Zone	...	...	...	3 742
Colombia	127 318	86 675	109 097	184 140	Falkland Islands	-	-	-	-
Costa Rica	2 827	4 969	4 261	9 344	French Guiana (a,b)	...	...	5	92
Cuba	-	-	-	80 017	Martinique	385	180	44	35
Dominican Republic	1 466	1 607	2 420	1 826	Puerto Rico (a,b)	23 014	29 943	32 416	...
Ecuador	17 253	21 948	38 734	37 735	St. Pierre and Miquelon	51	154	130	160
El Salvador (a)	16 914	13 503	16 219	15 147	Surinam	...	...	...	3 750
Guatemala	41 707	35 722	25 034	26 240	Virgin Islands (U.K.)	-	-	-	53
Haiti	251	163	487	302	Virgin Islands (U.S.)	510	794	741	...
Honduras	...	5 281	20 843	20 636	West Indies Federation	...	...	...	2 181
Mexico	347 392	331 222	342 075	427 860	Antigua	...	...	...	5 218
Nicaragua	2 244	2 876	4 291	28 713	Barbados	1 937	2 237	4 466	701
Panama	...	...	1 009	1 651	Dominica	...	...	1 070	37 757
Paraguay	2 797	5 077	5 731	3 329	Jamaica	...	...	...	-
Peru	33 074	117 298	3 042	82 727	St. Kitts-Nevis- Anguilla	-	-	-	-
United States (a,b)	1 984 149	2 248 229	2 664 970	...	Trinidad and Tobago	...	...	474	802
Venezuela	71 969	61 725	107 132	242 388					

(a) Governmental agencies only. (b) Incomplete data.

FIGURE 25

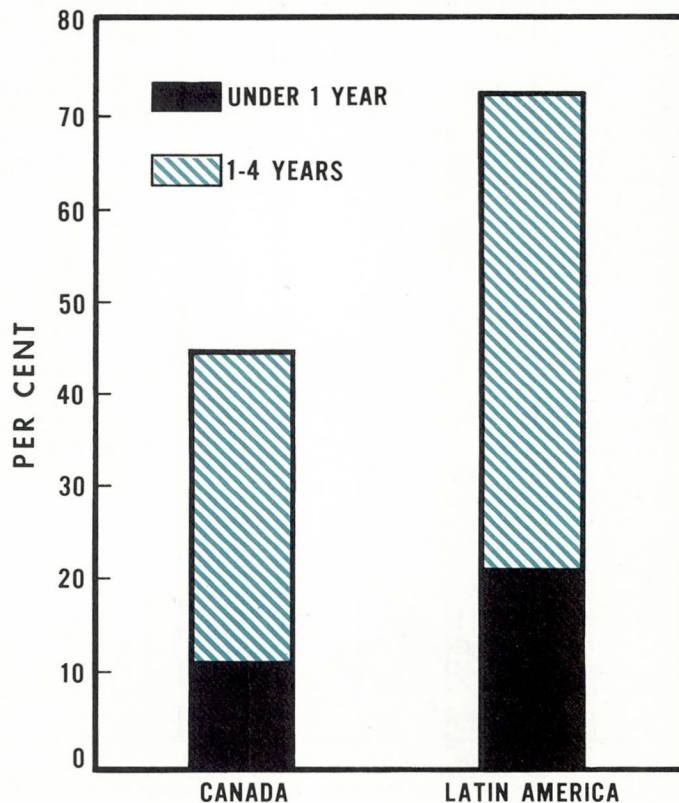
DEATHS FROM WHOOPING COUGH PER 100,000 POPULATION IN COUNTRIES OF THREE REGIONS OF THE AMERICAS, 1951-1960



NOTE: EXCLUDING THREE COUNTRIES OF MIDDLE AMERICA AND FIVE OF SOUTH AMERICA

FIGURE 26

PERCENTAGE OF CASES OF WHOOPING COUGH UNDER 1 YEAR AND 1-4 YEARS OF AGE IN CANADA AND LATIN AMERICA, 1957-1960



Case fatality from whooping cough is greatest for infants under one year of age. In Latin American countries, relatively high percentages of cases occur in infants. This is in contrast to the distribution of cases in Canada, where for the four-year period 1957-1960, 11 per cent of cases were of children under 1 year of age and 33 per cent of children 1-4 years of age. Based on available data for six Latin American countries, 21 per cent of cases were of children under one year and 51 per cent of children 1-4 years of age (Figure 26). Several factors may be responsible for differences in the age distribution of cases of whooping cough. For prevention of morbidity and mortality, immunization of infants early in life is recommended.

The number of persons immunized against whooping cough for the four-year period 1957-1960 are given in Table 45. Increases in numbers immunized are evident, but in many countries large numbers of children are still not protected and many cases continue to occur.

YAWS

The number of reported cases of yaws in the Americas have shown a marked decline in the past decade in many areas (Table 46). Although the number of areas providing data varies and the totals represent only the numbers reported, they point to progress toward eradication. The Governing Bodies of PAHO/WHO have designated the eradication of yaws as one of the eradication programs to have concentrated activity for completion. Apart from Brazil, for which data were not available, 2,788 cases were reported in 1960. Eight areas reported 100 or more cases in 1960 or recent year. The situation in 1960 had improved markedly from that ten years ago. However, in a few areas, reductions have not occurred and eradication programs are needed to eliminate this disease from the Americas.

TABLE 46. REPORTED CASES OF YAWS IN THE AMERICAS, 1951-1960

Area	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Total	17 180	16 121	12 596	26 548	7 838	6 153	5 538	4 896	3 910	2 788
Colombia (a)	2 547	3 083	4 246	2 473	1 299	1 154	1 201	732	810	463
Costa Rica	4	2	-	1	1	-	1	-	-	-
Cuba	-	-	110	-	-	-	...	...	-	1
Dominican Republic (b)	6 078	5 471	...	...	...	...	...	...	181	303
Haiti	...	...	...	17 249	2 017	1 074	1 298	1 361	860	336
Panama	193	171	189	163	144	123	65	21	-	2
Peru (a)	475	390	423	163	288	181	194	184	102	...
Venezuela (a)	1 978	1 457	1 285	976	901	716	647	426	250	146
Bahama Islands	...	...	...	1	-	-	-	...	...	...
British Guiana	81	65	45	90	90	65	11	5	...	...
French Guiana	...	...	...	...	48	...	...	...	-	-
Guadeloupe	159	102	91	...	...	...	...	...	-	-
Surinam	806	462	312	341	269	324	644	799	...	...
Virgin Islands (U. K.)	...	31	6	13	-	-	-	-	-	-
West Indies Federation										
Antigua	...	...	35	70	46	27	23	11	10	53
Dominica	275	545	403	146	348	617	225	236	223	204
Grenada	1 306	1 256	1 933	798	178	...	...	...	-	3
Jamaica	*	*	*	*	*	*	*	*	20	275
Montserrat	...	c) 558	c) 432	c) 293	c) 108	c) 71	c) 20	6	...	...
St. Kitts-Nevis-Anguilla	806	615	574	498	239	236	98	8	-	-
St. Lucia	516	557	774	1 124	1 010	640	270	71	140	64
St. Vincent	875	1 311	1 680	1 430	401	410	...	...	73	60
Trinidad and Tobago	1 081	45	58	719	451	515	841	1 036	1 241	878

(a) Reporting area. (b) Data for 1951 and 1952 refer to years ended on June 30 of each year.

(c) Cases treated.

* Disease not notifiable.

YELLOW FEVER

A few cases of jungle yellow fever are reported each year in the Americas (Table 47). The five countries which usually report one or more cases are Bolivia, Brazil, Colombia, Peru, and Venezuela. In the first part of the decade, cases were also reported from Costa Rica, Ecuador, Nicaragua, and Panama; in 1956 and 1957 a few cases were reported in Guatemala and Panama; in 1954 and 1959 cases were reported from Trinidad of which three, in 1954, were urban yellow fever.

TABLE 47. REPORTED CASES OF YELLOW FEVER IN THE AMERICAS, 1951-1960

Area	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Total	312	341	89	95	39	28	80	61	30	34
Bolivia	3	1	18	-	4	6	19	2	1	14
Brazil	50	221	39	9	8	2	10	26	4	1
Colombia	26	16	11	12	22	16	35	21	21	11
Costa Rica	180	93	5	-	-	-	-	-	-	-
Ecuador	42	-	-	-	-	-	-	-	-	-
Guatemala	-	-	-	-	-	-	3	-	-	-
Honduras	-	-	-	1	-	-	-	-	-	-
Nicaragua	-	7	8	-	-	-	-	-	-	-
Panama	3	1	-	-	-	1	4	-	-	-
Peru	4	1	-	26	-	-	3	6	1	6
Venezuela	4	1	8	29	5	3	6	6	1	2
Trinidad and Tobago	-	-	-	a) 18	-	-	-	-	2	-

(a) Jungle yellow fever, 15 cases; urban yellow fever, 3 cases.
Note: All the cases reported were jungle yellow fever except three cases in Trinidad and Tobago in 1954.

TABLE 48. NUMBER OF VACCINATIONS AGAINST YELLOW FEVER IN THE AMERICAS, 1957-1960

Area	1957	1958	1959	1960
Bolivia	...	...	...	2 546
Canada	4 180	4 010	5 630	3 500
Colombia	200 028	130 532	134 401	130 609
Cuba	186	100	110	125
El Salvador	5 028	4 819	3 194	220
Guatemala	69 437	44 953	3 170	541
Mexico	381 002	477 000	116 593	15 503
Nicaragua	5 293	6 335	6 286	...
Peru	17 843	46 347	26 046	44 841
Venezuela	405 704	226 496	262 459	263 358
Bermuda (a)	12	12	12	12
British Guiana	1959	11 561	2 090	3 716
British Honduras	16 577	1 379	992	565
Canal Zone	...	...	...	1 525
French Guiana	493	266	1 007	965
Guadeloupe	-	-	18	3
Martinique	144	103	222	91
Surinam	...	...	...	262
West Indies Federation				
Barbados	25	53	272	89
Jamaica	...	...	120	36

(a) Approximate.

Vaccinations against yellow fever continued principally in countries in which jungle yellow fever occurs. However, in many others, vaccinations of travellers were reported (Table 48).

One of the four eradication programs under way in the Americas is to eliminate the urban vector of yellow fever, the *Aedes aegypti* mosquito. This is described in a separate document.

4/ Report on the Status of *Aedes aegypti* Eradication in the Americas CSP16/12, XVI Pan American Sanitary Conference, PAHO, 1962.

Chapter IV

HEALTH SERVICES

Programs and responsibilities of health services at the three levels of government — national, regional and local — vary among the countries, depending on the pattern of government and the availability of private and non-profit sources for health and medical care. In view of these differences, comparisons of the extent of health services which are available to various populations are not easily made. Data on services should be interpreted only in relation to the overall medical resources of a country and to the use made of these resources by a population. In many countries complete information is not readily available.

In those in which both preventive and curative services are provided mainly by the government fairly complete data can often be obtained. In other countries in which private physicians and voluntary agencies are large contributors, the description of health activities becomes more difficult.

In the current Four-Year Reports specific questions were directed to obtaining information on expendi-

tures on health by official government agencies. Inquiry was made concerning health resources in terms of health centers, hospital clinics and other establishments for ambulatory out-patient care, clinics for specialized medical and health care and public health laboratories. Also included was a section on hospital facilities from which data are presented in Chapter V.

Many countries included in answers to the questionnaire narrative accounts of changes in organization of the health services and important events and progress in administration and in health programs. Information is used here from these sections to show the developments in health services in the Americas. Statistical data are presented whenever possible but are limited due to differences in structure of health and medical programs in the countries and lack of definitions and systems of collection of information. Many essential health activities are not individually mentioned since they are generally carried on as an integrated part of general health services.

EXPENDITURES FOR HEALTH SERVICES

One of the fields in which the development of comparable statistical data is difficult, if not impossible, is in expenditures for health services. This is because expenditures for health services in different countries are handled in various ways, by public and private agencies or by governments either city or municipal, state or provincial, or national. Definitions and procedures for obtaining data on capital or current costs, direct or indirect, have not been developed and used for the collection and analysis of data on expenditures. Although the questionnaire for this report included defined items on official government expenditures for health, the information is best presented separately for each country. Two summary tables bring together data available for these countries.

The Fifth World Health Assembly requested WHO "to undertake joint studies with other international agencies on the relationship between public health,

medical care and social security." WHO has recently carried on a study of health expenditures,⁽¹⁾ in which an attempt was made to define and classify health costs in a pilot study in six countries with varying systems of financing health services and different levels of living. Selected data from the analysis for the two American countries in this pilot study are presented as a basis for interpretation of the information provided by the countries for this present report.

In the WHO pilot study the costs were divided into capital and current, and sources of funds were distinguished as general government, compulsory insurance, private insurance, voluntary subscriptions and charitable funds, grants from outside the country, and other corporate and private courses. The total amount of general government funds at all levels (national, state, etc.) corresponds to the official total

^{1/} *A Study of Health Costs, The Cost and Means of Financing Medical Care Services*, WHO, Geneva, 1961 (Mimeographed report).

expenditure requested from Member States in the questionnaire for this report. Health services were defined in a broad sense to include promotion of health, prevention, diagnosis and treatment of disease—whether acute or chronic, whether physical, mental or social in origin—and rehabilitation of those incapacitated by disease or injury. The problems in determining the inclusions as health services are discussed in the report of WHO. Summary data are given for Chile and the United States, the two American countries which were included in the pilot study and which have also provided similar data in the questionnaire for this report (Table 49).

TABLE 49. GOVERNMENT EXPENDITURE ON HEALTH SERVICES AS PERCENTAGE OF TOTAL GOVERNMENT CONSUMPTION EXPENDITURE IN TWO COUNTRIES

	Chile	United States
Year	1959	1957/58
Population (1958)	7 298 000	174 787 000
Monetary unit	Escudos	Dollars
National income (per capita)	344	2 089
Total general government consumption expenditure	365 000 000	81 740 000 000
General government current expenditure on health services	62 900 000	5 357 000 000
Percentage	17.2	6.6

Of the total government expenditures, 17.2 per cent in Chile and 6.6 per cent in the United States were for health services. The National Health Service in Chile provides health services for the entire population and comprehensive preventive and curative medical care for the beneficiaries of the Workers' Social Insurance Fund (manual workers, their wives and children up to the age of 15 years) and for the medically indigent. This group represents between 70 and 75 per cent of the total population of the country. The high percentage of government expenditures for health in Chile indicates the important role that the government plays in the provision of health services. The pattern of health services in the United States is entirely different since most medical care is given by private physicians on a fee-for-service basis and general hospitals are usually operated by non-profit associations.

Since the content of the material received from the different governments in the Americas for this report vary widely, data are presented separately for each country. To facilitate comparisons, expenditures or budgets have been converted from national currency to U. S. dollars.

BOLIVIA

The budget for official health activities was given in two parts—the public health budget and the government contribution for health insurance. The total national budget was also provided. These figures in Bolivian currency and converted to U. S. dollars are as follows:

	<u>Bolivianos</u>		<u>U. S. Dollars</u>	
	Amount	Per cent	Amount	Per capita
Total national budget	425 458 105 731		35 798 000	10.36
Public health	12 150 298 402	2.9	1 022 000	0.30
Government contribution to health insurance	35 280 166 993	8.3	2 968 000	0.86

Of the total national budget 2.9 per cent was allocated for health and 8.3 per cent for health insurance, giving in all 11.2 per cent for these two activities in the field of health.

BRAZIL

Total governmental expenditures for 1960 and those for medical-health services were given at three levels, the federal, state and "municipios" as shown below:

	<u>Cruzeiros</u>			<u>U. S. Dollars</u>	
	Total government	Medical-health services		Medical-health services	
		Amount	Per cent	Amount	Per capita
Total	525 800 999 000	27 030 786 000	5.1	131 768 000	1.88
Federal	264 631 065 000	10 459 527 000	4.0	50 987 000	0.73
State	221 616 592 000	14 756 620 000	6.7	71 934 000	1.03
Municipios	39 553 342 000	1 814 639 000	4.6	8 846 000	0.13

The total for medical-health services in U. S. dollars was 1.88 per capita.

CANADA

Government expenditures for health were given by level of government for the fiscal year 1960-1961 as follows:

	<u>Canadian Dollars</u>	<u>U. S. Dollars</u>	
		Amount	Per capita
Total	910 568 000	914 225 000	51.32
Federal	326 904 000	328 217 000	18.42
Provincial	531 250 000	533 384 000	29.94
Municipal	52 414 000	52 624 000	2.95

Within the federal expenditures \$47,993,000 were for health grants to provinces and \$189,369,000 for hospital insurance payment to provinces. This latter expenditure was first made in 1958 and increased to

over \$189 million in 1960. Provincial expenditures for hospital care also increased from \$265 million in 1957 to \$442 million in 1960. The amount the health service received of total government funds increased from 10.4 per cent in 1957-1958 to 15.1 per cent in 1960-1961.

CHILE

The figure provided for all official health agencies of 64,979,797 escudos for 1960 was only slightly larger than the expenditures in the WHO Study. Based on the total general government consumption expenditure in 1959 of 365 million escudos, 17.8 per cent of the total budget was spent for health services. The health expenditures of \$8.09 per capita for 1960 were divided as follows:

	<u>Escudos</u>	<u>U. S. Dollars</u>	
		Amount	Per capita
Total	64 979 797	61 709 000	8.09
Health services	2 919 466	2 773 000	0.36
Medical and health care	62 060 261	58 937 000	7.73

COLOMBIA

Information provided for Colombia on health budgets includes monies from national, departmental, municipal and other sources such as income from charities and lotteries. In addition, income is obtained for services given in hospitals and institutions, from taxes specially designated for health, and from private donations. The total, however, does not include funds for social security and welfare, nor for the health care of the armed forces.

The following are appropriations for health services, hospitals, institutions and orphanages for the calendar year of 1960:

	<u>Pesos</u>	<u>U. S. Dollars</u>	
		Amount	Per capita
Total	252 243 000	34 888 000	2.47
National	98 273 000	13 592 000	0.96
Departmental	29 759 000	4 116 000	0.29
Municipal	16 260 000	2 249 000	0.16
Other sources	107 951 000	14 931 000	1.06

COSTA RICA

According to the information from the questionnaires, the official cost of health activities is 60,470,685 colones for 1960 and in U. S. dollars the expenditures were \$8.38 per capita as shown below:

	<u>Colones</u>	<u>U. S. Dollars</u>	
		Amount	Per capita
Total	60 470 685	9 817 000	8.38
Health services	8 738 772	1 419 000	1.21
Medical and health care	51 731 913	8 398 000	7.17

CUBA

The budget of the Ministry of Public Health in 1960 was given as 51,200,000 pesos, which is equivalent to the same sum in U. S. dollars, and amounts to \$7.53 per capita. The budget in 1960 was practically double that in 1959.

DOMINICAN REPUBLIC

The data provided include the costs of both the National Health Service and Social Welfare. Expenditures of official health agencies in 1960 were as follows:

	<u>Pesos</u>	<u>U. S. Dollars</u>	
		Amount	Per capita
Total	13 289 031	13 289 000	4.44
Health services	620 580	621 000	0.21
Medical and health care	12 588 451	12 588 000	4.20
Unspecified	80 000	80 000	0.03

These expenditures refer exclusively to the costs for health and social welfare; the budget of the Dominican Fund for Social Security is not included.

HAITI

The inclusions in the budgetary provisions, which were given in detail for 1958-1959, are grouped for presentation here in four sections:

	<u>Gourdes</u>	<u>U. S. Dollars</u>	
		Amount	Per capita
Total	18 998 415	3 800 000	1.10
Medical services	13 675 565	2 735 000	0.79
Education	997 252	199 000	0.06
Public health division	4 218 345	844 000	0.24
Administration	107 252	21 000	0.01

HONDURAS

In 1960, 7,760,695 lempiras were spent for health with practically one-half for health services and the other half for medical and health care. The data on the budget of the Ministry of Health and Social Welfare are as follows:

	<u>Lempiras</u>	<u>U. S. Dollars</u>	
		Amount	Per capita
Total	7 760 695	3 880 000	1.99
Health services	3 832 897	1 916 000	0.98
Medical and health care	3 848 798	1 924 000	0.99
International contributions	79 000	40 000	0.02

MEXICO

In 1960, 12.2 per cent of the federal budget was allotted for health, welfare and social security. Of this amount approximately half was for health and hospital services, as shown below:

	<u>Pesos</u>		<u>U. S. Dollars</u>	
	Amount	Per cent	Amount	Per capita
Total federal budget	10251341000		820107000	23.48
Health, welfare and social security	1248939490	12.2	99915000	2.86
Health and hospital services	617105142	6.0	49368000	1.41
Welfare and social security	631834349	6.2	50547000	1.45

Contributions of the states amounted to 23,894,468 pesos or 1,912,000 U. S. dollars.

NICARAGUA

The governmental expenditures for health as given below were 13.2 per cent of expenditures for all services in the fiscal year 1960-1961 and the per capita expenditure for health was 3.05 in U. S. dollars:

	<u>Cordobas</u>		<u>U. S. Dollars</u>	
	Amount	Per cent	Amount	Per capita
Total	247552000		34145000	23.12
Total health	32701949	13.2	4511000	3.05
Total health services	7822480	3.2	1079000	0.73
Medical and health care	24879469	10.1	3432000	2.32

PANAMA

As shown below, 10,241,335 balboas which were 17.2 per cent of the total expenditures for the Republic were provided for public health activities in 1960:

	<u>Balboas</u>		<u>U. S. Dollars</u>	
	Amount	Per cent	Amount	Per capita
Total	59436080		59436000	56.33
Public health	10241335	17.2	10241000	9.70

Exact figures were not available for the sum which the municipalities allot to public health, which is 5 per cent of their "entradas" and goes to a designated fund utilized by a special commission.

