

# Population-based research on aging with a life course approach





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The purpose of the series is to provide regular updates on the different areas of action of the Decade of Healthy Aging (2021-2030) in the Region, as well as on other related aspects. Experts from PAHO, the United Nations, the Inter-American System, and the academic world collaborated and participated in the initiative, providing essential feedback and recommendations to bring the project to light. Their contributions are greatly appreciated.

## Introduction

Population aging is one of the most significant changes taking place in societies worldwide. Older people occupy an increasingly important place in the public policy agenda, particularly in debates about their health, access to retirement and pensions, required care, and participation in civic life, among other areas.

The Decade of Healthy Aging (2021–2030), declared by the United Nations General Assembly in December 2020, is a global strategy that draws attention to these and other issues, opening an opportunity to implement concrete actions that contribute to creating a more inclusive and age-sensitive society. It is a joint effort that involves a variety of actors – governments, civil society, international agencies, professional teams, academia, the media, and the private sector – to benefit people of all ages and enable older adults to achieve higher levels of health and wellbeing.

The objective of this publication is to highlight the relevance of the life course approach when addressing challenges related to aging and old age in the societies of the countries that make up the subregion of Latin America and the Caribbean, and to show how research and evidence can contribute to implementing this approach. The following pages describe what the life course approach is and how it can contribute to ensuring a comprehensive view of population aging and development of public policies designed for this age group.

The aim of this publication is to start a debate on these issues among government authorities, public institutions, and representatives of international organizations. Although the life course perspective has been widely addressed by academia, it has only recently begun to be included in strategic and programmatic work by decision makers. The suggested approach considers the dynamic and unique aspects of individual and generational trajectories and invites us to go beyond partial studies defined by age, sex, gender, ethnicity, or territory. It aspires to integrate the different dimensions of aging – biological, social, economic, demographic, and historical – understanding that people experience historical moments that are unique to each cohort and different life periods that define, favorably or not, the characteristics of old age.

## Old age and aging

There are literally hundreds of concepts and theories that attempt to explain what aging is and why it occurs; however, none of them has been able to fully capture this complex and multifaceted phenomenon (1). In biology, aging is associated with an accumulation of molecular and cellular damage that gradually reduces physiological reserves, increases the risk of disease, and may erode the overall capacity of the individual (2).

Aging is a concept that can be applied both to individuals (individual aging) and populations (population aging). In the former, the changes that occur in the biological sphere are neither linear nor uniform, nor are they necessarily linked to the chronological age of the person (3). This means that aging is a process unique to each person.

Individual aging encompasses a series of changes and consequences in people's social sphere (2). The beginning of old age is determined differently by each society; it is, therefore, a social construct. As they age, people must face changes that lead to a greater likelihood of loss of function, an increased risk of disease, the loss of family members and loved ones, and a series of changes in the role they play within society (e.g., ceasing to work and retiring, or becoming grandparents), their relationship with the environment, and skills developed over time. From a normative standpoint, it is often assumed that a person becomes "old" when they reach the age of 60 or 65. As the retirement age is often used as the line marking old age, some countries consider it to begin at 65 years. To unify the various criteria, the United Nations has established that old age begins at the age of 60.

Old age is often associated with loss and illness, which leads to negative and discriminatory ideas towards older people (4). The truth is that old age is a period of life that can be as full as any other, and older persons have rights and should enjoy protection and care through government policies that counteract the disadvantages that can be associated with old age and that enhance their wellbeing.



## Healthy aging

Age-related changes are neither linear nor uniform, and their connection to a person's age is relative. While some people over the age of 70 are in excellent health and without significant functional losses, others are frail and need more care and help.

Creating a public health response to aging means addressing not only the factors that reduce the impact of losses associated with old age, but also those that strengthen recovery, adaptation, and psychosocial growth in this population group. Accordingly, the World Health Organization defines healthy aging as the “process of developing and maintaining the functional ability that enables well-being in older age”(2). Additionally, “functional ability comprises the health-related attributes that enable people to be and to do what they have reason to value. It is made up of the intrinsic capacity of the individual, relevant environmental characteristics, and the interactions between the individual and these characteristics” (2).

“Intrinsic capacity” is the composite of all the physical and mental capacities of an individual. “Environments” comprise everything that forms the context of an individual's life. These can be physical or social and include the home, communities, and broader society. “Wellbeing” is considered in the broadest sense and includes domains such as happiness, satisfaction, and fulfilment (2).

According to these definitions, healthy aging involves an interrelationship between intrinsic capacity and the environment throughout the entire aging process . This interrelation defines various trajectories of intrinsic and functional capacities (2).