PARAGUAY

Expenditures for support of activities of the Ministry of Public Health and Social Welfare amounted to almost 162 million guaranies or 7.8 per cent of the total government budget, as given below:

	<u>Guaranies</u>		<u>U. S. Dollars</u>	
	Amount	Per cent	Amount	Per capita
Total	2083700000		16537000	9.35
Health services	161774457	7.8	1284000	0.73

Total funds including those of the Institute of Social Welfare, which is a part of the Ministry, were over 500 million guaranies.

PERU

The total general budget, as well as that for the Ministry of Public Health and Social Welfare was given. Between 1957 and 1960 the budget for the Ministry increased by 130 per cent. Health services accounted for almost a fourth of the Ministry's budget, averaging \$0.91 (U. S.) per capita:

	<u>Soles</u>		<u>U. S. Dollars</u>	
	Amount	Per cent	Amount	Per capita
Total	7869352800		294071000	27.09
Ministry of Public Health and Welfare	1141306900	14.5	42650000	3.93
Health services	267036702	3.4	9879000	0.91

THE UNITED STATES

The total governmental expenditures for health in 1959 was \$5,280,749,000 which was \$29.81 per capita. Of this amount, the federal contribution was nearly 30 per cent while the remaining was divided nearly equally between state and local governments, as seen below:

	<u>U. S. Dollars</u>	<u>Per capita</u>
Total	5280749000	29.81
Federal	1550865000	8.76
State	1871610000	10.57
Local	1858274000	10.49

In the expenditures for state and local governments, construction, maintenance, operation and medical care in hospitals accounted for a large proportion of the expenditures. Of the federal expenditures, \$253,345,000 was for grants to states, and \$863,000,000 for the Veterans Administration.

VENEZUELA

The budget for the Ministry of Public Health and Social Welfare was 474,791,000 bolivars for 1960-1961 and in U. S. dollars 19.88 per capita. As can be seen below, the budget of the Ministry was 8.6 per cent of the total national budget:

	<u>Bolivars</u>		<u>U. S. Dollars</u>	
	Amount	Per cent	Amount	Per capita
Total national budget	5500000000		1641991000	228.60
Budget for Ministry of Health and Social Welfare	474791400	8.6	141729000	19.88

Estimates from partial data show that over one billion bolivars are assigned to health activities in the various Ministries and Institutes in the health field. Medical services account for over two thirds of this latter sum.

* * * * *

For 11 countries, the total governmental expenditures, as well as those for health, were provided from which the proportions of the totals expended for health were obtained (Table 50). For these countries the variation was from 5.1 to 17.2 per cent and is related to the kinds of services rendered. In the United States, for example, most medical care is not paid for from governmental funds. In several of these Latin American countries for which information was available the percentage for health was large, for the three highest were 17.2, 17.2 and 14.5 per cent.

TABLE 50. GOVERNMENTAL EXPENDITURES FOR ALL SERVICES AND FOR HEALTH IN COUNTRIES OF THE AMERICAS PROVIDING DATA, 1960

Country	Total (National currency)	Health	
		Amount	Per cent
Bolivia	425 458 105 731	a) 47 430 465 395	11.2
Brazil	525 800 999 000	27 030 786 000	5.1
Canada (1960-1961)	...	910 568 000	15.1
Chile (b) (1959)	365 000 000	62 900 000	17.2
Mexico	10 251 341 000	a) 1 248 939 490	12.2
Nicaragua	247 552 000	32 701 949	13.2
Panama	59 436 080	10 241 335	17.2
Paraguay	2 083 700 000	161 774 457	7.8
Peru	7 869 352 800	a) 1 141 306 900	14.5
United States (b) (1957-58)	81 740 000 000	5 357 000 000	6.6
Venezuela (1960-1961)	5 500 000 000	474 791 400	8.6

(a) Public Health and Social Security.
(b) A Study of Health Costs, WHO.

From the data provided for seventeen countries, the expenditures per capita in U. S. dollars are presented in Table 51. Although the inclusions in the ex-

TABLE 51. EXPENDITURES FOR HEALTH IN LOCAL CURRENCY AND UNITED STATES DOLLARS IN 1960 FOR 17 COUNTRIES OF THE AMERICAS

Country	Local currency	United States dollars	
		Amount	Per capita
Bolivia (a)	47 430 465 395	3 991 000	1.16
Brazil	27 030 786 000	131 768 000	1.88
Canada (b)	910 568 000	914 225 000	51.32
Chile	64 979 797	61 709 000	8.09
Colombia	252 243 000	34 888 000	2.47
Costa Rica	60 470 685	9 817 000	8.38
Cuba	51 200 000	51 200 000	7.53
Dominican Republic	13 289 031	13 289 000	4.44
Haiti (c)	18 998 415	3 800 000	1.10
Honduras	7 760 695	3 880 000	1.99
Mexico	1 248 939 490	99 915 000	2.86
Nicaragua (a, b)	32 701 949	4 511 000	3.05
Panama	10 241 335	10 241 000	9.70
Paraguay	161 774 457	1 284 000	0.73
Peru (a)	1 141 306 900	42 650 000	3.93
United States (d)	5 280 749 000	5 280 749 000	29.81
Venezuela (b)	474 791 400	141 729 000	19.88

(a) Public Health and Social Security. (b) 1960-61.
(c) 1958-59. (d) 1959.

penditures differ considerably in these countries due to the nature of programs and services provided, the data indicate that the per capita expenditures in U. S. dollars are in general sizeable with two in excess of \$25.00 per capita, one almost \$20.00, and four others over \$7.00 per capita. The comparison of these expenditures with those provided for the previous report on health conditions⁽²⁾ indicates that the amounts are much larger in nearly all countries which may be attributed in part to the provision of data in accordance with a broader definition of health services, as well as to an increase in services.

ACTIVITIES IN GENERAL AND SPECIALIZED HEALTH SERVICES

Organized health services in communities are offered through health centers, through out-patient clinics of hospitals, dispensaries and emergency and mobile units. The information received for this report on health facilities and the service rendered in them is not strictly comparable in the countries and areas of the Americas. Definitions of the types of units vary and the amount of care provided by a specified type may differ widely. Reporting on health centers and establishments for general ambulatory out-patient care was limited in summaries for some countries to official establishments of the Ministry of Health. In other countries without centralized reporting of units within the country it was extremely difficult

to obtain complete data. However, the data, even though limited, do indicate the efforts being expended to develop health services in the Americas.

In Table 52 is shown the number of health centers in each country or area for a recent year, together with the number of persons attending, or the total number of visits made to the centers. As a rule, "health center" refers to local official health services. It usually refers to an organized center with sufficient trained personnel to offer generalized health supervision, in some instances including curative medicine. Increases in the numbers of health centers have occurred in most countries in the four-year period. For a few countries the large proportions served through

^{2/} Summary of Four Year Reports on Health Conditions in the Americas, PASB, Sc. Pub. No. 40, 1958.

TABLE 52. HEALTH CENTERS AND INSTITUTIONS FOR GENERAL OUTPATIENT CARE
IN THE AMERICAS, 1960

Area	Year	Health centers		Hospital clinics		Other units	
		Number	Persons served	Number	Persons served	Number	Persons served
Argentina (a)	1959	18	291 610	133	1 668 714	204	1 403 706
Bolivia	1960	90	...	8	...	45	...
Brazil	1960	b) 2 303	...	...	...	...	...
Canada	1958	c) 213	...	1 127	3 547 442	...	...
Chile	1960	...	** 4 130 462	...	...	370	d)* 633 535
Colombia	1960	757	* 4 941 475	...	...	...	...
Costa Rica	1959	67	* 132 312	15	...	68	...
Cuba	1960	126	...	...	...	44	...
Dominican Republic	1960	2	e) 7 418	...	...	178	...
Ecuador	1959	...	...	63	711 346	69	198 811
El Salvador	1960	66	223 620	11	296 760	16	...
Guatemala	1960	58	196 352	24	f) 211 824	1	18 327
Haiti	1960	14	76 742	21	173 974	157	150 355
Honduras	1960	28	129 930	...	...	...	...
Mexico	1960	g) 1 388	* 4 142 915	456	h) 416 178	483	h) 221 916
Nicaragua	1960	37	80 398	26	i) 69 094	22	...
Panama (a)	1960	35	h) 54 264	15	506 453	...	j) 271 817
Paraguay (a)	1960	56	* 430 545	...	...	99	* 152 572
Peru (a)	1960	71	...	...	...	493	...
United States	1959	1 109	...	6 200	h,k)*65 000 000	...	...
Venezuela	1960	l) 398	1 614 446	43	346 586	62	h) 1 290 229
Bahama Islands	1959	-	-	1	28 445	32	* 35 673
Bermuda	1960	-	-	-	-	-	-
British Guiana	1960	130	* 102 700	f) 6	* 272 569	35	h) 124 930
British Honduras	1960	24	...	7	34 862	26	h) 19 859
Canal Zone	1960	6	52 867	43	116 827	2	14 677
Falkland Islands	1960	-	-	-	* 3 280	2	...
French Guiana	1960	...	...	...	...	24	13 819
Guadeloupe	1960	-	-	8	* 6 142	41	* 61 439
Martinique	1960	...	...	...	...	29	7 671
St. Pierre and Miquelon	1960	-	-	1	9 075	1	431
Surinam	1960	2	...	...	...	44	...
Virgin Islands (U.K.)	1959	-	-	1	* 796	9	* 2 829
West Indies Federation							
Antigua	1959	3	* 67 922	1	...	16	* 44 797
Barbados	1959	3	* 113 213	1	* 116 351	...	...
Dominica	1960	3	* 8 331	-	-	26	...
Grenada	1960	30	...	-	-	9	...
Jamaica	1960	64	253 066	22	253 771	78	m) ...
St. Kitts - Nevis - Anguilla	1959	...	...	...	...	15	9 963
St. Lucia	1959	15	* 73 411	...	m) ...	...	m) ...

* Total visits. ** Visits of adults only.

(a) Institutions of Ministry of Health only. (b) Official health services.

(c) Estimated number of health units with a full-time medical officer in 1960.

(d) No attendance figures for 353 rural posts. (e) Health center of Santo Domingo only.

(f) Year 1958. (g) Excluding Federal District. (h) Incomplete, not all units reporting on attendance. (i) Year 1959. (j) Social Security. (k) Excluding Federally operated clinics; including hospital clinics and outpatient diagnostic and treatment centers.

(l) "Medicaturas rurales". (m) Included under health centers.

health centers or other official health units can be easily seen. The data from the National Health Service in Chile, through which both health services and curative medicine are provided to over 70 per cent of the population and health services also to the rest, indicate that a large part of the population takes advantage of the available health services. Adults made over 4 million visits to centers or clinics during 1960. This gives a ratio of 0.9 visits per adult in Chile. The ratio of visits by children to the total child population is close to 1. No differentiation was made between health centers, hospital and other clinics.

In Colombia the numbers of health units is large (757) and the ratio of visits to total population is approximately 0.4. These 757 units are of varying types. Thirty-two pilot health centers have full-time personnel trained in public health, including a physician, nurse-midwives, supervisor of sanitation, sanitary inspectors and nursing auxiliaries. Maternal and child health services, epidemiology, environmental sanitation, dental health, statistics, auxiliary services and medical care are included in the programs of the center. In addition, ten municipalities operate their own health centers. Another 641 centers have part-time physicians and furnish basic services in maternal and child health, epidemiology, environmental sanitation, dental care and medical care for adults. In seventy-four other units only limited services are furnished by a nursing auxiliary and health inspectors, with only periodic visits by a physician.

Brazil also reported on large numbers of official health services, but without details on their activities.

For at least half of the countries, hospital outpatient clinics were reported to have an important role in supplying medical care to a population. These clinics were usually more numerous than health centers, since they serve smaller geographical areas and in some instances the attendance was sizeable. In Canada, 3.5 million persons attended hospital clinics and in the United States an estimated 65 million visits were made to 4,400 hospital clinics reporting on their services. From almost 2,000 more hospital clinics in the United States there were no data on attendance. For Argentina, reports for establishments of the Ministry of Health also indicated a large attendance at hospital clinics.

Other units supplying general health care have been included under "Other" in Table 52. These include a few polyclinics and dispensaries, first aid stations, many rural health posts and in some countries a few mobile health clinics.

A section of the questionnaire was also devoted to specialized health services. These included primarily maternal and child health, occupational health, rehabilitation, school health, mental health, dental health and tuberculosis. Data for services reported

TABLE 53. TUBERCULOSIS CONTROL ACTIVITIES IN THE AMERICAS, 1960

Area	Number of clinics	Persons assisted		Number of X-rays	Number receiving BCG
		Number	Visits		
Argentina (a)	4	...	88 085	...	...
Bolivia	...	14 177	20 724	...	25 105
Brazil	166	b) 95 765	...	1 360 560	3 033 835
Canada	...	563 079	...	1 494 333	170 100
Chile	...	...	...	...	143 030
Colombia	...	461 225	113 196	590 772	c) 165 418
Costa Rica	d) 1	...	...	...	17 567
Cuba	...	...	...	...	66 845
Dominican Republic	10	...	...	...	657 063
El Salvador	...	...	...	...	36 721
Guatemala	...	...	...	...	19 723
Honduras	5	...	...	...	3 212
Mexico	...	218 488	...	...	67
Nicaragua	...	...	...	...	194
Panama	...	...	...	...	e) 13 967
Paraguay	...	...	...	...	6 388
Peru	27	f) 7 966	137 738	...	g) 74 673
United States	1 191	...	...	...	...
Venezuela	297	789 916	...	...	472 824

(a) For Ministry of Health only. (b) Tuberculosis cases. (c) Provisional. (d) Mobile unit. (e) Incomplete. (f) New cases. (g) 1959.

in maternal and child health programs appear in Chapter II. For most other fields, little information is available. However, for three—tuberculosis, mental and dental health—data have been summarized for countries and other areas reporting on their programs.

TABLE 54. MENTAL HEALTH SERVICES IN THE AMERICAS, 1960

Area	Number of clinics	Persons treated	
		Number	Visits
Brazil	...	...	130 049
Canada (a)	87	45 136	293 655
Chile	...	7 376	50 178
Colombia	...	...	110 932
Cuba	2	...	...
Panama	2	...	...
Paraguay	1	445	2 846
United States (a)	1 009	...	...
Venezuela (a)	8	12 315	...
Bahama Islands	1	...	b) 600
Bermuda	1	...	500
British Guiana	2	88	...
Canal Zone	1	...	1 801
French Guiana (a)	1	85	180
Guadeloupe	2	...	1 805
Martinique	6	...	2 083
St. Pierre and Miquelon	1	12	42
Surinam	2	...	...
West Indies Federation	...	...	...
Barbados	1	b) 384	...

(a) 1959. (b) Estimated.

The tuberculosis program in many countries is integrated with general activities of health centers and units. For this reason, in some countries data may not have been included under specialized services. The information supplied on the number of clinics, persons examined, and clinic visits is shown in Table 53. Mobile X-ray units are operated in a few countries, and the numbers of X-rays taken were reported. The extent of immunization with BCG is considerable. In almost all countries a sizeable number of vaccinations were performed and in several countries with the lowest numbers of vaccinations extensive programs were carried out in the earlier years of this four-year period.

Mental health activities are known to be extremely limited in many parts of the Americas. Only nine countries included any information in their reports on numbers of clinics and visits (Table 54). In the United

TABLE 55. DENTAL HEALTH SERVICES IN THE AMERICAS, 1960

Area	Number of clinics	Persons treated		Population with fluoridated water
		Number	Visits	
Bolivia	6	...	...	-
Canada	...	...	...	1 316 700
Chile	...	...	2 008 476	208 272
Colombia (a)	345	469 349	760 257	b) ...
Costa Rica	26	48 099	76 240	-
Cuba	8	...	...	-
Dominican Republic	2	4 430	8 591	-
Ecuador	...	...	42 310	-
El Salvador	34	45 804	70 914	c) ...
Guatemala	11	3 872	...	-
Haiti	...	...	44 915	-
Honduras (a)	...	2 791	...	-
Mexico	120	177 828	...	-
Nicaragua	...	194	...	-
Panama	...	...	d) 20 001	-
Paraguay	138	31 703	301 008	180 372
Peru	71	114 465	187 711	6 000
United States (a, e)	...	f) 531 424	...	...
Venezuela	58	190 270	416 144	-
Bermuda	3	...	7 328	-
British Guiana	...	63 622	...	-
British Honduras	69	...	1 190	-
Canal Zone	2	...	15 104	41 891
Falkland Islands	1	...	...	-
French Guiana	1	...	...	...
Puerto Rico (a)	...	20 038	...	-
St. Pierre and Miquelon	1	2 229	2 925	-
Surinam	7	19 820	...	-
West Indies Federation				
Antigua	99	...	10 100	-
Barbados	3	f) 8 263	...	-
Dominica	2	...	...	-
Grenada	7	4 000	...	-
Jamaica (a)	37	...	116 893	-
St. Kitts-Nevis-Anguilla (a)	89	4 215	5 484	-

(a) Year 1959. (b) Two cities with fluoridated water supplies. (c) One city with fluoridated water supplies. (d) Services. (e) Incomplete. (f) For children and maternity patients only.

TABLE 56. NUMBER OF PUBLIC HEALTH LABORATORIES AND NUMBER OF LABORATORY EXAMINATIONS IN THE AMERICAS, 1957-1960

Area	Number of laboratories				Number of examinations			
	1957	1958	1959	1960	1957	1958	1959	1960
Canada	38	38	38	41	5 872 182	5 737 717	5 929 106	6 109 485
Chile	1	1	1	1	2 708 319	2 925 565	3 351 303	3 256 030
Colombia	3	3	24	20	5 968	10 005	335 451	516 825
Costa Rica	26	26	26	26	366 159	340 952	354 014	435 717
Cuba	...	...	...	...	56 402	54 512	78 663	146 391
Dominican Republic	1	1	1	1	139 127	187 543	212 253	219 474
Ecuador	23	23	23	23	303 570	374 786	393 787	429 318
El Salvador	17	15	19	19	245 085	272 075	309 983	245 124
Guatemala	12	12	12	12	106 706	127 729	108 911	101 077
Haiti	15	15	15	15	82 895	86 305	133 572	125 099
Honduras	...	...	...	...	97 196	70 128	118 387	122 587
Mexico	121	121	133	136	798 209	1 078 254	1 083 436	1 319 904
Nicaragua	54	44	34	34	90 578	78 987	331 119	260 358
Panama	1	1	12	14	75 122	90 433	87 844	82 372
Paraguay	1	1	1	1	84 183	65 350	86 937	47 271
Peru	2	2	2	2	247 991	253 009	234 970	218 758
United States (a)	182	182	182	182	...	2300000	2500000	...
Venezuela	59	59	59	62	1 276 774	1 448 754	1 627 559	1 490 552
Bahama Is. (b)	1	1	1	1	20 519	25 685	25 505	...
Bermuda	2	2	2	2	...	...	...	...
British Guiana	7	7	7	7	113 874	134 334	158 237	180 027
Canal Zone	2	2	2	2	95 755	453 079	474 719	404 599
Falkland Islands	-	-	-	-	-	-	-	-
French Guiana	1	1	1	1	23 806	20 448	22 355	24 974
Guadeloupe	2	2	2	2	109 187	120 101	152 909	175 820
Martinique	1	1	1	1	258 182	293 244	275 041	260 371
Netherlands Antilles	2	2	2	2	...	...	...	...
St. Pierre and Miquelon	1	1	1	1	5 662	5 808	4 826	9 329
Surinam	...	...	...	6	...	...	...	...
Virgin Is. (U. K.)	1	1	1	1	2 019	1 578	1 254	...
West Indies Federation								
Antigua	1	1	1	1	18 798	20 360	24 777	24 884
Barbados	1	1	1	1	17 183	32 520	39 761	45 236
Dominica	-	-	-	-	-	-	-	-
Grenada	1	1	1	1	...	...	...	...
St. Kitts-Nevis-Anguilla (b)	1	1	1	1	...	...	...	...
St. Lucia	2	2	2	2	13 222	14 461	23 981	...

(a) Number of laboratories for 1957-1959 estimated on basis of 1960 figure.

(b) Hospital laboratory performing both public health and hospital examinations.

States and Canada relatively large numbers of clinics are operated, but in the Latin American countries they are very few. Clinics also were more frequently in existence in the territories of the United Kingdom and France than in Latin American countries. The small numbers are not unexpected in view of the small number of beds available for treatment of mental illness.

Dental health services were apparently more likely to be considered as specialized than those in other fields. From many countries and areas there were reports on numbers of clinics and visits (Table 55). Additional information was given on the populations supplied with fluoridated water.