People are born with an intrinsic capacity reservoir and during their growth and development they increase that capacity in a very close relationship with their social environment (5). When it decreases, there is a greater risk of losing functional ability. On the other hand, increases contribute to the resilience of the older person. In the healthy aging model, resilience is conceived as the ability to maintain or improve the level of functional ability in the face of adversity. This ability includes both a person's intrinsic components and those that are specific to the environment and can mitigate deficits (2).

For this reason, the action plan promoted by the Decade of Healthy Aging, although focused on the second stage of life, proposes a life course approach that promotes healthier trajectories towards aging. Its areas of action seek to align health systems with the needs of older people and foster environments that favor their abilities, thus contributing to combating ageism.

## Healthy aging with a life course approach

The life course is a multidisciplinary model that allows for the dynamic study of the trajectories of people and populations within their structural and social contexts (6). Its use in the health field is based on the interrelation between individual lives and the historical and social context in which they develop, as well as its implications for health and disease processes. Accordingly, since the 1990s, many studies have begun to use this approach to understand the determinants of health in aging (7).

As a result, the so-called “life course epidemiology”, part of the interdisciplinary perspective of the life course approach to health, has recently emerged (8). This science is mainly concerned with studying the trajectories of functionality throughout life and their dynamic interaction with the environment and genetic determinants (9).

In the social sciences field, Giele and Elder (10) postulate that the life course is the sequence of roles that a person plays and the events that happen over time, and highlight the importance of the context, process, and meaning of human development. These authors examine individual and collective experiences over long periods and explain the causes and consequences of identified patterns. They also address a variety of social, historical, and cultural aspects that determine experiences and life trajectories (11). This theoretical-methodological perspective therefore aims to show the importance of historical conditions and changes when examining individual development and family life (12, 13).

The life course approach concepts and principles included in the appendix of this paper represent the comprehensive conceptualization of social development and individual and population health trajectories. They also provide a model to explain the processes and the complex interrelation of trajectories over time, as well as the changes and effects these produce at the individual and family level through successive generations. The concepts and principles can be used both to build health capacities and to comprehensively analyze

demographic changes, morbidity and mortality patterns, and changes in social behavior. Overall, this approach provides necessary inputs for policymakers to make decisions based on solid evidence, contributing to program design and to implementing effective interventions given the changing needs of the population in a constantly evolving world.

The life course approach establishes causal relationships between long term chronological processes, making it very useful in aging studies. Research on healthy aging has become a scientific and policy priority, because increasing the proportion of healthy and active older people can improve wellbeing and reduce health and social care costs. This requires an interdisciplinary approach that focuses on the life course, with reliable data to study life trajectories and the transitions that occur throughout them. Such an approach is essential when identifying needs, constraints, and critical moments in a person's life (i.e., those that will have a substantial effect on their old age). Although data-related issues will be examined in more detail below, it is important to mention that analyzing those issues makes it possible to prioritize ways to meet the needs and demands of individuals, always bearing in mind the general welfare of the population. Consequently, longitudinal surveys (retrospective and prospective) from an early age require a life course approach.

In order to promote healthy aging, it is necessary to encourage the development of intrinsic capacity throughout life. Just as there is ample evidence about critical and sensitive moments in the early stages of life, and moral, ethical, and economic arguments for improving children's health and reducing social inequities, there are also studies that demonstrate the need for strategies to maintain or improve intrinsic capacity during adult life. To do this, it is first necessary to determine how to promote the social, psychological, and physiological resilience of intrinsic capacities and functional abilities (8, 14).

The life course approach to healthy aging requires understanding the influence of three basic elements (15): 1) age, which is a risk factor for chronic noncommunicable diseases (one research priority is to better understand the biological process of aging and how it relates to these diseases); 2) health and aging, which requires interdisciplinary research including approaches from the social, psychological, and biological spheres; and 3) the aging process and its spectrums (i.e., healthy versus pathological or accelerated aging).

A better understanding of biopsychosocial factors and epigenetics has laid the groundwork for the life course approach to gain importance

in recent years (6). Current evidence indicates that genetics explain only 30% of health outcomes, while the remaining 70% depends on the impact of negative or positive factors on life trajectories (16, 17). For this reason, the life course approach is an indispensable tool for analyzing health trajectories towards healthy aging, as it helps to identify the critical and sensitive moments when people are most likely to lose their capacities, while demonstrating that, at such times, adequate care can favor the development of capacities.

## **Demographic studies, other sources of information, and the life course approach**

Population aging is one of the demographic changes requiring the most attention in the 21st century. Worldwide, one in nine people is 60 or older, and projections indicate that this figure will rise to one in five by 2050. While population aging brings numerous challenges for health policies, care, and social protection, the increase in global life expectancy is one of humanity's greatest achievements (18).