Public health laboratories have many functions of which one is to assist the clinician in diagnosing disease. In public health activities laboratories help

TABLE 57. NUMBER OF EXAMINATIONS IN PUBLIC HEALTH LABORATORIES
BY DEPARTMENT IN THE AMERICAS, 1960

Area	Total	Bacteri- ology	Chem- istry	Hema- tology	Parasi- tology	Pathol- ogy	Serology	Urology	Virology	Other
Canada	6 109 485	a)3 059 633	576 547	445 083	55 523	177 264	1 683 627	...	58 020	53 788
Colombia	516 825	34	...	...	b)510 285	2 881	130	...	622	2 873
Costa Rica	435 717	75 156	...	202 809	100 607	...	57 145	...	...	...
Cuba	146 391	1 518	609	...	...	...	...	...	...	c)144 264
Dominican Republic	219 474	8 664	85 372	18 346	39 129	1 947	66 016	...	...	...
Ecuador	429 318	19 227	...	...	72 117	...	146 829	...	...	191 145
El Salvador	245 124	58 183	...	6 450	42 797	...	135 987	...	...	1 462
Guatemala	101 077	19 569	...	...	33 454	...	48 054	...	...	...
Haiti	125 099	43 482	...	35	21 531	...	35 135	24 916	...	...
Mexico	1 319 904	39 390	37 630	205 651	191 910	288	774 509	34 315	...	36 211
Nicaragua	260 358	9 240	...	...	95 979	...	48 384	86 090	...	20 665
Panama	82 372	18 925	4 448	9 208	13 316	...	21 888	14 537	...	50
Paraguay	47 271	1 839	5 524	...	2 896	...	36 679	...	...	333
Peru	218 758	9 219	...	...	...	4 819	150 744	...	...	53 976
Venezuela	1 490 552	128 652	...	192 242	260 786	...	788 640	...	150	120 082
British Guiana	180 027	80 197	11 710	68 446	10 833	...	...	...	...	8 841
French Guiana	249 774	5 867	5 944	5 700	...	148	7 315	...	...	...
Martinique	260 371	8 166	...	28 110	11 338	...	74 588	...	...	138 167
St. Pierre and Miquelon	9 329	704	...	6 391	420	...	-	...	...	1 814
Virgin Islands (U. K.)	1 254	706	...	381	...	123	...	...	...	44
West Indies Federation										
Barbados	45 236	5 639	...	2 671	1 095	...	29 781	5 088	...	962
St. Lucia	23 981	1 423	...	...	13 480	...	7 056	...	...	2 022

(a) Includes 2,074,086 diagnostic tests and 985,547 sanitation examinations. (b) Includes 509,918 for malaria.
(c) General clinical analyses. (d) Year 1959.

to protect the individual and community from contamination of water, food and air, and impurities of drugs and medicine. In addition, examinations are performed to identify the agents responsible for communicable diseases and epidemics. Development and strengthening of laboratory services in the Americas will both improve the quality of medical care and produce more reliable information on morbidity, mortality and environmental conditions which is so urgently needed for evaluation and planning in the health field.

The Four-Year Reports from many countries contained information on the numbers of public health laboratories and on examinations performed during the period. In many countries the number of examinations increased considerably during the short span of four years. Available data are shown in Table 56 for the period 1957-1960.

For the year 1960, numbers of examinations in these laboratories are distributed in Table 57 by department. The four principal fields in which the laboratory work was performed were usually bacteriology, hematology, parasitology and serology. Bacteriological examinations included both clinical diagnostic tests and determinations of products for environmental

sanitation. In the Latin American countries large numbers of parasitological examinations were made. In Colombia almost all were for identification of malaria. In only a few countries were virus studies reported, and from relatively few was work in pathological diagnoses indicated. However, only public health laboratories were included, with the exception of a few joint hospital and public health laboratories.

Although data on general and specialized health services are difficult to obtain, they are useful in health planning. In each country, methods need to be evolved for measuring the attention required and directed to general and specific problems of health and disease. Development of centralized collection of statistics is not to be recommended for all countries because of differences in the sources of health care, whether federal, regional or local government, voluntary or private. However, in the smaller countries of the Americas, and those in which most care is offered through government sources, this may be the best method. In others, survey methods may be the advisable ones to gain knowledge of the health situation and investments in care.

IMPORTANT EVENTS AND CHANGES IN ORGANIZATION OF NATIONAL HEALTH SERVICES

Many National Health Services reported important events and changes in organizational structure in answer to questions in Part A of the questionnaires which have been summarized.

ARGENTINA

The Ministry of Social Welfare and Public Health has delineated health programs establishing priorities compatible with actual needs and economic possibilities of the country. These programs are intended to prevent diseases, promote health and rehabilitate the handicapped. The following principal accomplishments are reported for the period 1957-1960. A Special Committee was created in order to coordinate and centralize efforts in the campaign against tuberculosis. Also, agreements were arranged with the provinces to increase knowledge of the problem and intensify treatment programs. Compulsory poliomyelitis immunization of children 2 months to 14 years of age was established. Campaigns against hydatid disease and Chagas' Mazza disease were carried out. Although only sporadic cases of smallpox occur in the country, plans are under way for vaccination of 15,600,000 persons against smallpox in six months. It is expected that *Aedes aegypti* eradication campaigns will be finished in 1962. The extensive program for the eradication of malaria is continuing. The National Leprosy Program was submitted to Congress for sanction into an Act. A National Plan of Maternal and Child Health was established for the country with special attention to the reduction of morbidity and mortality from gastro-intestinal diseases.

BRAZIL

Since its separation from the Ministry of Education in 1954, the Ministry of Health modified its structure in only one point: the creation of the National Department of Rural Endemics in 1957. The medical and health activities are under the state governments or the federal government, jointly with other institutions outside the governments. In general all, or almost all, health programs are long-term ones. At the national level, they include the development of the following campaigns: tuberculosis, leprosy, vaccination, promotion of activities of maternal and child care institutions, environmental sanitation, rural endemics including malaria eradication, to mention only a few. A short-term program for the mass vaccination against small pox is to be carried out in 1962.

CANADA

During 1957 some internal rearrangements took place in the Health Services Directorate. As a result, the work of the Directorate is now carried on by an administration section, by five main health sections, each of which is headed by a principal medical officer and by a number of consultant divisions covering special fields. In a broader context it may be said that just as the pattern of the social and economic organization of the country is subject to constant and progressive change, health services cannot remain static and must also undergo appropriate changes necessary to the needs of the times. With the introduction on a national scope of the Hospital Insurance Program, the setting up of the Royal Commission on Health Care took place. The Hospital Insurance and Diagnostic Services Act came into force on May 1, 1957. This act empowers the Minister of National Health and Welfare to enter into agreements with the provinces to make insured services available to all residents, to ensure maintenance of adequate standards in hospitals, to maintain adequate records and accounts, etc. In 1958, federal assistance under the Hospital Construction Grant was increased to \$2,000 per hospital bed and beginning with the fiscal year 1959-60 a redistribution and merging of certain of the health grants was expected to provide a more flexible measure of assistance and make larger amounts available where additional amounts were necessary. In the field of maternal and child health, an Advisory Committee to the Minister of National Health and Welfare was established in 1958. The Emergency Health Services Division was created as part of the Health Service Directorate in 1959 to coordinate the emergency health planning of the Department. In the field of radiation protection an expansion in departmental activities occurred in 1959.

CHILE

Health activities continued to be promoted mainly by the National Health Service, which pursued a policy of integration. In this Service, policy making is centralized in the Public Health Department; execution is centralized in the zones, which are responsible for coordination, and in the hospital areas and their dependent services, which are responsible for both preventive and curative activities. In the matter of health legislation, Law 10,383, which established the National Health Service, was supplemented by further rules and regulations aimed at strengthening it.

The earthquake in early 1960 which affected eleven provinces and seven out of thirteen health areas, or about one third of the population, while a catastrophe, did bring about a quickening of planning for physical and administrative reorganization. This first step towards a national health plan within the framework of a development plan was recently strengthened when a Planning Board and a Planning Unit were established at the policy-making level. The Planning Unit is already working on immediate and long-range solutions.

CUBA

In recent years, new objectives are being proposed for health policies based on a technical-scientific reorganization. Plans have been made and are being implemented for re-structuring the Ministry, maintaining centralization with respect to regulations, standards, planning and specific goals. To attain these goals, administrations have been set up at the regional level to control decentralization and implementation of technical and administrative matters in the zones. During the first two years, 3,546 professional posts have been established for dentists, pharmacists, nurses and specialized technicians. The following is the most important new legislation on public health: in 1959, the incorporation of the National Organization of Children's Dispensaries in the Ministry of Health; in 1959, establishment of the Section of Nutritional and Metabolic Research; in 1960, the law to establish the technical-administrative organization of the Ministry of Health with the following programs: health promotion and protection; preventive and curative services to mother and child with special emphasis on prevention of diseases; protection of adolescents and youths and promotion of their healthy growth; regulation of medical aspects and requirements for physical education and sports; improvement of environmental sanitation both rural and urban; improvement of health conditions of workers; epidemiological control of diseases; control of food, beverages, drugs or other substances which might influence health; collection of the required statistics, promotion of education and dissemination of health materials; establishment of regulations for construction and maintenance of hospitals and health services in industrial plants; establishment of regulations for a steady development of health services incorporating the progress of science; promotion of medical research, and promotion of national drug production.

EL SALVADOR

The Committee for Economic Planning was established in August 1959, and subsequently the Council of Ministers created the Health Planning Board. Both the Committee and the Board are cooperating agencies of the ministries. Other changes reported in administration are included in the chapter on environmental sanitation.

HAITI

A Department of Population was created in the Department of Public Health. The Social Aid Service, formerly under the Department of Public Health, has been abolished with the creation of a Social Welfare Service. Changes have been made in the organization and Regulations of the Public Health Department. An extensive project in rural medicine has been studied and planned to be initiated through a pilot project. The program for the eradication of yaws, which was started well before 1957, is now in the final surveillance phase.

HONDURAS

The main event in the public health field was the approval in 1959 of the National Plan for Public Health. When it was put into effect, it brought about changes in structure and administration. The "Dirección General de Sanidad" that was under the Ministry of Government and Justice was transferred to the Ministry of Public Health. Divisions and normative and executive departments were created.

The country was divided into seven health districts, of which two had functioning health services and one was being organized. Centers, sub-centers, health posts and maternal and child health clinics were created in the health districts. A new system of statistical information was introduced. The program of control of leprosy was started in the southern part of the country. Laws required the iodization of salt and the enrichment of wheat flour with vitamins and minerals. Projects of regulation of milk and of water supplies and sewage systems were approved.

MEXICO

In 1958 the Ministry of Health and Social Welfare made certain changes in its structure in order to promote health activities throughout the country. It created the Department of Public Health Services with jurisdiction over all agencies of the Ministry engaged in health work. The technical activities which had previously been distributed among other executive agencies, of which the four most important were the Bureau of Coordinated Health and Welfare Services; Bureau of Rural Social Welfare; Bureau of Rural Cooperative Medical Services; and Bureau of Health in the Federal District, were transferred to this new Department.

In June, 1959, two Undersecretariats were established, one for health and the other for social welfare. The appropriate machinery for coordination was also established. The Department of Public Health Services in States and Territories coordinates and supervises the activities of the Bureaus of Coordinated Services both of Health and of Welfare, as well as the rural and cooperative medical services, and those of epidemiology and health campaigns.

There is now a medical care department, a social welfare department and a public health department in the Federal District. The Department of Public Health Education integrated with the Health Education and the School of Public Health, and has jurisdiction over all the agencies engaged in training of personnel, whether elementary, professional, or advanced. The Maternal and Child Health Department, the Department of Mental Health and Rehabilitation, which was combined from those of Neurology, Psychiatry, Mental Health, and Rehabilitation, and the Department of Nursing and Social Work have policy-making functions in their respective fields.

PANAMA

During this period, the Falk Plan on the health situation was submitted with recommendations. The plan for the three health regions was adopted in the budget. Although the directors have been named, the plan has not been implemented. Later, a commission on public health was appointed, which made recommendations. The anti-tuberculosis campaign initiated during this period will make an impact on this problem.

PARAGUAY

The principal activities of the Ministry of Public Health and Welfare were given in outline form and included the following: in 1957, program of control of leprosy, plans for eradication of malaria, for development and improvement of the health services and regionalization, for eradication of smallpox, anti-rabies campaign, decree creating the National Council of Nutrition, resolution creating full-time work for professional technicians (*dedicación exclusiva*), resolution creating the Commission for Fellowships; in 1958, decree for iodization of salt, decree establishing requirements for the profession of nursing; in 1959 decree reorganizing the National Committee of Vital and Health Statistics, decree creating a Commission with representatives of the Ministries of Public Health and Agriculture charged with planning and coordinating the work in zoonoses and control of foods.

PERU

The most outstanding events in health administration during the period 1957-1960 were the reorganization of the Ministry of Public Health and Social Welfare and the enactment of the following legislation: on 14 June, 1957, the Ministry was reorganized by Decree, on the following basis: technical centralization and administrative decentralization, acknowledgement of public health as a specialty and guaranteed security of tenure of staff, promotion of active community participation in health and welfare programs, and more effective coordination of central policy-making

agencies with peripheral executive agencies. Under the jurisdiction of the Department of Health are the Divisions for Health Areas, Policy-making Technical Services, Pharmacy, Administration and Nutrition. The two most important are those for Health Areas and Policy-making Technical Services. The first is responsible for creating, organizing, developing, and directing the local services and for formulating programs; and the second is responsible for establishing the policy directives that guide the activities of such local agencies. The most important plans and programs initiated, under way, or formulated between 1957 and 1960 are as follows: malaria eradication; five-year smallpox eradication plan; health education plan of the Institute of Occupational Health; hospital construction and reconstruction plan; national health plan; plan to expand tuberculosis control throughout the country.

THE UNITED STATES

The most significant event with respect to national health administration during the period under review was a Study of the Organization and Future Mission of the United States Public Health Service. Over the past few years the national health programs and needs have changed at an accelerated momentum. In order for a national health agency to meet the changing health needs of the the citizens, the administrative organization must be changed accordingly. In recognition of this fact, the Surgeon General, in January, 1960, appointed a Study Group to determine how the Public Health Service might better meet the changing health needs of the American people. The Study Group made an intensive review of: 1) present functions and responsibilities of the Public Health Service; 2) national trends in health problems, manpower, facilities; 3) methods available for dealing with health problems; and 4) studies by other groups of national health problems and needs.

The group sought to evaluate the major functions of the Service with reference to their probable significance in meeting the future health needs. The group identified the following areas in which increased public and private effort would be needed and most likely to occur: 1) research in biological, medical, environmental and social sciences; 2) application of present and future research findings; 3) development of health resources, in terms of manpower and facilities for all pertinent areas of research, training and service; 4) environmental health; 5) comprehensive health care, including disease control; 6) national systems of vital and health statistics and related data; 7) collection, storage, retrieval and dissemination of scientific literature in fields pertinent to health; and 8) health information and education of various publics.

Progress was reported on the following specific activities. Medical care needs of the aged resulted in

amendments to the Social Security Act in 1960 whereby federal matching grants to the states were authorized for care of the medically indigent, including payment for certain services. The continuing National Health Survey, a division of the National Center for Health Statistics, was authorized in 1956. Comprehensive statistics on health and illness are compiled for the general population of the nation through household interviews, medical examinations of a sample of the population, and special surveys.

The first National Conference on Air Pollution was held on November 18-20, 1958, and the first National Conference on Nursing Homes and Homes for the Aged in February 1958. Substantial progress has been made in the construction of general hospital beds and facilities throughout the United States, and also in health services for children during the period. Public health implications of ionizing radiation from the environment have been receiving increasing attention. Major activities in the field of radiological health include research, epidemiological studies, radiation monitoring of air, water, milk and food, training of radiological health specialists, and technical assistance to states on radiation safety measures.

VENEZUELA

When the National Health Service was organized by departments, some agencies were merged into two new departments, which was the most important change in the central organization of the Ministry in recent years. The Department of Social Affairs and Autonomous Institutes, established in August 1958, is responsible for the study of social problems that have a bearing on the health of the population, and for the preparation and execution of plans and programs. It now includes Divisions of Community Organization and Development, of Emergency Allowances, Civil Defense, and of Social Work, as well as the six autonomous Institutes attached to the Ministry. The Department of Malariology and Environmental Sanitation established on 5 December 1960, includes the Division of Malariology and the Division of Sanitary Engineering which were previously part of the Department of Public Health, as well as the Rural Housing Program, which was begun under the Department of Social Affairs. The new Department is now composed of the Division of Sanitary Engineering, Rural Endemic Diseases, Rural Water Supply, Rural Housing, and of Hookworm and Other Helminthic Diseases.

Important expansions took place in the Department of Administration with a view to modernizing and improving its systems. At the local level, the most important event was the establishment of the health region of Yaracuy State, which combines the medical and health services under a single direction.

The Central Office of Coordination and Planning (CORDIPLAN), established in May 1959 under the Office of the President, has been responsible for the studies required to formulate the National Plan for

the period 1961-1964. CORDIPLAN collects basic information for estimating the needs of services, funds, personnel, and establishing future goals. The document of this agency entitled "Four-Year Plan No. VII - Health" contains the national targets for medical and public health services.

BARBADOS

In 1959 the Local Government Act (1958) and the Public Health Act (1954) were both put into effect. The first is an Act to make better provision for social government and the second is to consolidate and amend the Acts of the Island to place responsibility for sanitation on the Local Government Councils in place of eleven Boards.

BERMUDA

Administrative and clinical services were closely linked by the consolidation of all divisions in the new Medical and Health Department.

BRITISH GUIANA

Progress in maternal and child health service can best be appreciated by reference to the award of the Dennis Geffen Rose Bowl by the National Baby Welfare Council of the United Kingdom.

BRITISH HONDURAS

The most significant health program initiated during the period was the conversion of malaria control to malaria eradication.

DOMINICA

In a ten-year development program it is proposed to build and staff a network of health centers, to double the number of hospital beds and to expand existing maternal and child welfare services to cover the whole island.

FRENCH GUIANA, GUADELOUPE, AND MARTINIQUE

The health programs carried out in this period have emphasized the extension and improvement of hospitals and medical care, the creation of dispensaries for preventive medicine with intensification of programs against communicable diseases, mainly tuberculosis, leprosy, intestinal parasitism and reduction of infant mortality.

ST. LUCIA

With the introduction of the ministerial system of government, the general direction of the medical services was vested in the Minister of Social Services instead of, as previously, in the Administrator.

SURINAM

Legislation concerning the leprosy service, the reporting of communicable diseases, the inspection of foodhandlers and the distribution of milk was passed.

RESEARCH

Activities in medical and health research have been increasing in many countries of the Region, both in Ministries of Health and in private institutions. Replies from nine countries and five other areas of the Americas emphasized various aspects of their programs. Some called attention to creation of special national committees and institutes for research; others pointed out studies in progress in the years 1957-1960; and others reported on increases of funds to support research activities.

In eight of the countries special research institutes

were functioning under the direction of the Ministries of Health. These institutes were concerned with studies in microbiology, in rural endemic diseases, such as malaria, schistosomiasis, and Chagas' disease, in research on cancer and leprosy and on nutrition. Within some of the Ministries, research on administrative aspects of health services, on reduction of morbidity and mortality and on social factors was also under way. Nutrition received special emphasis in the reports and three of these nine countries reported separate research institutes for nutrition.

MAJOR HEALTH PROBLEMS

In the outline suggested for descriptive information in Part A, a section was devoted to "Major Health Problems." In general, replies tended to emphasize the broad problems, not usually those associated with a single disease, but rather those related to environmental, educational and socio-economic conditions.

Eleven countries listed major health problems. Given high priority in seven countries was the need for environmental sanitation. This was expressed in various ways, as the lack of environmental sanitation, lack of potable water, lack of sewerage systems or as the problem of excessive gastrointestinal infections in childhood. The nutritional status of the population was also mentioned as a major problem in six of the eleven countries.

Control of tuberculosis remains a major concern of health authorities in many countries, in spite of decreasing mortality rates. In five of the eleven countries this disease was considered as one of the five major health problems. Other diseases mentioned by two or more countries included cancer, cardiovascular diseases, respiratory diseases, mental disorders and intestinal parasitism.

Replies from those countries expressing needs only in broad terms usually included health education as a leading problem or referred to problems related to socio-economic conditions. Other situations detrimental to health which were listed included the lack of trained medical and technical personnel and the lack of medical care and health services. The uneven geographical distribution of personnel for health services was emphasized. One country placed stress mainly on need for proper planning, administration and coordination in the Health Services, together with sufficient numbers of full-time personnel and training facilities.

Among nine other areas in the Americas giving the same type of information, seven gave the same high priority to problems of environmental sanitation, four to tuberculosis and two to nutrition. Social problems of neglected children, care of the indigent, overcrowding in homes, poor socio-economic conditions, and mental health problems received more emphasis than in the countries. Diseases due to helminths, venereal diseases, leprosy, yaws, and schistosomiasis were among the problems mentioned.

Chapter V

HOSPITAL SERVICES

The important function of a hospital is to provide medical attention for persons suffering from illnesses which can be treated more adequately in a hospital than in the home. The hospital serves as a center in which surgery, diagnostic techniques and other specialized procedures can best be performed. Directly or indirectly, according to its size or location, the hospital may have complementary activities in the promotion and protection of health. The hospital also has an important role in the preparation and training of medical personnel.

Data on the availability and utilization of hospitals are basic requirements for planning for medical care in a community or country and for assessing progress toward desired goals. The information presented in this report describes the number and types of facilities in the Americas with no attempt at defining standards as to the desirable numbers and types. Such standards can be determined only in relation to many factors such as the special health problems in an area, differences in medical practices, the availability and use of hospital facilities as well as socio-economic conditions.

HOSPITAL FACILITIES

The number of existing hospitals by type, is presented in Table 58. Hospitals for short-term illness, for pediatrics and for obstetrics have been classified as general hospitals. Thus, the total number of general hospitals includes not only those in which all types of services are rendered but also hospitals designed for specialities such as obstetrics, pediatrics and acute infectious diseases. For several countries the information pertains only to government hospitals. However, although the total is incomplete, there were reported to be 16,348 hospitals in the Americas for 1960. Of this total, 8,146 were in Northern America and 8,202 in Middle and South America. This latter figure is low due to exclusion of non-governmental hospitals in several countries and the total number of hospitals in Middle and South America is probably between 8,500 and 9,000.

For planning purposes the number of beds in hospitals in relation to population is a useful index. In Table 59 and Figure 27 are given the numbers of beds according to type of hospital and the numbers per 1,000 population. Of the 22 countries with data available, Canada reported the largest total number of beds per 1,000 population, 10.6. United States, Argentina, and Chile followed next in order with 9.1, 6.4, and 5.0 beds per 1,000 population, respectively. In two countries there was less than one bed per 1,000 population. However, in one of these two countries only beds in government hospitals were included. For several other countries, beds enumerated were also limited to those in hospitals of the government or ministry of health.

The numbers of general hospital beds ranged from 5.5 per 1,000 population in Canada to 0.4 in Paraguay.

Items 7-8
 FIGURE 27
 TOTAL HOSPITAL BEDS PER 1,000 POPULATION IN THE AMERICAS, 1960

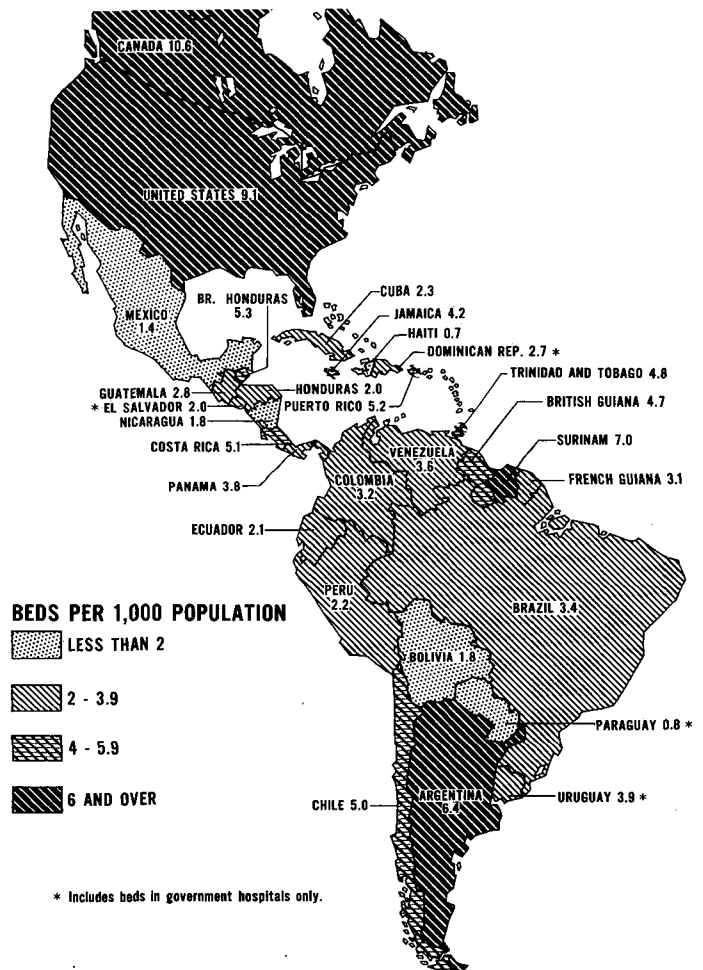


TABLE 58. NUMBER OF HOSPITALS BY TYPE IN THE AMERICAS, 1960

Area	Year	Total	General					Tuber- culosis	Leprosy	Mental	Other
			Total	Pedia- trics	Mater- nity	Infec- tious diseases	Other general				
Total		a) 16 348	10 659	174	341	20	10 124	573		674	688
Argentina	1959	2 148	1 987	30	118	...	1 839	89		14	58
Bolivia	1960	107	99	1	6	1	b) 91	4	2	1	1
Brazil	1959	2 622	...	...	...	...	...	...	...	...	...
Canada	1958	1 301	963	...	34	8	921	56	1	76	c) 205
Chile	1960	245	199	6	9	...	184	16	...	2	28
Colombia	1960	540	495	22	22	4	447	20	2	20	3
Costa Rica	1960	37	31	...	16	...	15	2	1	2	1
Cuba	1960	d) 67	50	5	3	1	41	7	2	1	7
Dominican Republic	1960	d) 44	39	2	10	...	27	3	3	1	1
Ecuador	1959	75	58	4	3	...	51	14		3	-
El Salvador	1960	d) 23	20	1	1	-	18	2	-	1	-
Guatemala	1960	132	126	36	33	2	55	3	...	1	2
Haiti	1960	31	22	...	1	...	21	4		2	3
Honduras	1960	23	20	1	...	...	19	2	...	1	...
Mexico	1958	1 132	...	...	...	...	...	...	...	...	...
Nicaragua	1960	27	26	-	-	-	26	-	-	1	-
Panama	1960	26	24	1	-	-	23	1	-	1	-
Paraguay	1960	d) 19	17	...	...	1	16	...	...	1	1
Peru	1959	210	188	1	7	...	180	10		4	8
United States	1959	6 845	5 707	55	51	-	5 601	273	1	502	362
Uruguay	1960	d) 59	54	2	2	...	50	3		2	...
Venezuela	1960	293	257	6	11	1	239	16	2	18	-
Bahama Islands	1960	2	1	-	-	-	1	-	-	1	-
Bermuda	1960	1	1	-	-	-	1	-	-	-	-
British Guiana	1960	27	24	-	-	-	24	1	1	1	-
British Honduras	1960	9	6	-	-	-	6	1		1	1
Canal Zone	1960	4	2	-	-	-	2	-	1	1	-
Falkland Islands	1960	1	1	-	-	-	1	-	-	-	-
French Guiana	1960	4	3	-	-	-	3	-	1	-	-
Guadeloupe	1960	21	19	1	3	-	15	-	1	1	-
Martinique	1960	15	13	-	5	-	8	1	-	1	-
Netherlands Antilles	1960	e) 7	4	-	-	-	4	1	1	1	-
Puerto Rico	1958	131	115	-	-	-	115	9	1	3	3
St. Pierre and Miquelon	1960	3	2	-	1	-	1	-	-	1	-
Surinam	1960	20	15	-	-	-	15	1	3	1	-
Virgin Islands (U.K.)	1960	1	1	-	-	-	1	-	-	-	-
Virgin Islands (U.S.)	1959	3	3	-	-	-	3	-	-	-	-
West Indies Federation											
Antigua	1960	4	1	-	-	-	1	-	1	1	1
Barbados	1960	4	2	-	1	-	1	-	1	1	-
Dominica	1960	6	4	-	-	-	4	-	1	1	-
Grenada	1960	7	5	-	-	2	3	1	-	1	-
Jamaica	1960	28	23	-	1	-	22	2	1	1	1
Montserrat	1957	f) 1	1	-	-	-	1	-	-	-	-
St. Kitts-Nevis- Anguilla	1959	4	4	...	...	...	4	...	...	...	...
St. Lucia	1960	7	4	-	-	-	4	1	-	1	1
St. Vincent	1957	f) 6	2	-	1	-	1	1	1	1	1
Trinidad and Tobago	1960	26	21	-	2	-	19	3	1	1	-

(a) Includes 2,622 hospitals in Brazil and 1,132 hospitals in Mexico not distributed by type. (b) Includes 42 health center hospitals. (c) Includes orthopedic, chronic, convalescent, and other special hospitals. (d) Includes only government hospitals. (e) Includes hospitals in Curaçao and Aruba only. (f) Data are from Annual Epidemiological and Vital Statistics, 1958, World Health Organization, Geneva, 1961.

TABLE 59. NUMBER OF HOSPITAL BEDS BY TYPE OF HOSPITAL, WITH RATES PER 1,000 POPULATION FOR TOTAL BEDS AND GENERAL HOSPITAL BEDS IN THE AMERICAS, 1960

Area	Year	Total		General hospitals						Tuber- culosis hos- pitals	Leprosy hos- pitals	Mental hos- pitals	Other hos- pitals
		Number	Rate	Total		Pedi- atric	Mater- nity	Infectious diseases	Other general				
				Number	Rate								
Total		2 462 410		1 268 505		32 057	33 900	4 701	1 197 847	171 523		921 014	101 368
Argentina	1959	131 772	6.4	93 837	4.6	3 974	3 002	...	86 861	12 105		18 290	7 540
Bolivia	1960	6 184	1.8	4 934	1.4	78	233	42	a) 4 581	638	206	380	26
Brazil (b)	1959	233 503	3.4	130 203	1.9	11 628	19 308	2 903	96 364	25 226	20 852	45 704	11 518
Canada	1958	179 893	10.6	93 268	5.5	...	467	581	92 220	13 018	12	57 425	16 170
Chile	1960	37 869	5.0	23 444	3.1	1 484	154	...	21 806	c) 4 506	...	3 682	6 238
Colombia	1960	44 696	3.2	33 278	2.4	2 138	820	109	30 211	2 825	1 230	7 200	163
Costa Rica (d)	1959	5 746	5.1	3 954	3.5	...	311	...	3 643	550	177	1 065	...
Cuba	1960	e) 15 611	2.3	5 748	0.8	1 054	240	250	4 204	3 124	750	5 000	989
Dominican Republic (f)	1960	8 024	2.7	5 054	1.7	700	527	...	3 827	1 470		1 000	500
Ecuador	1959	8 803	2.1	6 443	1.5	490	483	...	5 470	1 524		836	-
El Salvador (f)	1960	g) 5 211	2.0	4 138	1.6	125	169	-	3 844	673	...	400	-
Guatemala	1960	10 627	2.8	9 582	2.5	...	...	163	9 419	...	...	950	95
Haiti	1960	h) 2 316	0.7	1 985	0.6	...	86	...	1 899	312		19	...
Honduras (i)	1957	3 531	2.0	3 083	1.7	-	16	-	3 067	448	-	-	-
Mexico (b)	1958	45 844	1.4	38 804	1.2	2 697	3 411	508	32 188	2 971	-	3 174	895
Nicaragua	1960	j) 2 660	1.8	2 660	1.8	-	-	-	2 660	-	-	...	-
Panama	1960	3 964	3.8	2 412	2.3	116	-	-	2 296	316	-	1 236	-
Paraguay (f)	1960	1 397	0.8	780	0.4	...	...	30	750	270	...	347	...
Peru	1959	23 086	2.2	19 061	1.8	561	756	...	17 744	2 559		1 145	321
United States	1959	1 612 822	9.1	736 883	4.2	6 231	2 520	-	728 132	64 116	351	755 293	56 179
Uruguay (f)	1960	11 006	3.9	5 938	2.1	...	...	...	5 938	2 084		2 984	...
Venezuela	1960	26 029	3.6	18 667	2.6	744	927	40	16 956	2 846	900	3 616	-
Bahama Islands	1960	450	4.3	250	2.4	-	-	-	250	-	-	200	-
Bermuda	1960	132	3.1	132	3.1	-	-	-	132	-	-	-	-
British Guiana	1960	k) 2 665	4.7	1 831	3.2	-	-	-	1 831	...	...	834	...
British Honduras	1960	479	5.3	344	3.8	-	-	55	289	-	-	81	54
Canal Zone	1960	972	23.1	590	14.0	-	-	-	590	-	120	262	-
Falkland Islands	1960	32	16.0	32	16.0	-	-	-	32	-	-	-	-
French Guiana	1960	961	31.0	856	27.6	-	-	-	856	-	105	-	-
Guadeloupe	1960	2 302	8.5	1 858	6.9	37	138	-	1 683	-	114	330	-
Martinique	1960	3 309	11.9	2 574	9.3	-	93	-	2 481	170	115	450	-
Netherlands Antilles	1960	l) 1 410	7.4	920	4.8	-	-	-	920	60	30	400	-
Puerto Rico	1958	12 170	5.3	6 822	3.0	-	-	-	6 822	2 817	93	2 269	169
St. Pierre and Miquelon	1960	92	18.4	87	17.4	-	11	-	76	-	-	5	-
Surinam	1960	1 888	7.0	1 250	4.6	-	-	-	1 250	52	226	360	-
Virgin Islands (U. K.)	1960	39	5.6	39	5.6	-	-	-	39	-	-	-	-
Virgin Islands (U. S.)	1959	199	6.0	199	6.0	-	-	-	199	-	-	-	-
West Indies Federation													
Antigua	1960	570	10.4	180	3.3	-	-	-	180	-	40	200	150
Barbados	1960	1 445	6.2	473	2.0	-	20	-	453	-	175	797	-
Dominica	1960	274	4.6	222	3.7	-	-	-	222	-	22	30	-
Grenada	1957	527	6.2	311	3.7	-	-	20	291	68	-	148	-
Jamaica	1960	6 753	4.2	2 935	1.8	-	164	-	2 771	402	185	3 115	116
Montserrat (i)	1957	69	5.3	69	5.3	-	-	-	69	-	-	-	-
St. Kitts-Nevis Anquilla	1959	182	3.3	182	3.3	-	-	-	182	-	-	-	-
St. Lucia	1960	490	5.7	180	2.1	-	-	-	180	50	-	140	120
St. Vincent (i)	1957	435	5.7	150	2.0	-	16	-	134	40	20	100	125
Trinidad and Tobago	1960	3 971	4.8	1 863	2.2	-	28	-	1 835	488	73	1 547	-

(a) Include beds in 42 health center hospitals. (b) Total beds distributed by type of hospital service. Data not available by type of hospital. (c) Includes beds in venereal and infectious diseases hospitals. (d) Data are from Anuario Estadístico de Costa Rica, 1959, Ministerio de Economía y Hacienda, Dirección General de Estadística y Censos, San José, 1960. (e) Does not include beds in hospitals under the direction of universities, municipalities, or other autonomous organizations. (f) Includes beds in government hospitals only. (g) Does not include 500 beds in social security, military and private hospitals not distributed by type. (h) Does not include beds in "other" hospitals. (i) Data are from Annual Epidemiological and Vital Statistics, 1958, World Health Organization, Geneva, 1961. (j) Number of beds in mental hospital unknown. (k) Does not include beds in tuberculosis and leprosy hospitals. (l) Includes beds in hospitals in Curaçao and Aruba only.

In Argentina, the United States, and Chile the rates were 4.6, 4.2, and 3.1. In most countries there have been increases in the numbers of general hospital beds during the four-year period, 1957-1960, but in only a few has the ratio of beds to population increased. However, this does not imply that hospital services have

not been strengthened. Changes in medical practices may have decreased the number of beds required for treatment of some diseases and for others changes may have resulted in a reduction of the length of time during which hospital care is necessary.

LENGTH OF STAY AND OCCUPANCY RATES

Maximum utilization of existing facilities is of great importance and offers the best method for increasing hospital efficiency. An appraisal must take into account changes in proportion of beds occupied, in admissions, and in types of conditions treated. Also changes in the average length of stay for both general and specialized hospitals may be evaluated. Knowledge of average lengths of stay is useful for administrative purposes such as the evaluation of the use of existing facilities as well as the assessment of administrative and treatment procedures.

From data available in the summary reports of countries on annual admissions and occupancy rates, approximations to average length of stay figures have been obtained for short-term hospitals (general hospitals). The range of the average length of stay in countries with data available was from 17.4 to 8.2 days with a median stay of 12.6 days (Figure 28 and Table 60). Average lengths of stay in general hospitals have already been decreased in some countries but in many there is still apparently need for reduction.

The average length of stay is shown separately for different types of hospitals included in the general

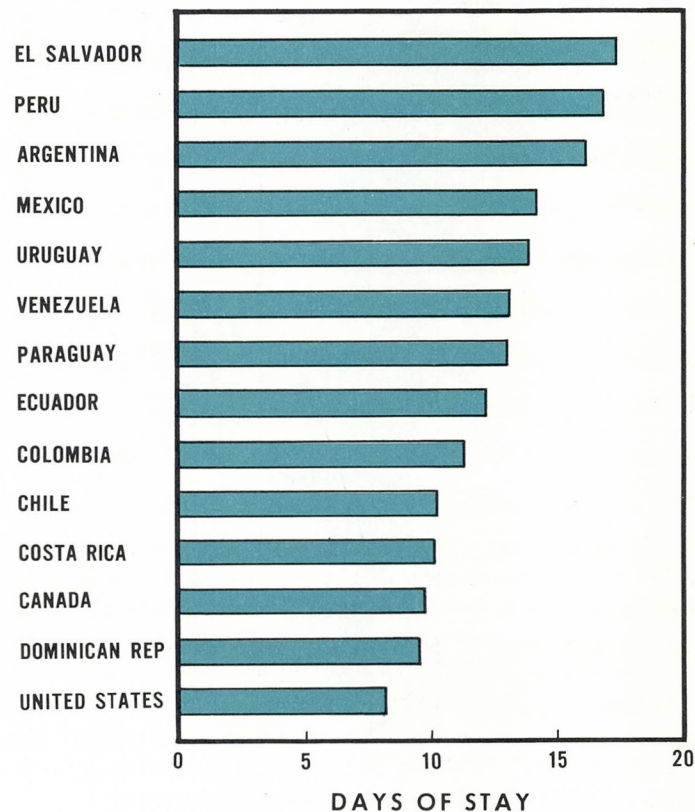
TABLE 60. AVERAGE LENGTH OF STAY IN DAYS BY TYPE OF GENERAL HOSPITAL FOR 14 COUNTRIES, 1960

Country	Total general hospitals	Type of hospital			
		Maternity	Pediatrics	Other general	Infectious
Argentina (a)	16.4	15.9	22.7	15.5	-
Canada (b)	9.8	7.9	-	9.8	18.7
Chile (d)	10.5	5.3	18.3	10.2	-
Colombia	11.6	4.9	22.8	11.7	4.0
Costa Rica (e)	10.3	4.2	...	11.0	-
Dominican Republic (f)	9.6	6.2	10.0	10.4	-
Ecuador (d)	12.2	4.2	20.2	13.9	-
El Salvador (f)	17.4	3.3	30.3	20.1	-
Mexico (a)	14.0	5.5	10.4	15.0	-
Paraguay	13.0	...	...	13.0	-
Peru (d)	16.9	5.5	19.7	18.5	-
United States (d)	8.2	6.1	7.0	8.2	-
Uruguay (f)	13.9	...	...	13.9	-
Venezuela (f)	13.1	-	18.6	13.1	10.1

- (a) For Ministry of Health hospitals only. (b) 1958.
 (c) For "public" hospitals only (i. e. not private and not federal). (d) 1959. (e) Source: *Anuario Estadístico de Costa Rica*, 1959. (f) Government hospitals only.

FIGURE 28

AVERAGE LENGTH OF STAY FOR GENERAL HOSPITALS IN COUNTRIES OF THE AMERICAS, 1960

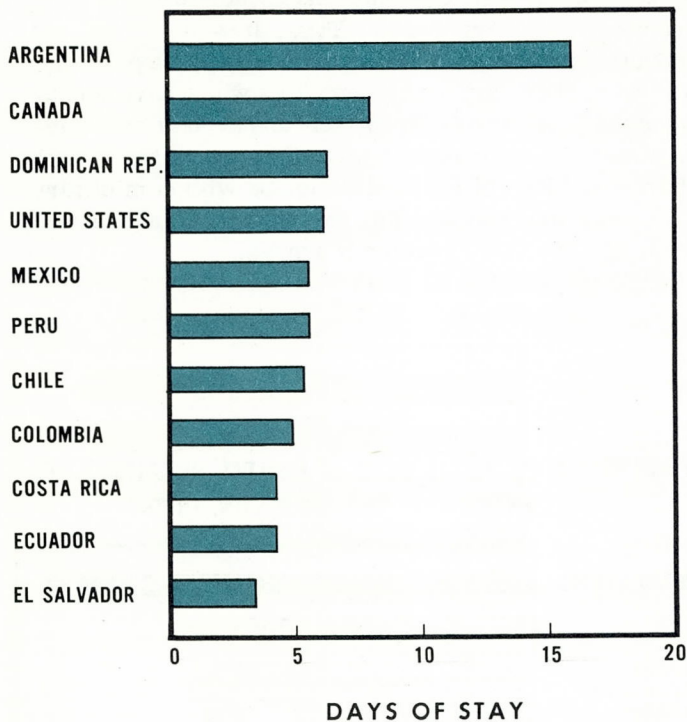


hospital groups. Lengths of stays in maternity hospitals (Figure 29) were much shorter than in general hospitals and thus average stays in general hospitals with large maternity services will be affected by the proportion of admissions to maternity services. In general, averages of length of stays in pediatric hospitals (Figure 30) were longer than the averages in other types of general hospitals.

Occupancy rates in general hospitals varied from 52 per cent in one country, to over 100 in another. In over half of the countries bed occupancy rates were between 70 and 89 per cent, while in four countries they were below 70 and in two over 90. The latter

FIGURE 29

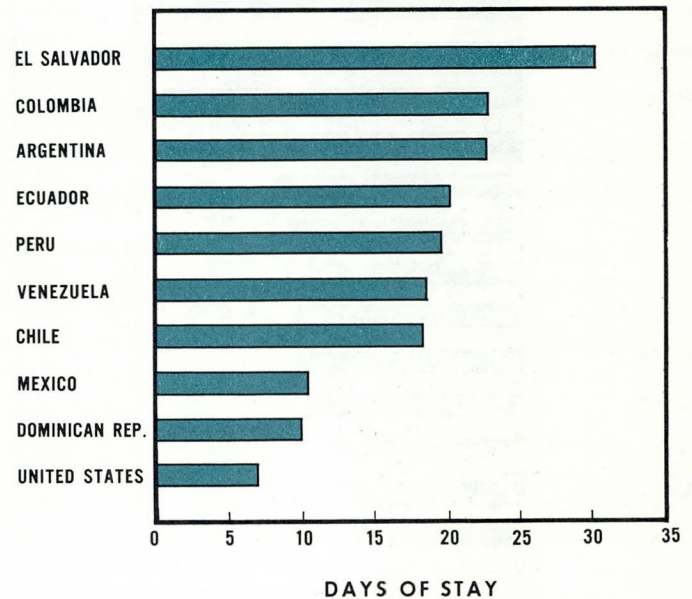
AVERAGE LENGTH OF STAY FOR MATERNITY HOSPITALS
IN COUNTRIES OF THE AMERICAS, 1960



high rates would suggest that the demand for hospital beds often was beyond the capacity of the hospital facilities.