Increased life expectancy means that activities should be geared towards increasing the number of disability-free years of life, i.e., towards achieving healthy aging. In the demographic sense, the life course begins and ends with clearly determined events, namely birth and death. A wide range of demographic behaviors (e.g., migration, formal or consensual marital unions, and pregnancy) also significantly influence the life course. Consequently, one of the major contributions of this approach to demographic studies involves changes in age structure and their impact on population aging (19).

According to Hagestad and Dykstra (20), population aging and demographic changes in recent decades affect the individual life course in intergenerational matrices. Indeed, increased longevity means a greater probability that more generations will live together, with stronger ties between them. Each matrix must be seen through a lens of "micro matrixes" comprised of cohorts and age groups, while keeping in mind family, community, and network settings. Demographic changes also impact differences between men and women.

Historical events, as well as social, cultural, economic, and demographic changes, have consequences not only for individual lives, but also for population aggregates known as cohorts or generations (21). Cohorts can be defined by historical events that bring social change

(such as major armed conflicts or economic crises [e.g., the Great Depression]) or simply by births in a particular year or period (22).

Many historical events – such as the Spanish flu pandemic of 1918 – have effects not only on mortality in the population, but also on the life course of survivors. A study by Almond (23) using census data estimated the effects of the 1918 influenza pandemic on cohorts exposed in utero, following Barker’s hypothesis that nutrition and exposure to infections in the intrauterine period and early life are associated with certain chronic conditions in adulthood (24). The results revealed that these cohorts had lower educational attainment, higher rates of physical disability, and lower socioeconomic status, compared to others. This indicates the need to invest in health at all stages of life and minimize risks in populations exposed to adverse events through policies targeting those most affected.

Life course analysis also involves examining differences between cohorts, i.e., between population subgroups defined by certain distinguishing characteristics, such as sex, social class, or ethnicity (22). Analyzing these subgroups makes it possible to determine the effect of different trajectories throughout the life course and to identify critical moments that may affect certain cohorts. According to Ferraro (25), the study of accumulated inequality in various groups is an essential element of policy formulation, requiring complex research on risk factors and defining which population groups should be studied. This will ultimately allow policies to be defined that neutralize or eliminate the effects of negative exposures throughout the life course, given their great heterogeneity in the aging process.

There are examples of studies that have examined effects on cohorts using the life course approach. Haas, Oi, and Zhou (26) studied the effects of life course on chronic conditions and disability in several countries in Europe and the United States. They found substantial variations in functional health trajectories and a major impact of cohort dynamics on the cause of that variation: younger cohorts were less healthy compared to older cohorts. They also found evidence of heterogeneous effects of the life course process on health trajectories.

In another study, Haas and Oi (27) investigated a set of cohorts of older people from 13 European countries to analyze international variation in the impact of early conditions on the origin of certain diseases. They examined differences between countries in terms of exposure to poor health conditions, poverty in childhood, and long-term health. The results suggest significant international variation in exposure to

poor socioeconomic and health conditions in children. There was also a great deal of variation in the association between these factors and health conditions in older age. However, in the countries studied, early conditions were not enough to explain international differences in the health of older populations. The authors suggest that this could be due to homogeneity in the group of analyzed countries, which have contextual differences but tend to share similar levels of wealth, medical infrastructure, and economic integration, as well as similar demographic trends. Most of these European countries have also implemented similar social welfare policies over the course of the 20th century, with some specific differences in timing and form.

Certain key principles guide the use of the healthy life course approach in demographic studies. Table 1 presents some ways in which these principles can be applied to analyzing surveys or demographic data for the purpose of achieving healthy aging (for more information on the principles, see the appendix).

**Table 1.** Life course principles and their use when studying surveys or demographic data

PRINCIPLE	USE
Trajectories	Monitoring demographic characteristics that promote healthy aging from early stages and throughout life.
Transitions	Studying factors and characteristics at different life stages (people aged 50 to 60 years vs. those over 60 years old).
Critical and sensitive periods	Identifying times or situations in which the intrinsic capacity of older people increases or decreases.
Temporality	Understanding the duration and frequency of events that occur in the life course to achieve healthy aging.
Cumulative impact	Studying the sum of various factors that promote or define a life course to achieve healthy aging.
Transfer of traits and resources	Studying transferred intergenerational characteristics that promote or hinder healthy aging.
Linked lives	Understanding the interdependence between the data on the healthy lives of older people and the data from previous and future generations.
Human agency and social determinants	Examining the integration of behavioral indicators, as well as the inclusion of the social determinants in which people live their lives.

*Source:* Prepared by the authors based on information from the Pan American Health Organization. Building Health Throughout the Life Course. Concepts, Implications, and Application in Public Health. Washington, DC: PAHO; 2021.

These principles can be integrated, together or individually, into data collection, population surveys, and research to emphasize the use of the life course approach in demographic analyses. Consideration and integration will depend on the objective of the study, availability and traceability of the data, demographic issues to be addressed, and the research methodology selected for the analysis.