FIGURE 30

AVERAGE LENGTH OF STAY FOR PEDIATRIC HOSPITALS FOR
COUNTRIES OF THE AMERICAS, 1960



SPECIALIZED HOSPITALS

Long-term hospitals in most countries are mainly for treatment of tuberculosis or leprosy, and mental diseases. In a few countries there are also orthopaedic hospitals, chronic disease institutions, etc. Table 61 gives the proportions of total beds which are in tuberculosis hospitals and the proportions in psychiatric hospitals. Not included in these proportions are the beds allotted to these services in general hospitals, which in most places are relatively few.

The proportions of total beds which were in tuberculosis hospitals (Figure 31) ranged from 4 per cent in the United States to 20 per cent in Cuba. Nearly 20 per cent of all beds were in tuberculosis hospitals in the Dominican Republic, Ecuador, Paraguay, and Uruguay. Seven countries reported that from 10 to 15 per cent of all beds were in such facilities, and 7 countries reported less than 10 per cent in such facilities. The number of beds in tuberculosis hospitals per 1,000 population varied from 0.8 per 1,000 population in Canada to 0.1 in Haiti. The countries devoting a larger proportion of beds to tuberculosis were not necessarily those with the highest ratio of beds for treatment of tuberculosis on a population basis.

Relatively large proportions of total hospital beds were allocated to the care of mental illness in only a few countries. The proportions of beds in hospitals

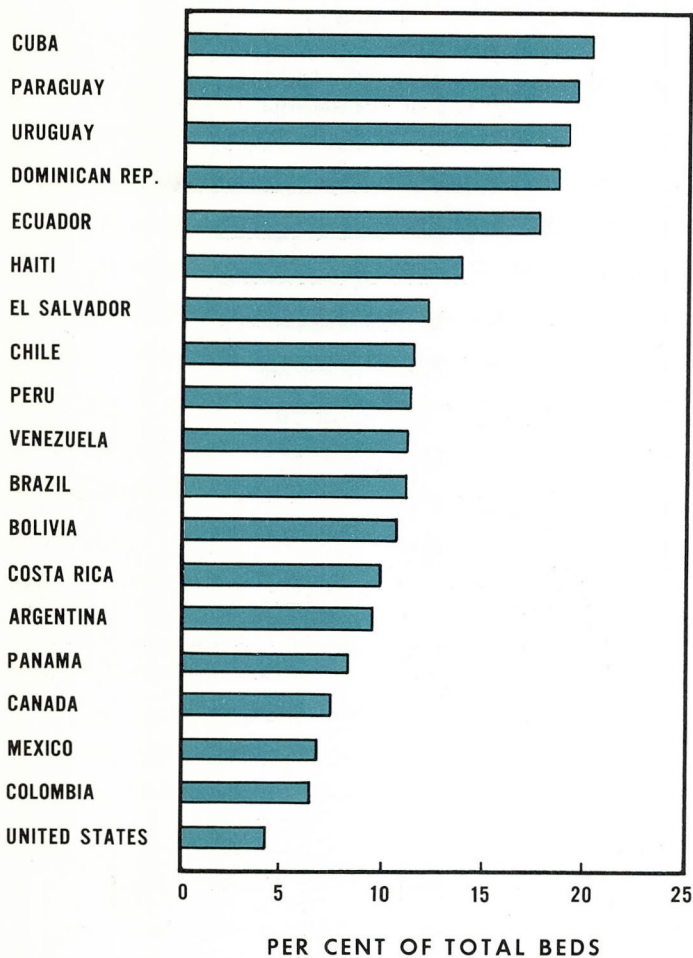
TABLE 61. NUMBER OF BEDS IN TUBERCULOSIS AND MENTAL HOSPITALS, RATES PER 1,000 POPULATION AND PROPORTION OF TOTAL HOSPITAL BEDS, FOR COUNTRIES IN THE AMERICAS, 1960

Country	Total beds	Tuberculosis			Mental		
		Number	Rate	Per cent	Number	Rate	Per cent
Argentina (a)	131 772	(b)12 105	0.6	9.2	18 290	0.9	13.9
Bolivia	6 184	638	0.2	10.3	380	0.1	6.1
Brazil (a)	233 503	25 228	0.4	10.8	45 704	0.7	19.6
Canada (c)	179 893	13 018	0.8	7.2	57 425	3.4	31.9
Chile	37 869	4 505	0.6	11.9	3 682	0.5	9.7
Colombia	44 696	2 825	0.2	6.3	7 200	0.5	16.1
Costa Rica (d)	5 746	550	0.5	9.6	1 065	0.9	18.5
Cuba	15 611	3 124	0.5	20.0	5 000	0.7	32.0
Dominican Republic (e)	8 024	(b) 1 470	0.5	18.3	1 000	0.3	12.5
Ecuador (a)	8 803	(b) 1 524	0.4	17.3	836	0.2	9.5
El Salvador (e)	5 211	673	0.3	12.9	400	0.2	7.7
Guatemala	10 627	...	...	...	950	0.3	8.9
Haiti	2 316	(b) 312	0.1	13.5	19	0.0	0.8
Honduras (f)	3 531	...	...	...	...	...	...
Mexico (c)	45 844	2 971	0.1	6.5	3 174	0.1	6.9
Nicaragua	2 660	...	...	...	...	...	...
Panama	3 964	316	0.3	8.0	1 236	1.2	31.2
Paraguay (e)	1 397	270	0.2	19.3	347	0.2	24.8
Peru (a)	23 086	(b) 2 559	0.2	11.1	1 145	0.1	5.0
United States (a)	1612 822	64 116	0.4	4.0	755 293	4.3	46.8
Uruguay (e)	11 006	2 084	0.7	18.9	2 984	1.1	27.1
Venezuela	26 029	2 846	0.4	10.9	3 616	0.5	13.9

(a) 1959. (b) Includes leprosy beds. (c) 1958. (d) Source: *Anuario Estadístico de Costa Rica, 1959*. (e) Includes beds in government hospitals only. (f) 1957.

FIGURE 31

PROPORTION OF TOTAL BEDS IN TUBERCULOSIS HOSPITALS
FOR COUNTRIES OF THE AMERICAS, 1960



for mental diseases (Figure 32) ranged from less than one per cent in Haiti to 47 per cent in the United States. Canada, Cuba, and Panama each had more than 30 per cent of total beds in mental disease hospitals and Paraguay and Uruguay had 25 per cent and 27 per cent of total beds in psychiatric facilities. In eight countries less than ten per cent of all beds were in these hospitals. In only four countries were there provisions for at least one bed for mental illness per 1,000 population — United States 4.3, Canada 3.4, Panama 1.2, and Uruguay 1.1. The numbers of beds in mental hospitals were less than 0.2 per 1,000 population in seven countries.

Changes in the methods of treating mental illness, tuberculosis and other chronic diseases have already reduced the time required for hospitalization. Introduction of new drugs has made domiciliary care practical for many cases. Thus, in some countries reductions in the numbers of beds may be possible. However, there are many countries which have not had adequate facilities for treatment and in these countries advances in therapeutic procedures combined with shorter periods of hospitalization or with domiciliary care may make it possible to serve more adequately the needs for these chronic diseases.

FIGURE 32

PROPORTION OF TOTAL BEDS IN MENTAL HOSPITALS FOR
COUNTRIES OF THE AMERICAS, 1960

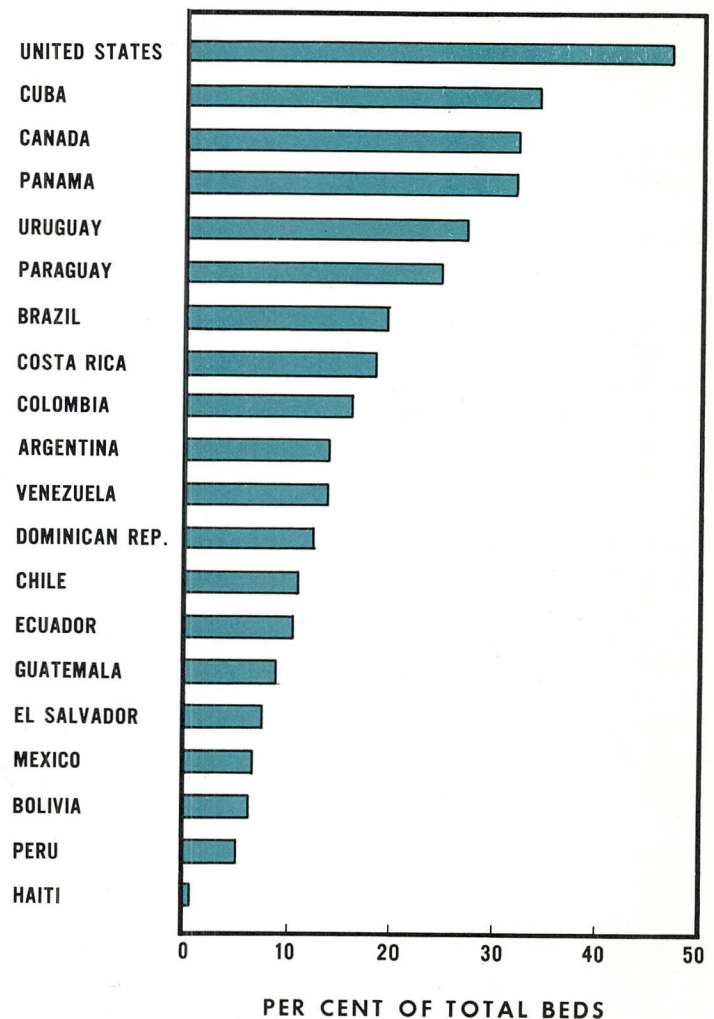


TABLE 62. CAUSES OF HOSPITALIZATION BY GROUPS OF DISEASES IN NINE COUNTRIES
OF THE AMERICAS, RECENT YEARS

Cause of hospitalization	Number								
	Canada (Saskat- chewan) 1960 (a)	Chile 1958	Colom- bia 1958	Costa Rica 1959 (b)	Guate- mala 1958	Nica- ragua 1958	Panama 1960 (c)	Peru 1958	Vene- zuela 1960 (d)
All causes.....	192 276	531 843	527 959	14 116	110 455	47 049	32 285	*248 611	58 009
I. Infective and parasitic diseases (001-138).....	3 244	40 366	60 327	720	24 937	5 874	1 810	29 872	1 945
Tuberculosis (001-019).....	(122)	(17 500)	(6 924)	(...)	(4 802)	(492)	(676)	(12 933)	(252)
II. Neoplasms (140-239).....	8 858	13 961	15 033	494	2 878	1 235	1 598	7 634	1 376
Malignant neoplasms (140-205).....	(4 908)	(7 894)	(6 444)	(...)	(1 707)	(445)	(905)	(3 333)	(533)
Benign and unspecified (210-239).....	(3 950)	(6 067)	(8 589)	(...)	(1 171)	(790)	(693)	(4 301)	(843)
III. Allergic, endocrine system, metabolic, and nutritional diseases (240-289).....	5 034	...	12 496	383		762	574	2 606	
IV. Diseases of the blood and blood-forming organs (290-299).....	816	...	8 412	187	10 672	1 150	232	1 967	1 761
V. Mental, psychoneurotic, and personality disorders (300-326).....	2 969	10 446	7 864	399	3 360	218	1 434	3 417	135
VI. Diseases of the nervous system and sense organs (330-398).....	6 325	...	14 522	406	4 489	769	1 178	5 921	1 321
VII. Diseases of the circulatory system (400-468)....	11 700	18 603	11 458	564	2 697	492	1 819	4 825	1 575
VIII. Diseases of the respiratory system (470-527)....	37 010	50 038	40 224	1 389	8 634	2 189	1 193	22 352	3 483
IX. Diseases of the digestive system (530-587).....	26 338	76 176	67 021	2 295	14 984	6 964	2 528	34 312	7 240
X. Diseases of the genito-urinary system (590-637) .	9 859	21 231	25 830	982	4 927	1 871	2 195	8 131	2 374
XI. Deliveries and complications of pregnancy, childbirth, and the puerperium (640-689).....	32 591	198 577	155 862	3 716	7 122	14 173	14 769	72 998	29 773
XII. Diseases of the skin and cellular tissue (690-716)	4 095	12 572	13 584	307		701	235	5 717	
XIII. Diseases of the bones and organs of movement (720-749).....	6 965	...	6 911	400	5 402	924	212	5 464	1 003
XIV. Congenital malformations (750-759).....	2 628	13 440	1 603	64	273	583	95	782	115
XV. Certain diseases of early infancy (760-776)....			1 739	236	617		110	2 276	296
XVI. Symptoms, senility, and ill-defined conditions (780-795).....	17 957	e) 39 419	22 923	143	4 840	8 644	646	19 471	541
XVII. Accidents, poisonings, and violence (E800-E999) .	15 510	37 014	62 092	948	14 623	500	1 657	20 864	4 132
All other conditions and observations.....	377	-	58	483	-	-	-	-	939
	Percentage distribution								
All causes.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
I. Infective and parasitic diseases (001-138).....	1.7	7.6	11.4	5.1	22.6	12.5	5.6	12.0	3.4
Tuberculosis (001-019).....	(0.1)	(3.3)	(1.3)	(...)	(4.3)	(1.0)	(2.1)	(5.2)	(0.4)
II. Neoplasms (140-239).....	4.6	2.6	2.8	3.5	2.6	2.6	5.0	3.1	2.4
Malignant neoplasms (140-205).....	(2.5)	(1.5)	(1.2)	(...)	(1.5)	(0.9)	(2.8)	(1.4)	(0.9)
Benign and unspecified (210-239).....	(2.1)	(1.1)	(1.6)	(...)	(1.1)	(1.7)	(2.2)	(1.7)	(1.5)
III. Allergic, endocrine system, metabolic and nutritional diseases (240-289).....	2.6	...	2.4	2.7	9.7	1.6	1.8	1.0	
IV. Diseases of the blood and blood-forming organs (290-299).....	0.4	...	1.6	1.3		2.4	0.7	0.8	3.1
V. Mental, psychoneurotic, and personality disorders (300-326).....	1.5	2.0	1.5	2.8	3.0	0.5	4.4	1.4	0.2
VI. Diseases of the nervous system and sense organs (330-398).....	3.3	...	2.8	2.9	4.1	1.6	3.7	2.4	2.3
VII. Diseases of the circulatory system (400-468)....	6.1	3.5	2.2	4.0	2.4	1.0	5.6	1.9	2.7
VIII. Diseases of the respiratory system (470-527)....	19.3	9.4	7.6	9.8	7.8	4.7	3.7	9.0	6.0
IX. Diseases of the digestive system (530-587).....	13.7	14.3	12.7	16.3	13.6	14.8	7.8	13.8	12.5
X. Diseases of the genito-urinary system (590-637) .	5.1	4.0	4.9	7.0	4.5	4.0	6.8	3.3	4.1
XI. Deliveries and complications of pregnancy, childbirth and the puerperium (640-689).....	17.0	37.3	29.5	26.3	6.4	30.1	45.8	29.4	51.3
XII. Diseases of the skin and cellular tissue (690-716)	2.1	2.4	2.6	2.2		1.5	0.7	2.3	
XIII. Diseases of the bones and organs of movement (720-749).....	3.6	...	1.3	2.8	4.9	2.0	0.7	2.2	...
XIV. Congenital malformations (750-759).....	1.4	2.5	0.3	0.5	0.2	1.2	0.3	0.3	0.2
XV. Certain diseases of early infancy (760-776)....			0.3	1.7	0.6		0.3	0.9	0.5
XVI. Symptoms, senility, and ill-defined conditions (780-795).....	9.3	e) 7.4	4.3	1.0	4.4	18.4	2.0	7.8	0.9
XVII. Accidents, poisoning, and violence (E800-E999) .	8.1	7.0	11.8	6.7	13.2	1.1	5.1	8.4	7.1
All other conditions and observations.....	0.2	-	0.0	3.4	-	-	-	-	1.6

(a) Data for the population covered by the Saskatchewan Hospital Service Plan amounting to 899 648 in 1960 or 98.9 per cent of the total population of Saskatchewan. (b) Data for 2 hospitals. (c) Data for 3 general hospitals, 1 psychiatric hospital and 1 tuberculosis hospital; 4 736 discharges from Hospital del Niño, not classified by cause are excluded. (d) Data for 23 government hospitals. (e) Including sections III, IV, VI and XIII which are not available separately.

Sources: Chile, Nicaragua and Peru, WHO, Annual Epidemiological and Vital Statistics, 1958.

Colombia: Dirección Administrativa Nacional de Estadística, Anuario General de Estadística, 1958.

Costa Rica Caja Costarricense de Seguro Social, Informes Estadísticos, Hospital Central, Hospital Turrialba, Dispensarios, 1959.

Guatemala: Dirección General de Estadística, Estadísticas Hospitalarias, 1954-1958.

Panama: Dirección de Estadística y Censo, Demografía, 1960.

Venezuela: Ministerio de Sanidad y Asistencia Social, Anuario de Epidemiología y Estadística Vital, Tomo I, 1960.

* Provisional.

HOSPITAL MORBIDITY

Data concerning the causes of hospitalization are valuable both as a source of morbidity statistics for assessing the health status of the population and as a source of information for planning and administering the medical care program. Information on the causes of hospitalization may serve as one measure of the distribution of illnesses for which medical care is needed and may also be useful in appraising the need for preventive health programs.

Data are available on the causes of hospitalization of persons discharged from hospitals in 9 countries (Table 62). For Colombia, Guatemala, and Peru the hospital data presented refer to the entire hospitalized population and for Chile the data are for patients in government hospitals. However, for some countries the data pertain only to general hospitals or to a few selected hospitals. Thus, data for specific diagnoses could not be expressed as rates on a population basis. The percentage distribution by cause of hospitalization is presented instead.

Usually, the largest proportions of discharges in all countries were of persons hospitalized for deliveries and complications of pregnancy, childbirth, and the puerperium. The proportion of persons discharged who were hospitalized for this cause ranged from 6 per cent in Guatemala to 51 per cent in Venezuela and was over 25 per cent in the material presented for seven of the nine countries.

Diseases of the digestive system were important causes of hospitalization in many countries. The proportion of discharges of persons hospitalized for diseases of the digestive system ranged from 6 per cent in Panama to 16 per cent in Costa Rica. In 8 countries the percentage of discharges of persons hospitalized for this cause was between 12 and 15 per cent. Among these diseases, gastritis, enteritis, etc., are important as a cause of hospitalization. For example, approximately 46 per cent of all persons hospitalized in Guatemala for treatment of diseases of the digestive system were diagnosed as having gastritis, enteritis, etc. In Colombia, and Venezuela 21 and 34 per cent of patients with diseases of the digestive system were treated for this cause.

Infectious and parasitic diseases are also leading causes of illness requiring hospitalization. The proportions of persons discharged who were hospitalized for diseases in this group varied from 2 per cent in Canada to 23 per cent in Guatemala. In Colombia, Nicaragua, and Peru the proportion of discharges of persons who were hospitalized for infectious and parasitic diseases was approximately 12 per cent. Included among the important diseases requiring hospital care were tuberculosis, malaria, typhoid, dysentery, and diseases due to helminths. In the countries for which data are available the per cent of all patients hospitalized for tuberculosis varied from 4 to 37 per cent of the total patients with infectious or parasitic diseases. The proportion hospitalized for malaria of those hospitalized for infectious or parasitic diseases ranged from none to more than 69 per cent in one country.

It is possible, using methods now available, to prevent a large proportion of diseases of the digestive system — that is, the group of gastritis and enteritis — as well as infectious and parasitic diseases in the Americas. Programs for the eradication of diseases such as malaria, environmental sanitation, and vaccination programs are important in preventing many of these diseases. Alternative methods of medical care and prevention of diseases may prove less expensive in both economic and social terms than hospital care.

The large numbers of patients whose illness was included in the group of ill-defined causes indicates the need for improvement in diagnostic procedures and the recording of admission and discharge diagnosis. An important problem which affects the evaluation of hospital facilities and services, as well as health planning, is to effect improvement of the recording and reporting of data regarding hospital patients and causes of illness. Such data are valuable for the administration of the hospital and are also useful on a community, regional or national basis for assessing the utilization and needs for hospital beds. Efforts can well be directed to improvement of the accuracy and completeness of hospital statistics in order to provide administrators with the data necessary for planning.

Chapter VI

ENVIRONMENTAL SANITATION

The increasing emphasis which was already being focused on environmental health programs in the Americas, in particular on construction and improvement of water supply and sewerage systems, was accelerated by the Charter of Punta del Este in 1961. Goals were established of providing potable water supplies and sewerage services to at least 70 per cent of the urban population and to 50 per cent of the rural in each country in the next decade. Large numbers of people are without adequate facilities at present and the rapid increase in population in the Americas, especially in cities, has made an acute situation which without immediate remedies will grow worse.

It is well accepted that construction programs for water supply and sewerage systems will have maximum health benefits, will directly affect social and economic progress and materially improve the standard of living

of the population. It is for these reasons that environmental sanitation projects will normally carry high priority both in the national health plans and in national development plans. Each of the International Banks has agreed that water and sewerage projects are eligible for loan funds.

Adequate housing is not available to meet the rapid growth in population in the cities of Latin America, and housing programs are now being developed in many areas. Other environmental health problems related to industrialization and urbanization are also the concern of the Ministries of Health in the Americas. These include industrial waste disposal, control of stream pollution, garbage and refuse disposal, occupational health, radiation protection, air pollution, vector control, and food and milk sanitation.

WATER SUPPLIES

During the four-year period covered by this report, progress has been made in the construction of water supply systems in urban areas. Plans for construction and extension of systems have been drawn up in several countries and, in most, better information has been assembled on the status of water supply systems. Agencies have been established with responsibilities for surveys, design, and methods of financing new construction and extensions. Beginnings have been made in improving administrative and financial management of water companies in order that the water supply programs will become self-financing and sustaining. Loan funds from both international and national sources are becoming available at low interest rates for initiation of construction programs.

The magnitude of the problem in the Americas can be seen from the data in Table 63 and Figure 33. The information for this table was taken from several sources. Whenever possible the data supplied in the Four-Year Reports from the countries were used. Often, however, because of differences in definitions of water services or urban areas it was not possible to use the information presented. Sometimes data

recently received by the Pan American Health Organization from the countries for estimating construction costs in the next decade were substituted. When information from neither of these sources was available for a country, data already published⁽¹⁾ were included.

The proportion of the urban population with water service in their homes from a piped community supply ranged from almost 98 per cent in one country to 25 per cent in another. The percentages based on the total urban and rural population of the countries varied from 78 to 2 per cent. For only a few countries was piped community water service available to any sizeable part of the rural population. However, due to differences in defining populations as urban or rural, the data are not strictly comparable. For example, in the United States "urban" as used for this purpose includes the total population excluding only rural farm population. The latter, of course, would not be served from community water supplies. Also, community supplies and distribution systems would not be accessible to part of the rural non-farm population included as "urban." Thus, the proportions served in the urban group and in the rural group are both lower than if

^{1/} Wolman, A., *Technical, Financial and Administrative Aspects of Water Supply in the Urban Environment in the Americas*. Technical Discussions, Directing Council of PAHO, 1959.

the definition of "urban" of localities of 2,000 or more inhabitants had been used. In both urban and rural areas, in addition to those with community water services in their homes, many people obtain water from public fountains and from private and individual wells. Data on the numbers served through the latter services are very limited.

The summary by regions indicates that 88 per cent of the urban population in Northern America is served by piped community water supplies, as compared to 63 and 61 per cent in Middle and South America.

At present there are approximately 57 million inhabitants in urban areas in Latin America with water service in their homes and 35 million living in houses without water available. Estimates have been made that, in addition to those without water now, through population growth alone there will be almost 50 million more in cities in the countries of Latin America who will need water by 1971. To reach the goal established by the Charter of Punta del Este (i.e., water service in the homes for 70 per cent) water supplies must be constructed for an average of 4.2 million persons per year, over the ten-year period. For the 110 million inhabitants in rural areas of Latin

America water supplies are less adequate than in the cities.

In Chapters I and II data have already been presented on mortality from diarrheal diseases, typhoid fever and other diseases which are associated with lack of easily available and potable water. These mortality rates were shown to be many times higher than the corresponding rates in the countries with high proportions of the population served by water supplies.

Progress was reported in several countries on surveys and plans being made in order that the provision of water service keep pace with the rapid population growth of urban areas. The problems created by growth and urbanization in Venezuela can be readily seen from the following increase in population in 17 years:

Year	Cities with over 5,000 population	Urban population		
		Total	With water service	Without water service
1943	39	983,000	404,000	579,000
1960	157	4,371,000	2,382,000	1,989,000

TABLE 63. NUMBER AND PER CENT OF POPULATION LIVING IN HOUSES CONNECTED TO COMMUNITY PIPED WATER SUPPLY SYSTEMS IN URBAN AND RURAL AREAS IN THE AMERICAS, RECENT YEARS

Area	Year	Source of data a)	Total			Urban b)			Rural		
			Total c) population	With water		Total population	With water		Total population	With water	
				Number	Per cent		Number	Per cent		Number	Per cent
Argentina	1961	2	21 101 000	10 221 000	48.4	15 531 000	10 146 000	65.3	5 570 000	75 000	1.3
Bolivia	1960	3	3 454 000	...	...	...	...	(55.8)	...	...	...
Brazil	1960	3	70 177 000	...	...	...	...	(54.7)	...	...	...
Canada	1960	1	17 814 000	11 157 000	62.6	12 292 000	11 157 000	90.8	5 522 000	-	-
Chile (c)	1961	2	7 360 000	3 989 000	54.2	4 874 000	3 589 000	73.6	2 486 000	400 000	16.1
Colombia (d)	1960	1	14 132 000	6 576 000	46.5	5 932 000	4 674 000	78.8	8 200 000	1 902 000	23.2
Costa Rica	1961	2	1 187 000	691 000	58.2	421 000	412 000	97.9	766 000	279 000	36.4
Cuba	1961	2	6 976 000	2 657 000	38.1	3 855 000	2 182 000	56.6	3 121 000	475 000	15.2
Dominican Republic	1960	3	3 014 000	...	...	918 000	...	(63.0)	2 096 000	...	...
Ecuador	1960	2	4 317 000	...	...	1 248 000	726 000	58.2	3 069 000	...	...
El Salvador	1960	1	2 612 000	526 000	20.1	962 000	483 000	50.2	1 650 000	43 000	2.6
Guatemala (c)	1961	2	3 678 000	703 000	19.1	865 000	366 000	42.3	2 813 000	337 000	12.0
Haiti (c)	1961	2	4 102 000	101 000	2.5	402 000	101 000	25.1	3 700 000	-	-
Honduras	1961	2	1 991 000	315 000	15.8	618 000	212 000	34.3	1 373 000	103 000	7.5
Mexico	1959	1	33 304 000	18 468 000	55.5	16 885 000	11 401 000	67.5	16 419 000	7 067 000	43.0
Nicaragua (c)	1961	2	1 732 000	218 000	12.6	568 000	215 000	37.9	1 164 000	3 000	0.3
Panama (c)	1960	3, 4	1 076 000	...	...	446 000	...	(84.2)	630 000	...	(26.3)
Paraguay	1960	2	1 770 000	172 000	9.7	624 000	172 000	27.6	1 146 000	-	-
Peru (c)	1960	1	10 365 000	2 900 000	28.0	4 878 000	2 900 000	59.5	5 487 000	-	-
United States (c)	1958	1	171 500 000	133 100 000	77.8	e)151 200 000	133 100 000	88.0	e)20 300 000	-	-
Uruguay (c)	1961	2	2 370 000	1 305 000	55.1	1 750 000	1 290 000	73.7	620 000	15 000	2.4
Venezuela (c, d)	1960	1	7 288 000	2 845 000	39.0	4 371 000	2 384 000	54.5	2 917 000	461 000	15.8

(a) Source of data: 1 - Four-Year Report from country. 2 - Estimate received from country through Environmental Sanitation Division. 3 - Country data from Wolman. 4 - Other. (b) Urban usually refers to cities with 2,000 or more inhabitants. (c) Populations may differ from those in Table 4 since it was advisable to use data from source supplying information on water services. (d) Urban includes only cities of 5,000 or more inhabitants. (e) All but rural farm population included as urban in this table.

Thus, in spite of the work of the "Instituto Nacional de Obras Sanitarias" created in 1943 and in charge of water supplies in cities of 5,000 population and over, the rapid increase in urban population has resulted in an increase in the deficit of water service.

The Central Office of Coordination and Planning (CORDIPLAN) created in 1959 has been in charge of preparing a plan for Venezuela for 1961-1964. This quadriennial plan contains a project for water supplies in cities of more than 10,000 inhabitants to serve an additional 1.6 million people or 74.1 per cent more than the population served at present. This will bring the total urban population with water to approximately 4,000,000.

In Canada the number of water systems and population served both increased by 12 per cent between 1957 and 1960. Administrative changes took place in two provinces with respect to water supplies. Responsibility for administration, financing and construction of water works was transferred from the Health Departments to a Water Resources Commission or to a Water Authority.

In 1960 the "Instituto Nacional de Fomento Municipal" in Colombia carried out a survey covering 841 "cabeceras municipales" and 422 "corregimientos" with a total population of 7,517,000. This survey included 199 urban localities of 5,000 or more inhabitants with population of 5,932,000 and 1,064 smaller localities with 1,585,000 inhabitants. Twenty-seven of the 199 urban localities surveyed did not have a system, and 106 of the 172 with water supply systems did not have treatment facilities. Of the 1,064 rural communities surveyed, half had no systems and 90 per cent of the systems had no treatment facilities. In addition there were 2,266 rural communities with a population of 2,750,000 which were not included in the survey. Thus, this survey indicated the magnitude of the problem of providing water services.

The National Government in Peru issued a decree in 1959 creating a National Committee on Public Works to coordinate the activities of the different government agencies participating in water supply programs. The Committee was also to prepare general regulations for development and carrying out of the National Program for Water Supply, previously under the Ministry of Health.

Two studies were prepared by the Division of Sanitary Engineering in relation to both water supplies and sewage disposal. One was to evaluate national needs and estimate costs of new services as well as improvement of those already existing.

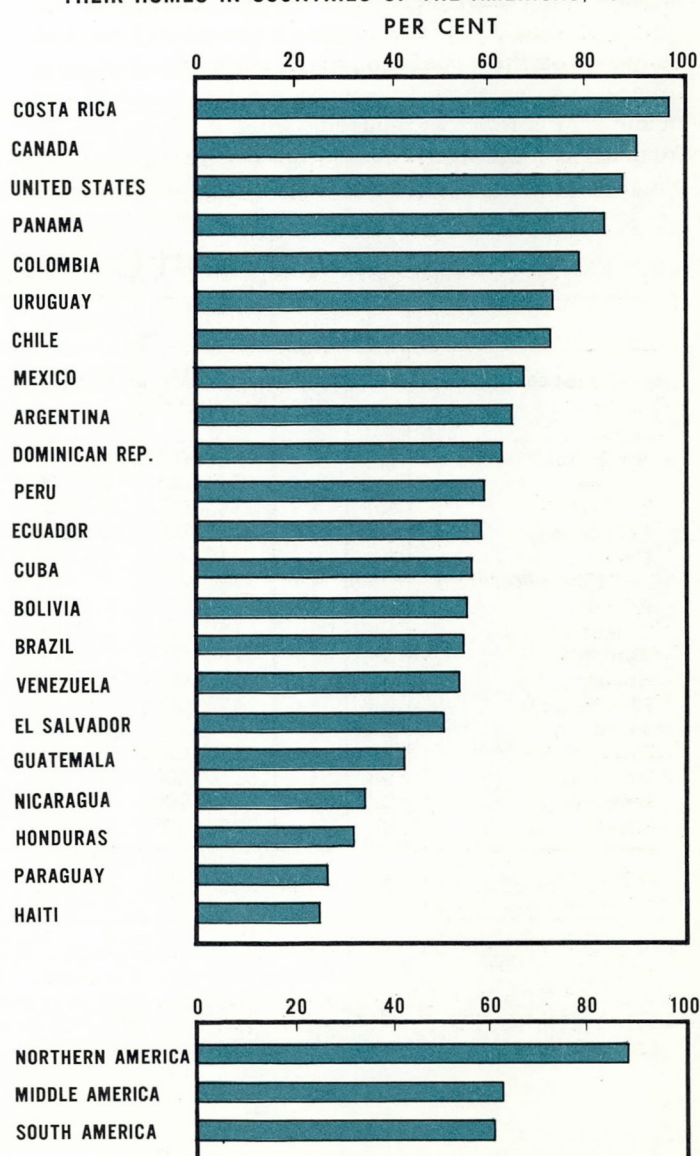
The second was to plan for extension and improvement of the potable water and sewerage systems of Metropolitan Lima. In August 1960 the Division of Sanitary Engineering merged with its counterpart in SCISP and started activities in a new field, construction of water supply and sewerage systems in urban and rural communities.

In 1959 a Subcommittee was appointed by the Committee for Economic Planning for El Salvador to be in charge of the Potable Water Supply Plan for all localities of the country. In 1961 a National Water Authority known as "ANDA" was created, which is to be responsible for all urban water and sewer works in the country. The Rural Sanitation Program continued in its efforts to provide the rural communities with potable water. In 1957 water in six of the principal cities of the country was chlorinated and by the end of 1960 chlorination was being carried out on water supplies in 14 towns.

The means for supplying water service in the Caribbean Islands differ from those in the large countries. For example, stand pipes and rain water catchment and storage systems were reported in use in the Bahama Islands, Bermuda and Barbados. Construction to extend water service was reported in French Guiana and Surinam.

FIGURE 33

PER CENT OF URBAN POPULATION WITH WATER SERVICE IN THEIR HOMES IN COUNTRIES OF THE AMERICAS, 1960



SEWERAGE SYSTEMS

The Charter of Punta del Este included goals at the same level for sewage disposal as for water supplies, that is, to make available sewerage facilities for 70 per cent of the urban population and 50 per cent of the rural. The solution of this problem in Latin America presents greater difficulties than that of water supplies. Most cities in Latin America do not have adequate systems, and in rural areas many houses do not have any kind of excreta disposal facilities. The proportion of the urban population living in houses connected to sewerage systems is much smaller in Middle and South America than the proportions in houses connected to community piped water systems. Moreover, establishing methods for financing construction and improvement of sewerage systems with repayment is more difficult than for water, especially in rural areas. However, plans are being prepared in many countries in coordination with those for construction and improvement of water systems.

In Table 64 and Figure 34 are shown the percentages of the population living in homes connected to sewerage systems in countries for which data were made available. Two sources were used for this information — the Four-Year Reports prepared in the countries and estimates received by the Pan American

Health Organization through Environmental Sanitation Divisions in the countries.

By country, the range in the per cent of the urban population with installations was from 0 to 76 per cent in the 16 countries with data available. For total population, urban and rural, the range was from 0 to 58 per cent. Only three countries reported any installations in rural areas, which is of course affected by definitions used for urban and rural. For example, in Colombia all communities with less than 5,000 population are included as rural, and it is reasonable to expect some of the larger ones in this group to have sewerage systems. On the other hand, in the United States only rural farm population is included as rural in this tabulation, and thus none would be connected to community systems. In general, no recent accurate figures are assembled on facilities in rural areas. In Middle and South America only 17 and 47 per cent, respectively, of the urban population lived in homes connected with sewerage systems. In Northern America over two-thirds of the urban population was served by systems.

A few examples may help to describe activities under way in this field. In Canada, in 1960 the National Housing Act was amended to provide authority to grant

TABLE 64. NUMBER AND PER CENT OF POPULATION SERVED BY SEWERAGE SYSTEMS IN URBAN AND RURAL AREAS IN THE AMERICAS, RECENT YEARS

Area	Year	Source of data a)	Total			Urban (b)			Rural		
			Total (c) population	With installations		Total population	With installations		Total population	With installations	
				Number	Per cent		Number	Per cent		Number	Per cent
Argentina	1961	2	21 101 000	6 534 000	31.0	15 531 000	6 534 000	42.1	5 570 000	-	-
Canada	1960	1	17 814 000	9 379 000	52.6	12 292 000	9 379 000	76.3	5 522 000	-	-
Chile (c)	1961	2	7 360 000	2 899 000	39.4	4 874 000	2 899 000	59.5	2 486 000	-	-
Colombia (d)	1960	1	14 132 000	4 838 000	34.2	5 932 000	3 645 000	61.4	8 200 000	1 193 000	14.5
Costa Rica	1961	2	1 187 000	121 000	10.2	421 000	121 000	28.7	766 000	-	-
Dominican Republic	1960	1	301 400	...	...	918 000	158 000	17.2	2 096 000	...	...
Ecuador	1960	2	4 317 000	...	...	1 248 000	664 000	53.2	3 069 000	...	...
Guatemala (c)	1961	2	3 678 000	256 000	7.0	865 000	255 000	29.5	2 813 000	1 000	0.0
Haiti (c)	1961	2	4 102 000	-	-	402 000	-	-	3 700 000	-	-
Honduras	1961	2	1 991 000	126 000	6.3	618 000	126 000	20.4	1 373 000	-	-
Nicaragua (c)	1961	2	1 732 000	92 000	5.3	568 000	92 000	16.2	1 164 000	-	-
Paraguay	1960	2	1 770 000	150 000	8.5	624 000	150 000	24.0	1 146 000	-	-
Peru (c)	1960	1	10 365 000	2 500 000	24.1	4 878 000	2 500 000	51.3	5 487 000	-	-
United States (c)	1957	1	168 100 000	98 400 000	58.5	e)147 900 000	98 400 000	66.5	e)20 200 000	-	-
Uruguay (c)	1961	2	2 370 000	889 000	37.5	1 750 000	889 000	50.8	620 000	-	-
Venezuela (c, d)	1960	1	7 288 000	1 385 000	19.0	4 371 000	1 318 000	30.2	2 917 000	67 000	2.3

(a) Source of data: 1 - Four-Year Report from country. 2 - Estimates received from countries through Environmental Sanitation Division.

(b) Urban usually refers to cities with 2,000 or more inhabitants.

(c) Populations may differ from those in Table 4 since it was advisable to use data from source supplying information on sanitation services.

(d) Urban includes cities of 5,000 or more inhabitants.

(e) All but rural farm population included as urban.

loans to municipalities to construct or expand existing sewage treatment works in order to eliminate or prevent water and soil pollution. A survey in Colombia of 199 urban localities of over 5,000 inhabitants showed that 57, or over a fourth, did not have sewerage systems and that in cities with systems approximately two thirds of the population was served. Of the 1,064 rural communities surveyed, 30 per cent had systems and in those communities with systems two thirds of the population was served. In El Salvador in 1959-1960 the "Instituto de Vivienda Urbana" undertook the construction of a treatment plant for sewage disposal for selected urban sections and large buildings, which was to serve as a pilot plant. During 1957-1960 latrines were constructed and distributed. They are sold to the public for 10 colons and donated to public institutions. In Venezuela plans for the four years 1961-1964 were drawn up to provide 1.5 million people with sewerage systems, an increase of 72.7 per cent in relation to population served in 1960.

In the other areas of the Americas very small proportions are served by sewerage systems. For example, in the Bahamas only 10 per cent of the population is served by community systems. In British Honduras there is no conventional system and private systems range from septic tank installations to the various types of latrines. In Surinam the open sewer system in the capital city is being converted to a closed system.

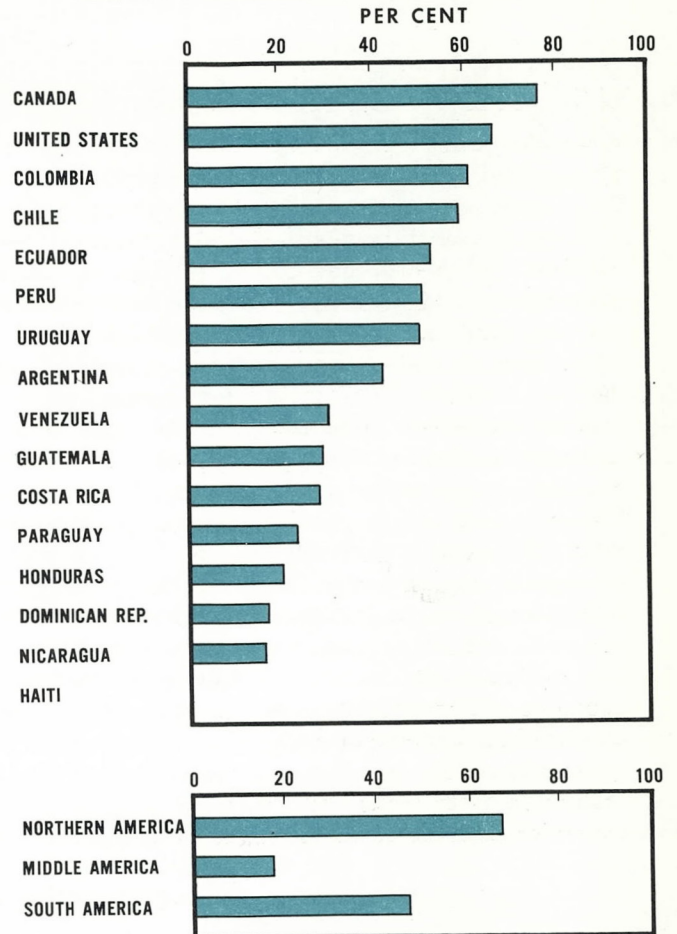
HOUSING

Accompanying urbanization and industrialization is the demand for more and better housing. The rapid growth of population in Latin America, together with the movement of large numbers of the rural population to urban areas has created many problems in housing. Programs are being activated in a number of countries in both urban and rural areas with the creation of agencies to plan for construction, financing, and management of units. It is necessary to ensure that proper plans are made to meet the health requirements including services such as potable water supply, sewage disposal and garbage disposal.

Limited surveys in some countries have revealed that in rural areas most dwellings are poorly constructed; they lack water supplies, latrines, baths and electricity and are over-crowded. In many countries housing censuses were taken for the first time around 1950. Most countries integrated with the population censuses selected questions on housing, but others carried out separate censuses of housing.

In the population censuses recently taken or planned for the near future, housing questions have been included in most countries. Nine countries had housing censuses around 1950 and twelve have already taken housing censuses in 1960 or 1961, as seen in Table 65. These censuses will be the best overall source of data in both urban and rural areas. For the most part, tabulations are not yet available for censuses

PER CENT OF URBAN POPULATION SERVED BY SEWAGE DISPOSAL SYSTEMS IN COUNTRIES OF THE AMERICAS, 1960



taken at this time, but based on censuses around 1950, deficits at that time in housing units amounted to well over 10 million in Latin America.

TABLE 65. COUNTRIES WITH SEPARATE HOUSING CENSUSES AROUND 1950 AND 1960

Countries	Dates	
	Taken	Planned
Argentina	1947	1960
Brazil	-	1960
Canada	1951	1961
Chile	-	1960
Colombia	1951	1963
Costa Rica (a)	1949	-
Dominican Republic	-	1960
Ecuador	-	1962
El Salvador (a)	1950	1961
Guatemala (a)	1949	...
Honduras	1949	1961
Mexico	-	1960
Panama	-	1960
Paraguay	-	1962
Peru	-	1961
United States	1950	1960
Venezuela (a)	1950	1961

Sources: Inter American Statistical Institute, Censos de Habitación, PAU, Washington, 1953.
 United Nations Economic and Social Council, Progress Report on 1960 World Population and Housing Census Program, February 1962.

(a) Urban areas only.

Chapter VII

MEDICAL AND HEALTH PERSONNEL

Advancement in health depends on resources of medical and health personnel, taking into account both quality and quantity. Adequate numbers of physicians, nurses, sanitary engineers, dentists and other technical staff members are essential to meet the day to day requirements for medical care of a population and to build programs for prevention of disease and improvement of the health status. Most countries today do not have sufficient and adequately trained personnel for health and medical services of their population. They must prepare many more to handle the health problems of rapidly growing populations. In planning for health high priority is attached today to education and training of technical staff. Returns on investments in educational programs are expected to be excellent. Educational opportunities will have to be increased at every level from primary and secondary education through university and professional training.

For planning of sound health programs, both immediate and long range, a first step is to obtain information on numbers of physicians, nurses and

other health workers rendering service in a country. The size of these groups indicates what immediate program can be successfully undertaken and to what extent education and training should be increased. For these reasons the questionnaires for the Four-Year Reports included sections on present resources in medical and health personnel and on the existing facilities for professional and technical education. As in other parts of the world the nomenclature applied to certain professional groups in the Americas does not always have the same meaning in terms of education and the capacity of the individuals to carry out specialized professional responsibilities. Thus as might be expected, the data are not always comparable. However, this latest information provided by the countries is shown except in instances when no information was supplied or other data appeared to describe more adequately the resources in a country. Under these circumstances, data previously published by the Pan American Health Organization or the World Health Organization were used.

PHYSICIANS

The adequacy of the ratio of number of physicians to population can be assessed only in relation to the health problems of a country, its medical care system, and the numbers of nursing and ancillary personnel also participating in serving the health needs of the people. It cannot be determined on the basis of a single fixed ratio.

In 1960 there were over 370,000 physicians in the Americas of which approximately 257,000 or almost 70 per cent were in Northern America, 33,000 in Middle America and 81,000 in South America (Table 66). In all three regions the ratios of numbers of physicians to population increased slightly from 1957 to 1960. For Northern America in 1960 (or most recent year) there were 13.2 physicians per 10,000 population as compared to 12.9 in 1957. For Middle America this ratio was 5.2 in 1960 instead of 5.0 in 1957; and for South America the increase had been to 5.7 per 10,000 population from 5.3.

By country the ratios ranged from 13.4 per 10,000 population to 1.8. Of the 21 countries for which data were available four had more than 10 physicians per 10,000 population (Argentina, Canada, United States and Uruguay) and at the other end of the scale five had fewer than 3 per 10,000 population. A few countries may have in fact more physicians than shown, for some reports enumerated only those employed in ministries of health or by the government. Whenever possible, however, total figures have been presented, even if referring to an earlier year.

Distribution of physicians geographically in relation to population is uneven in most countries. Information in this report was insufficient to analyze this factor, but in general physicians are concentrated in cities, and in rural areas the ratios of physicians on a population basis are far less than those shown for the country as a whole.

The numbers of physicians in government or

ministries of health are relatively large proportions of the totals in some countries. They are shown in Table 67 with numbers of government or public health personnel in other health specialties. In some countries these groups—particularly physicians—in govern-

TABLE 66. NUMBER OF PHYSICIANS, SCHOOLS OF MEDICINE AND MEDICAL GRADUATES PER YEAR WITH RATES OF PHYSICIANS PER 10,000 POPULATION IN THE AMERICAS, 1960

Area	Physicians		Medical schools	
	Number	Rate	Number	Graduates per year
Argentina (a)	26 898	13.0	8	281
Bolivia	b) 657	b) 1.9	3	* 24
Brazil (a)	c) 27 111	c) 4.0	31	d) 1 578
Canada	19 700	11.1	12	863
Chile	4 726	6.2	3	218
Colombia	6 042	4.3	8	408
Costa Rica	458	3.9	1	...
Cuba	6 609	9.7	1	...
Dominican Republic	b) 442	b) 1.5	1	152
Ecuador	e) 1 325	e) 3.4	3	...
El Salvador	483	1.8	1	26
Guatemala	d) 730	d) 2.1	1	59
Haiti	b, e) 120	...	1	34
Honduras	e) 365	e) 2.1	1	...
Mexico	20 227	5.8	21	f) 568
Nicaragua	524	3.5	1	23
Panama	401	3.8	1	13
Paraguay	d) 889	d) 5.3	1	51
Peru	5 061	4.7	3	67
United States	a) 236 818	a) 13.4	84	7 081
Uruguay	d) 3 116	d) 11.3	1	...
Venezuela	5 045	7.0	4	255
Bahama Islands	56	5.3	-	-
Bermuda	37	8.8	-	-
British Guiana	145	2.6	-	-
British Honduras (a)	22	2.5	-	-
Canal Zone	107	25.5	-	-
Falkland Islands	4	20.0	-	-
French Guiana	23	7.4	-	-
Guadaloupe	112	4.1	-	-
Martinique	113	4.1	-	-
Netherlands Antilles	137	7.2	-	-
Puerto Rico (a)	1 059	4.6	1	...
St. Pierre and Miquelon	4	8.0	-	-
Surinam	149	5.5	1	...
Virgin Islands (U.K.)	2	2.9	-	-
Virgin Islands (U.S.)	24	7.7	-	-
West Indies Federation				
Antigua	15	2.7	-	-
Barbados	77	3.3	-	-
Dominica	8	1.3	-	-
Grenada	14	1.6	-	-
Jamaica	d) 342	2.2	1	24
Montserrat	c) 3	...	-	-
St. Kitts-Nevis-Anguilla	a) 9	1.8	-	-
St. Lucia	12	1.4	-	-
St. Vincent	c) 10	...	-	-
Trinidad and Tobago	352	4.2	-	-
Northern America	256 559	13.2	96	7 944
Middle America	32 833	5.2	32	...
South America	81 191	5.7	66	...

(a) 1959. (b) Government only. (c) Hospitals and health services. (d) 1958. (e) 1957. (f) Data for 12 schools.

* Incomplete, one school only.

ment service may only be employed part-time in their official health activities.

In 1960 there were 194 schools of medicine in the Americas. Of these 96 were in Northern America, 32 in Middle America and 66 in South America. There is at least one school in every country and in addition one each in Jamaica, Puerto Rico and Surinam. In Latin America the largest numbers of schools were in Brazil, Mexico, Argentina and Colombia (31, 21, 8 and 8 respectively). The numbers of graduates from medical schools per year are also shown in Table 66. No total has been obtained for the regions since by country the numbers are incomplete. The number in Northern America was 7,944 for 1960. However, it has been previously estimated that approximately 7,700 physicians are graduated in Northern America each year and almost 7,000 in Latin America. Data on medical education in the Four-Year Reports was incomplete and has not been summarized for this document. There are indications, however, from the numbers of students enrolled, that of those admitted to medical schools, a large proportion fail to complete the course.

The data on physicians and their education indicate that a major health need in the Americas is to increase the numbers of physicians through full utilization and improvement of facilities for their education and training.

NURSES AND NURSING AUXILIARIES

Nurses, midwives and nursing auxiliaries work in the Americas in both hospitals and health services. In both services the numbers at present are far less than the minimum recommended for acceptable care. In Table 68 are presented data on numbers of nurses, midwives and nursing auxiliaries in countries and other areas in 1960 or in the most recent years for which data were available.

Qualifications, requisites and education for nurses vary among the countries. In the nursing field it is more difficult to develop comparable data on resources than in many other fields. The information shown is for the most part based on classifications of nursing personnel provided by the countries.

In Northern America there are over 570,000 graduate nurses, in Middle America approximately 16,000 and in South America 21,000. The total of 37,000 in Middle and South America is for a population greater than that of Northern America. On a population basis, there are at least ten times as many graduate nurses in Northern America as in either Middle or South America (28.9 per 10,000 population as compared to 2.4 and 1.5 in the latter two regions).

TABLE 67. MEDICAL PERSONNEL IN GOVERNMENT SERVICES, RECENT YEAR

Area	Year	Services	Physicians	Dentists	Pharmacists	Sanitary engineers	Veterinarians	Other university	Medical assistants	Health assistants	Nurses	Mid-wives	Laboratory technicians	X-ray technicians	Physiotherapists	Nursing auxiliaries	Sanitary auxiliaries	Dental auxiliaries	Other
Argentina	1959	Official	18 797	2 208	1 253	...	...	...	...	...	...	1 640	...	...	...	...	...	...	33 441
Bolivia	1960	Official	657	59	54	...	1	...	...	...	240	66	60	22	...	582	235	...	41
Brazil	1959	Health	5 205	...	...	...	...	...	...	1 438	...	...	...	...	5 433	...	...	...	16 599
Chile	1960	Official	2 886	785	380	25	48	659	...	1 094	642	128	...	30	8 512	...	...	...	3 201
Colombia	1958	Health	1 377	352	20	47	20	...	...	120	...	86	...	...	1 820	1 516	...	...	1 844
Costa Rica	1960	Official	455	95	5	4	11	...	...	89	525	...	...	...	1 050	...	...	...	...
Dominican Republic (a)	1960	Health	442	21	60	8	4	4	151	254	431	46	72	27	2	563	...	...	423
Ecuador	1959	Official	76	-	12	2	3	21	...	10	30	...	91	...	18	...	...	...	141
El Salvador	1960	Health	b) 510	53	14	12	1	8	100	3	350	246	145	52	...	943	194	...	117
Guatemala	1960	Government	97	34	2	1	...	...	...	...	49	19	34	...	...	199	...	6	4
Honduras	1960	Official	154	24	7	5	...	...	...	...	93	...	55	12	...	531	...	...	...
Mexico	1960	Official	3 824	309	116	76	63	112	842	1 637	4 407	204	287	41	18	203	992	3	400
Nicaragua	1960	Health	...	...	...	...	...	...	...	...	...	...	46	...	...	158	131	...	...
Panama	1960	Official	263	39	8	12	9	...	1	...	424	72	106	20	1	826	...	25	...
Paraguay (a)	1960	Health	264	58	17	6	1	...	...	450	37	191	21	22	...	...	49	...	714
Peru (a)	1960	Health	1 108	156	32	38	16	58	...	...	576	121	...	...	...	...	132	...	4 009
United States (c)	1959	Health	19 601	6 812	...	1 925	...	...	...	...	45 396	...	...	...	...	46 762	9 705	...	...
Uruguay	1960	Health	1 164	d) 112	65	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Venezuela (a)	1960	Health	2 059	149	39	101	21	55	...	...	1 068	...	219	78	6	3 670	622	5	165
Bahama Islands	1960	Government	28	1	1	-	4	1	-	e) 292	-	7	6	2	46	24	-	-	14
Bermuda	1960	Government	6	3	-	...	1	...	...	...	21	3	1	-	-	19	-	-	2
British Guiana	1960	Government	82	5	6	1	5	1	-	6	325	-	35	6	3	67	4	...	...
British Honduras	1960	Government	d) 16	-	11	-	1	-	32	-	165	99	2	2	-	...	-	-	-
Canal Zone	1960	Government	102	8	9	1	5	-	-	-	209	-	21	9	5	326	-	-	584
Falkland Islands	1960	Government	4	2	-	-	-	-	-	-	3	-	-	-	-	7	-	-	-
French Guiana	1960	Government	20	-	3	-	3	-	-	-	63	9	9	-	-	20	6	-	5
Guadeloupe	1960	Government	16	-	3	-	2	-	-	-	168	34	-	-	-	-	13	-	47
Martinique	1960	Government	73	5	3	-	3	-	-	-	177	44	-	-	-	...	-	-	-
Netherlands Antilles	1960	Government	41	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Pierre and Miquelon	1960	Government	4	1	-	-	-	-	-	-	10	1	3	1	-	-	-	-	-
Surinam	1960	Government	74	2	5	-	3	3	-	-	550	15	20	3	-	64	5	10	...
Virgin Islands (U. K.)	1960	Government	2	...	...	...	...	...	...	...	16	...	1	1	...	...	...	...	...
West Indies Federation																			
Antigua	1960	Government	14	2	9	...	1	...	...	...	98	29	3	1	...	24	...	...	...
Barbados	1960	Government	36	10	...	-	...	-	-	-	187	8	9	6	1	262	...	...	...
Dominica	1960	Government	8	2	10	-	1	-	-	-	55	17	3	1	-	10	-	-	-
Grenada	1960	Government	12	5	23	1	-	-	-	-	-	7	1	-	-	...	-	-	...
Jamaica	1960	Government	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Kitts-Nevis- Anguilla	1960	Government	7	1	6	1	1	-	-	-	110	19	2	1	-	-	-	-	1
St. Lucia	1960	Government	11	1	7	-	1	-	-	-	88	-	4	1	-	-	-	-	-

(a) Health and Social Welfare. (b) Positions. (c) State and local health, federal. (d) 1959. (e) Including student nurses.

TABLE 68. NUMBER OF NURSES, MIDWIVES AND NURSING AUXILIARIES
WITH RATES PER 10,000 POPULATION IN THE AMERICAS, 1960

Area	Year	Number			Rate		
		Nurses	Midwives	Nursing auxiliaries	Nurses	Midwives	Nursing auxiliaries
Argentina	1957	10 273	3 560	16 527	5.2	1.8	8.3
Bolivia	1960	240	66	582	0.7	0.2	1.7
Brazil (a)	1957	4 144	...	38 039	0.6	...	5.9
Canada	1960	68 502	...	b) 26 608	38.5	...	14.9
Chile	1960	1 570	642	8 712	2.1	0.8	11.4
Colombia	1960	999	...	c) 1 820	0.7	...	1.3
Costa Rica (d)	1960	e) 525	e) ...	1 050	4.5	...	9.0
Cuba	1957	2 876	1 885	...	4.5	3.0	...
Dominican Republic (f)	1960	431	46	563	1.4	0.2	1.9
Ecuador	1957	194	183	...	0.5	0.5	...
El Salvador (f)	1960	350	246	943	1.3	0.9	3.6
Guatemala	1957	543	...	...	1.6	...	...
Honduras	1960	93	...	531	0.5	...	2.7
Mexico	1960	4 407	204	203	1.3	0.1	0.1
Nicaragua	1960	263	...	158	1.8	...	1.1
Panama	1960	489	87	958	4.6	0.8	9.1
Paraguay	1957	88	358	579	0.5	2.2	3.5
Peru	1960	...	g) 2 736	...	...	...	2.5
United States	1960	504 000	6 000	625 000	28.0	0.3	34.7
Uruguay	1957	420	834	...	1.5	3.1	...
Venezuela	1957	2 027	-	5 020	3.2	-	7.8
Bahama Islands	1960	h) 347	...	46	33.0	...	4.4
Bermuda	1958	63	32	15	15.0	7.6	3.6
British Guiana	1960	d) 325	...	...	5.8	...	...
British Honduras	1960	165	227	...	18.1	24.9	...
Canal Zone	1960	209	...	326	49.8	...	77.6
Falkland Islands	1960	e) 3	...	7	15.0	...	35.0
French Guiana	1960	63	13	20	20.3	4.2	6.5
Guadeloupe	1960	210	77	-	7.8	2.9	-
Martinique	1960	205	63	...	7.4	2.3	...
Netherlands Antilles	...	...	...	...	...	...	...
Puerto Rico	1960	787	1 023	...	3.3	4.3	...
St. Pierre and Miquelon	1960	10	1	-	20.0	2.0	-
Surinam	1960	700	50	...	25.9	1.9	...
Virgin Islands (U.K.)	1960	16	9	...	22.9	12.9	...
Virgin Islands (U.S.)	1960	19	17	...	5.8	5.2	...
West Indies Federation							
Antigua	1960	i) 98	29	...	17.8	5.3	...
Barbados	1960	187	8	262	8.0	0.3	11.2
Dominica	1960	55	17	-	9.2	2.8	-
Grenada	1957	75	46	48	8.8	5.4	5.6
Jamaica	1957	1 861	...	1 585	11.9	...	10.2
Montserrat	1958	20	10	...	15.4	7.7	...
St. Kitts-Nevis-Anguilla	1959	110	19	...	19.8	3.4	...
St. Lucia	1960	e) 92	...	-	10.7	...	...
St. Vincent	1957	74	96	32	9.7	12.6	4.2
Trinidad and Tobago	1960	1 254	1 186	...	15.0	14.2	...
Northern America		572 575	6 033	651 623	28.9	0.3	32.9
Middle America		15 761	5 295	6 705	2.4	0.8	1.0
South America		21 046	5 706	74 042	1.5	0.4	5.3

(a) From report of Brazilian Nurses' Association on Survey of Nursing Needs and Resources. Graduate midwives included with nurses. (b) Data for 1958 including psychiatric nurses who were not graduate nurses. (c) Year 1958. (d) Government only. (e) Midwives included with nurses. (f) Ministry of Health only. (g) Not specified as graduate nurses or auxiliaries. (h) Including student nurses. (i) Including auxiliaries.

By country the number of graduate nurses per 10,000 population varied from 38.5 to 0.5. In all but one country in Latin America there were fewer than 5 graduate nurses per 10,000 population and in 12 countries there were less than 2 per 10,000 population.

In all regions of the Americas nursing auxiliaries work under supervision of nurses or physicians in

rendering nursing services. In Northern America they are employed mainly in hospital care but in Latin America they have functions in health services in addition to those in hospitals. Nursing auxiliaries are also in far greater supply in Northern America than in either Middle or South America. There were over 651,000 auxiliaries or 32.9 per 10,000 population in the United States and Canada and less than 81,000 combined in the other two regions. In South American countries ratios of nursing auxiliaries to graduate nurses were usually high. Six Latin American countries had more than 5 nursing auxiliaries per 10,000 population and the range in auxiliaries per 10,000 population was from 11.4 to 0.1.

Midwives, some of whom also are graduate nurses, also render service in the Americas. There were reported to be an estimated 6,000 in Northern America and 11,000 in Middle and South America. The ratio was greatest in Middle America (0.8 per 10,000 population) followed by South America (0.4) and Northern America (0.3). From only a limited number of countries were there data on the numbers of auxiliary midwives, and thus tabulations have not been included in this report.

A large part of nursing personnel in Middle and South America are employed in official government services, both hospital and public health. In the United States and Canada the largest numbers work in non-profit hospitals. The numbers in government services in the countries are shown in Table 67.

The responsibilities given to graduate nurses and nursing auxiliaries in Latin America, particularly in rural areas where physicians are not available, are great. The small numbers of graduate nurses and auxiliary nursing personnel points to many problems in the Americas in addition to the deficiencies in numbers, such as lack of secondary education for preparation of young women to enter the nursing field, the need for strengthening professional nursing education because of the greater responsibilities placed on nurses in terms of supervisory and teaching functions and the lack of adequate preparation for nursing auxiliaries.

OTHER HEALTH PERSONNEL

Among the professional and technical specialties in the health field there are several groups which are needed in large numbers for the maintenance of basic health services. These include dentists, sanitary engineers and sanitary inspectors.

Development of dentistry is at different stages in the various countries of the Americas. This is directly related to the availability of dentists in re-

lation to population which also has a wide range in the Region. As seen in Table 69 there were in 1960 or recent year over 100,000 dentists in Northern America, a ratio of 5.6 dentists per 10,000 population. In Middle America there are 5,203 dentists or 0.8 per 10,000 population and in South America almost 36,000 dentists or 2.8 per 10,000 population. Of the countries Uruguay had the highest ratio of dentists to population,

6.1 per 10,000 population, and the values ranged down to 0.1 per 10,000 population. Only 5 countries of Latin America had 2 or more dentists per 10,000 population. The numbers employed in government health services are included in Table 67.

All countries except one have at least one dental school, and in addition there is a school in Puerto Rico. In Northern America in 1960 there were 52 dental schools, in Middle America 19 and in South America 58. Thirty-six of these schools were located in Brazil, and 10 in Mexico. In general schools have

TABLE 69. NUMBER OF DENTISTS, SCHOOLS OF DENTISTRY AND GRADUATES PER YEAR WITH RATES OF DENTISTS PER 10,000 POPULATION IN THE AMERICAS, 1960

Area	Year	Dentists		Schools of dentistry	
		Number	Rate	Number	Graduates per year
Argentina	1957	10 083	5.1	3	442
Bolivia	1960	500	1.4	3	a) 11
Brazil	1959	15 532	2.7	36	b) 1294
Canada	1960	5 780	3.2	6	215
Chile	1960	2 504	3.3	3	124
Colombia	1960	1 719	1.2	4	a) 110
Costa Rica	1960	146	1.2	1	...
Cuba	1957	2 100	3.3	1	...
Dominican Republic	1960 c)	21	0.1	1	27
Ecuador	1960	500	1.2	3	...
El Salvador	1957	161	0.7	1	-
Guatemala	1957	130	0.4	1	4
Haiti	1957	52	0.2	1	...
Honduras	1957	63	0.4	1	2
Mexico	1957	1 601	0.5	10	d) 13
Nicaragua	1960 c)	93	0.6	1	2
Panama	1960	88	0.8	-	...
Paraguay	1958	277	1.6	1	10
Peru	1960	1 630	1.5	1	125
United States	1959	103 581	5.8	46	3 253
Uruguay	1957	1 650	6.1	1	...
Venezuela	1960	1 400	1.9	3	143
Bahama Islands	1960	6	0.6	-	-
Bermuda	1960	26	6.2	-	-
British Guiana	1960	32	0.6	-	-
British Honduras	1960	7	0.8	-	-
Canal Zone	1960	16	3.8	-	-
Falkland Islands	1960	2	10.0	-	-
French Guiana	1960	5	1.6	-	-
Guadaloupe	1960	38	1.4	-	-
Martinique	1960	56	2.0	-	-
Netherlands Antilles	1960	31	1.6	-	-
Puerto Rico	1959	363	1.6	1	...
St. Pierre and Miquelon	1960	1	2.0	-	-
Surinam	1960	18	0.7	-	-
Virgin Islands (U.K.)	1960	1	1.4	-	-
Virgin Islands (U.S.)	1959	8	2.6	-	-
West Indies Federation					
Antigua	1960	2	0.4	-	-
Barbados	1960	10	0.4	-	-
Dominica	1960	3	0.5	-	-
Grenada	1960	9	1.0	-	-
Jamaica	1960	97	0.6	-	-
Montserrat	...	...	...	-	-
St. Kitts-Nevis-Anguilla	1959	4	0.7	-	-
St. Lucia	1960	2	0.2	-	-
St. Vincent	1957	1	0.1	-	-
Trinidad and Tobago	1960	94	1.1	-	-
Northern America		109 388	5.6	52	3 468
Middle America		5 203	0.8	19	48
South America		35 852	2.8	58	2 259

(a) 1959. (b) 1958. (c) Government service only.
(d) Data from 4 schools.

small enrollments and a large proportion of students admitted do not complete their courses. With the dentists available at present current requirements for dental care and preventive measures can not be met, and the need for expansion in the educational program to prepare dentists is pressing.

Sanitary engineering personnel including both sanitary engineers and sanitary inspectors are basic to the development of programs in environmental health which are receiving great emphasis at the present time. Inventories of resources in personnel are not easily obtained. The number of sanitary engineers employed directly in health departments is small; many others are staff members of other ministries, institutes, banks or private companies concerned with construction of water supplies and sewerage systems. Estimates have been made that there are about 5,000 sanitary engineers in the United States and Canada and 2,000 in Middle and South America. However, reports from these latter countries indicate that the numbers known to be working in Latin America exclusive of Argentina and Brazil is in the neighborhood of 350, and this group is principally in health services. In sanitary engineering, as in other fields, there is need for a registry system to determine the numbers of trained personnel outside the government service. The numbers reported by the countries are shown in Table 70, with other health personnel and the numbers in government services are given in Table 67. In view of the acceleration of programs to extend systems for water supplies and sewerage systems to larger proportions of the population, many more engineers will need education and training in this field.

Sanitary inspectors are employed in large numbers in the Americas, for the most part in health services. The numbers per 10,000 population are higher in both Middle and South America than in Northern America. Special short courses are usually provided for their training.

The data for other technical personnel employed in the health field in the Americas appear in Table 70. These include veterinarians, health educators, statisticians, pharmacists, laboratory technicians, physiotherapists, X-ray technicians and dental auxiliaries. Some of these groups such as veterinarians, health educators and statisticians are now being trained in schools of public health and other university facilities. For all fields increases in numbers are essential. Other types of personnel mentioned above are prepared in special courses and for each there is an increased demand in order to adequately staff health services and hospitals in the Americas.

TABLE 70. PERSONNEL FOR MEDICAL AND HEALTH SERVICES IN THE AMERICAS, RECENT YEARS

Area	Sanitary engi- neers	Sanitary inspec- tors	Veteri- narians	Health edu- cator	Statis- ticians	Phar- macists	Labora- tory tech- nicians	X-ray techni- cians	Dental auxil- iaries	Physio- thera- pists	Social workers	Otros
Argentina (a)	...	...	...	...	...	1 641	...	...	...	...	...	b)42 577
Bolivia (a)	...	235	...	5	5	54	60	22	...	...	13	18
Brazil (b)	...	...	...	...	...	788	1 301	1 161	...	...	509	27 761
Canada	75	950	1 775	...	...	c)5 382	3 209	2 117	4 271	530	530	3 884
Chile	25	...	48	27	...	380	205	...	29	30	570	2 584
Colombia (d)	47	1 516	300	13	...	20	86	...	...	...	62	1 469
Costa Rica	10	...	18	...	...	422	...	...	-	...	89	...
Cuba	8	...	661	...	...	...	...	...	...	...	...	...
Dominican Republic (d)	8	...	4	...	...	60	72	27	-	2	...	832
Ecuador (a)	2	...	3	...	...	12	91	-	-	-	...	177
El Salvador (d)	12	194	1	...	...	14	145	52	...	4	22	205
Guatemala (a)	1	...	...	...	...	2	34	...	6	...	...	4
Honduras (a)	5	...	...	...	...	7	55	12	...	...	...	...
Mexico (a)	76	992	63	...	...	116	287	41	3	18	85	2 906
Nicaragua	12	131	...	...	...	240	46	...	...	...	...	...
Panama (d)	12	...	9	...	...	10	106	20	25	...	...	1
Paraguay (d)	6	49	1	12	6	17	21	22	...	1	29	1 116
Peru	104	132	391	6	...	1 786	...	...	...	...	272	405
United States	5 000	10 000	20 000	1 000	5 000	120 000	78 000	75 000	114 500	8 000	11 700	...
Uruguay (d)	...	...	...	...	...	65	...	...	...	...	...	...
Venezuela (d)	24	402	21	...	...	39	219	78	5	6	...	842
Bahama Islands	-	24	6	-	-	1	7	6	-	2	...	15
Bermuda	...	19	1	...	...	17	4	4	-	-	...	5
British Guiana	1	67	7	1	...	125	35	6	4	3	...	6
British Honduras	-	...	1	-	-	29	2	2	-	-	...	32
Canal Zone	1	-	5	...	...	9	21	9	-	5	...	584
Falkland Islands	-	-	-	-	-	-	-	-	-	-	-	-
French Guiana	...	6	3	9	-	8	9	-	-	...	5	...
Guadeloupe	-	13	3	-	-	41	-	-	-	-	...	...
Martinique	-	...	3	-	-	54	-	-	-	-	33	80
Netherlands Antilles	...	...	...	...	...	21	...	...	...	...	...	...
Puerto Rico	...	...	29	...	...	...	...	...	...	...	...	...
St. Pierre and Miquelon	-	-	-	-	-	-	3	1	-	-	...	-
Surinam	...	64	3	...	...	14	36	7	5	-	...	3
Virgin Islands (U. K.)	...	...	...	...	...	...	1	1	...	...	...	...
Virgin Islands (U. S.)	...	...	2	...	...	...	...	...	...	...	...	...
West Indies Federation												
Antigua	...	24	1	-	-	9	3	1	...	...	...	...
Barbados	-	...	...	...	...	...	9	6	1	-	...	20
Dominica	-	10	1	-	-	10	3	1	-	-	...	...
Grenada	1	...	-	-	-	23	7	1	-	-	...	...
Jamaica	2	...	...	...	...	607	...	...	...	...	...	...
St. Kitts-Nevis- Anguilla	1	...	1	-	-	14	2	1	-	-	...	1
St. Lucia	-	-	1	-	-	19	4	1	-	-	...	-
Trinidad and Tobago	...	...	13	...	...	380	...	...	...	...	...	...

(a) Government only. (b) Technical assistants. (c) Minimum estimate. (d) Ministry of Health only.

EDUCATION AND TRAINING

Each country establishes its own standards for both undergraduate and post-graduate professional education. Information on certain aspects of these standards was provided by many countries together with enrollment data. Since prerequisites for admission, curriculum, and the proportion completing the prescribed courses of study vary no attempt is made to present such data. In Table 71 is summarized the number of schools in certain specialties meeting nationally accepted criteria.

TABLE 71. EDUCATIONAL FACILITIES, SCHOOLS AND CENTERS, FOR MEDICAL AND HEALTH PERSONNEL IN THE AMERICAS, 1960

Country	Medicine	Public Health	Dentists	Pharmacists	Sanitary Engineers	Veterinarians	Nurses	Midwives	Nursing Auxiliaries	Social Workers	Sanitary Inspectors	Dental Hygienists	Laboratory Technicians	Medical Record Librarians	Dietitians	Physiotherapists
Argentina	8	2	3	a)	a)	a)	a)	a)	a)	a)	a)	a)	a)	a)	a)	...
Bolivia	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...
Brazil (b)	31	12	36	23	c)	8	188	44	179	26	...	1	100	...	16	5
Canada	12	2	6	3	3	5	5	1	10	...	...	...	...	...	...	...
Chile	3	1	3	...	1	2	2	5	1	...	...	...	...	...	...	...
Colombia (d)	8	1	4	4	...	2	5	...	...	...	...	...	...	...	...	...
Cuba	1	...	1	1	1	1	1	...	a)	...	...	4	a)	...	...	...
Dominican Republic	1	1	1	3	...	1	1	...	...	...	...	...	...	...	...	...
El Salvador	1	1	1	1	1	1	1	...	...	...	10	...	11	...	...	1
Guatemala	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	...
Haiti	1	...	1	1	1	1	1	...	...	...	...	...	...	...	...	...
Honduras	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	...
Mexico	21	1	10	17	...	1	76	...	...	...	...	...	...	...	...	...
Nicaragua	1	1	1	1	1	1	4	...	1	1	...	...	...	...	...	...
Panama	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	...
Paraguay	1	1	1	1	1	1	1	...	...	...	...	...	...	...	...	...
Peru	3	1	2	1	1	1	13	1	1	4	1	1	1	1	1	1
United States	e)84	10	46	76	75	18	1129	...	602	55	37	732	650	f)40	65	g)87
Venezuela	4	1	3	4	...	1	7	...	...	...	...	...	...	...	...	...

(a) Information on enrollments but number of schools not stated. (b) 1958. (c) Included in Engineering Schools or in School of Public Health. (d) 1959. (e) In addition 6 schools of osteopathy. (f) Includes medical record technician. (g) Occupational therapy 28; physiotherapy 38.

Several comments given in the narratives of Part A of the Report from countries indicate the great progress made in education and training programs. These have been summarized for inclusion in this report. Emphasis has been placed in many countries on training of public health workers in schools of public health and in special courses arranged by the ministries of health.

In July 1959 the Ministry of Social Welfare and Public Health in Argentina established the National School of Public Health to train both professional and auxiliary personnel in health subjects. The establishment of this institution was aimed at overcoming the shortage of specialized personnel and to have sufficient personnel available to undertake health activities employing the most up-to-date procedures for the promotion, protection, and restoration of health, by providing specialists in hospital organization and administration, epidemiology, statistics, and so forth.

In Brazil, the most outstanding event in the matter of training public health personnel was the establishment of the National School of Public Health in Rio de Janeiro, which began to operate regularly in 1959. At the federal level, training courses for health personnel are conducted by the National Department of Health,

chiefly for auxiliary personnel, by the National Children's Bureau, and by the Institute Oswaldo Cruz. However, it is hoped to eventually have all courses in the School of Public Health. There are five additional schools providing training in public health in Brazil, one in each of the following states: Sao Paulo, Minas Gerais, Bahia, Pernambuco, and Parana. By the Law of 10 July 1958 the profession of sanitary engineer was given legal recognition. One national agency that has contributed fellowships for training in the country or abroad is CAPES (Committee for Advanced Training of Personnel).

There were 12 medical schools in Canada at the beginning of the period as well as auxiliary training facilities. The following additions were made: the University of Sherbrooke, Sherbrooke, Province of Quebec, established a faculty of medicine with first medical year in 1961. The University of Manitoba opened a dental school in 1958-1959 and established a school of physiotherapy and occupational therapy. Beginning in 1960 the University of Alberta offered three-year courses on physical therapy and occupational therapy. The Faculty of Medicine of the University of British Columbia has plans for a three-year course for therapists in rehabilitation. The School of Hygiene of the University of Toronto established a Diploma in Bacteriology in a course for laboratory personnel, veterinarians, dentists, and pharmacists. Thirteen hospitals are approved for three-year training courses, and nine hospitals for one or two-year courses for post-graduate training in ophthalmology. Faculties of Dentistry of the Universities of Alberta and Manitoba approved establishment of two-year diploma courses for dental hygienists. The University of Toronto School of Hygiene has instituted a diploma course in nutrition, and a master's degree in nutrition. In 1960, a new Institute of Industrial Hygiene and Air Pollution was established at the University of Montreal. In 1960, there were 110 laboratories in hospitals approved by the Canadian Medical Association for the training of laboratory technicians, four public health laboratories, and three educational institutions giving courses leading to certification as a "Registered Technician." From 1957 to 1960, 788 mental health personnel were trained in formal academic courses and 384 in short courses. To illustrate the scope and variety of post-graduate training facilities, the Royal College of Physicians and Surgeons publishes annually a list of Canadian Hospitals approved for advanced training. Graduate training and degree courses are available in the medical schools. In the nursing profession several universities offer courses leading to a Bac-

calaureate in Nursing with specialization in public health nursing, nursing education and administration.

The Seminar on Medical Education held in Santiago, Chile, 20-24 September 1960 dealt with medical education in detail, as well as with the changes in the curriculum of the School of Public Health, aimed at achieving a better coordination between public health and medical care activities, from which it is hoped to attain fruitful results. The discussions were of importance not only for programming, organization, administration, training and guidance, but also for research.

The Health School of the Ministry of Public Health in Cuba has been given the necessary stimulus to enable it to develop intensive training of professional and technical personnel, as well as the necessary resources for that purpose. During the period 1958-1960 courses were given in health and hospital administration, in nursing to both nurses and auxiliaries, in occupational health and in other fields for sanitary inspectors, laboratory assistants, and X-ray technicians. Participating in these courses were 254 students and 39 teachers in 1958; 117 students and 47 teachers in 1959; and 685 students and 100 teachers in 1960.

In 1958 the School of Medicine in El Salvador founded the School of Medical Technology which is now in operation.

At the School of Medicine in Haiti three departments have been established, each directed by a head who is at the same time chief of service at the General Hospital. Clinical in-service training is compulsory after the third year of study. As early as the second year of study, medical students visit the wards for instruction in symptomatology. A third school for male nurses has been set up in Cayes.

The reorganization of the School of Medicine in Honduras has begun with a plan of reform that will extend over seven years. The following has been accomplished to date: a system for selecting applicants was instituted with a limit of 35 admissions per year; students admitted must have previously completed a year of basic training in mathematics, physics, biology, chemistry, etc.; clinical training was divided into surgical and medical, there being a chair for each with a director, assistant professors, and instructors; seminars by faculty members and students were instituted; the university has awarded fellowships to professors for study abroad; new biochemistry, bacteriology, and physiology laboratories, and surgical and experimental wards have been installed; specialists in medical education have arrived from abroad. In accordance with the National Health Plan, the Training Center for Nursing Auxiliaries and Sanitary Inspectors began in March 1957; 68 auxiliaries and 56 inspectors have already completed their training.

The Ministry of Health and Welfare in Mexico gave the necessary attention to professional education and training, in order to gain the best results from its budgetary allocations and taxes. The National Government offered its support to universities and other professional training schools by increasing the subsidies awarded, but without interfering with their freedom to choose their curricula. In the schools for medical and allied training it achieved the introduction of important concepts in keeping with the advances made in the health and medical sciences. The School of Public Health was successful in fostering international relations by means of round tables, seminars, etc. The first School of Nursing of the Ministry of Health and Welfare was inaugurated in April 1960 with 30 students. It operates under the Public Health Education Department and conducts its activities at the Medical Center of Mexico City. The School of Social Workers was established in Tlaxcala under the Public Health Department of the States and Territories and under the technical direction of the School of Public Health. The School of Public Health gave four courses for the Master of Public Health Degree with 141 students, four courses for Master of Nursing in Public Health with 55 students, and ten other courses were given to laboratory technicians, nursing auxiliaries, sanitarians, nutritionists, social workers, with a total of 102. In addition to these courses at the School of Public Health there were three short courses for nursing auxiliaries, and four courses in hospital administration and organization. A course in hospital administration was established with six specialties. The first course of two years' duration was attended by 15 students of whom 14 were physicians and one a nurse. To raise the level of training, the following activities were organized: a round table on health education; an International Meeting of Directors of Schools of Public Health; an International Conference on Nutrition and Dietary Habits; a Seminar on Health Education Applied to Sanitation Programs; a Seminar on Training and the Latest Methods in Tuberculosis; a Latin American Seminar on Microbiology; a Seminar on Prothesis and Orthopedic Appliances; a round table on personnel training and organization; and other meetings.

During this period in Panama there was an increase in the number of professional health educators and public health physicians, and the first veterinarians were trained. Training included fellowships for study abroad (especially in Latin American countries), in-service training, seminars, etc.

The principal activities in education of the Ministry of Public Health and Social Welfare in Paraguay were reflected in a series of agreements, decrees and resolutions. Resolutions of 1957 pertained to the first short course in public health for heads of rural units,

second training course for inspectors, a course for health educators and a short course in sanitation for hook-worm control campaign. Similar resolutions in 1958 were for courses for nursing auxiliaries and for rural-medical officers; in 1959 for seminars on child and family nutrition and on hospital administration, and in 1960 for a course for inspectors and seminars on nursing education and hospital administration. Also, an agreement in 1960 was for a plan to improve the curricula and educational facilities of the "Dr. Andres Barbero" Institute.

In Peru changes were introduced between 1957 and 1960 in the basic education and training of professional personnel engaged in public health activities and of auxiliary health personnel. Two schools of medicine were established in the most important cities in the north and the south of the country. The curricula of the schools are modern and the faculty has undergone pedagogical training. A Department of Post-Graduate Training was established at the School of Medicine in Lima, and organized short courses and lectures throughout the country. It also established residencies for specialist training. In addition, the course in hygiene, which was given in the sixth year of studies, has been changed into a course in preventive medicine, hygiene, and social medicine so as to integrate preventive and social security concepts with the classical welfare concepts. It will extend over the second to the sixth year of study. A new curriculum adopted in 1960 reduces the medical course to 6 years and increases the actual number of hours of study by 25 per cent. There have been changes in the number of professors in schools of dentistry with increases from 91 in 1957 to 129 in 1960; in the budget, which increased by more than 50 per cent; and in training, by the addition of further training courses.

The most outstanding changes in education in sanitary engineering in Peru were the transformation of the School of Sanitary Engineering into a Faculty of the National University of Engineering in 1958; the institution of further training courses for sanitary engineers, the purchase of equipment, and the construction of three assembly rooms. A course in public health was established in 1957 for students of veterinary medicine in their last year of studies, and the Faculty of Veterinary Medicine was installed in its new premises during this four-year period. Courses in sociology were introduced at the Institute of Anthropology of the Greater National University of San Marcos, and an Institute of Anthropology was founded at the University of San Cristobal in Huamanga. In 1960 two Social Service Schools were established in the mountainous region of Peru, one in the city of Puno and the other in Ayacucho.

The major occurrences in the nursing field in Peru were: the introduction of a standard curriculum in the 12 nursing schools; the establishment of the Higher Council of Nurses and of the Post-Graduate

Nursing Institute; the reopening in 1957 of the School for Male Nurses of the Government Health Services and the Police; the establishment of nursing schools of the Salaried Workers Social Security Fund; the establishment of the Tacna Regional Hospital, of the Peruvian Naval Center and of the School of Nursing and Obstetrics at the University of San Cristobal in Huamanga in 1960.

Ministerial agencies in Peru assisted in the basic training of medical and health personnel, in public health training and orientation for graduates, and in specialized training in various branches of public health. The following agencies collaborated: the National Institutes of Health; the Institute of Occupational Health; the Institute of Nutrition; the Biostatistics Program; the Division of Health Education which trains health educators, and several others.

To maintain the present ratio of 141 physicians and 56 dentists per 100,000 population in the United States the number of physicians graduated annually must be increased from 7,400 to 11,000 and the number of dentists from 3,000 to 6,200 by 1975. To reach these goals, an estimated 20 to 24 medical schools and 20 new dental schools will be required, as well as the expansion and replacement of the facilities of present schools. Three recent laws provide some educational aid for medical and allied personnel: (1) the National Defense Education Act of 1958 authorizes long-term low-cost loans for students, some of whom are medical and dental students; (2) the Practical Nurse Training Extension Act authorizes a yearly grant of \$5 million for an 8-year period (1957-65) to States for training of practical nurses; and (3) an amendment to the Public Health Service Act authorizes grants of \$2 million annually for a 5-year period for graduate traineeships in schools of public health, nursing and engineering. During the 4-year period, 2,306 awards were made in the latter program with the largest number, 1,242, to nurses. In 1958, the 85th Congress amended Section 314(c) of the Public Health Service Act to authorize the Surgeon General to make grants-in-aid to accredited schools of public health. One of the primary purposes of these grants is to support the provision of comprehensive professional public health training in such schools. Under a legislative ceiling of \$1,000,000 the Congress appropriated for this purpose \$459,000 for fiscal year 1959 and \$1,000,000 for each of fiscal years 1960 and 1961.

In Venezuela the most notable progress in education was the large increase in the number of personnel trained abroad and in the country through fellowships of the Ministry of Health and Welfare. The total fellowships increased from 84 in 1958 to 254 in 1959 to 353 in 1960. In nursing the important events were the establishment of "Bachillerato" as a requirement for admission to one school, the increases to four years of the course in other schools and the of-

ficial establishment of the course for nursing auxiliaries. In the field of social service the most important progress was the approval of the "Bachillerato en Humanidades con Mención en Servicio Social" and the creation of the School of Social Work in the Central University of Venezuela. A great change occurred in the relations of the Ministry and the National Universities with the celebration of the First Seminar on Medical Education in Venezuela. The Venezuelan

School of Public Health in the Faculty of Medicine of the Central University was created in 1958 with teaching at two levels with one course of four months' and the other of ten months' duration. Various post-graduate courses in other medical specialties, cardiology, anatomy, pathology, internal medicine, pediatrics, anesthesiology, etc., were initiated. During the period 1957-1960, four courses were given at the Nuclear Energy Institute on the use of radioisotopes.

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