The following section examines examples, data, and indicators that show the life course approach in demographic analyses that include one of its most studied principles: life trajectories and their development over time.

## The importance of data in the life course approach

As part of the life course approach, the life trajectories principle has been used in demographic studies in developed countries since the 1970s. In Latin America it has only been adopted since the 1990s (27).

Given that the quality of life and wellbeing in old age are profoundly influenced by the environment, the countries of this subregion have focused on investigating the evolution of certain demographic and socioeconomic indicators over time, with the aim of comparing the realities of people born in different decades. Declining mortality and fertility rates have played a central role in the process of rapid aging in these countries. Mortality rates during the first year of life were much higher in the generation born in 1960 than in the one born in 1980. The latter, in turn, had a higher infant mortality rate (IMR) than the generation born in 2000. The cohort born in 2020 had the lowest IMR of all the generations mentioned (just under 15 deaths per 1000 live births). The factors that explain the sharp drop in IMR (e.g., greater health systems coverage, better food, and more access to adequate housing and drinking water) are also reflected in higher life expectancy (LE) for successive generations.

Life expectancy at birth (LEB) and LE at 60 years have therefore increased steadily from 1960 to 2020. While the 1960 generation had an average LE of 55 years, the 1980 cohort reported an LEB of approximately 10 additional years. Similarly, the generation born at the start of the 21st century had an average LEB of 71.5 years, compared to 75.5 years for the 2020 generation. The 60-year-old population in 1960 had an average LE of almost 16 additional years, compared to an additional LE of 22 years for the 2020 group. This is also reflected in the growth of the percentage of the population over 60 years of age, which grew from almost 6% in 1960 to 13% in 2020, showing a clear improvement in quality of life (28).

Another important demographic indicator is the total fertility rate (TFR). In the study period (1960–2020), this rate decreased continuously from an average of 5.87 children per woman in 1960 to two children in 2020 (i.e., below the replacement level of 2.1 children per woman). The high fertility rates of the last century were closely linked to the role that women have historically played in childcare and the home. Women's

participation in the labor market has always been low relative to men because of this traditional way of dividing tasks, and even lower in the formal market. Today, many women are excluded from social security systems, a lack of protection that will clearly have negative effects on their quality of life in old age. It is quite possible that the increased rate of female participation in economic activity – partially as a result of the decline in the TFR in recent years – will lead to women having greater access to retirement and pension systems (28, 29).

Entry into the formal labor market and job choice are factors that directly influence wellbeing in old age, not only due to access to retirement and pension systems, but also because the work environment is important for worker performance and wellbeing. A person's level of education therefore plays a central role in the life course, as it is a determinant of access to the labor market. Education also contributes to reducing poverty, marginalization, and inequality (30). According to data from the World Bank (31), between 1980 and 2020 the lower secondary education completion rate increased by more than 40% and secondary education enrollment increased by more than 35%.

The sociodemographic indicators mentioned in Table 2 represent the average for Latin America and the Caribbean for four selected years: 1960, 1980, 2000, and 2020. However, the countries of this subregion are a heterogeneous group. Differences in indicators between countries such as the Plurinational State of Bolivia and Uruguay are a clear example of the marked inequalities that exist between the countries of Latin America and the Caribbean: in the early 1960s, Uruguay's IMR was approximately 50 deaths per 1000 live births per year, while in the Plurinational State of Bolivia this figure exceeded 160 deaths. The same can be observed when comparing other indicators such as the TFR (which, in 1960, was more than double in the Plurinational State of Bolivia compared to Uruguay) or the LEB (approximately 68 years in Uruguay and 42 years in the Plurinational State of Bolivia). This marked heterogeneity still persists in the countries of this subregion and can be clearly seen within South America (in 2020, Chile's IMR was four times lower than that of the Plurinational State of Bolivia or the Bolivarian Republic of Venezuela), Central America (Costa Rica's IMR was less than 7 deaths per 1000 live births compared to approximately 19 per 1000 in Guatemala), and the Caribbean (Cuba reported the lowest IMR in Latin America and the Caribbean. Haiti had the highest, with more than 50 deaths per 1000 live births per year).



**Table 2.** Selected sociodemographic indicators from the cross-generational approach in Latin America and the Caribbean

INDICATOR	YEARS			
	1960	1980	2000	2020
Percentage of population 0–14 years old	42.50	39.50	32.20	23.90
Percentage of population 15–59 years old	51.80	54.00	59.60	63.10
Percentage of population 60 years and above	5.70	6.50	8.30	13.00
Infant mortality rate (per 1000 live births)	106.80	64.50	27.60	14.60
Life expectancy at birth (years)	55.57	64.33	71.50	75.65
Life expectancy at 60 years of age <sup>a</sup>	15.83	17.53	19.72	21.95
Total fertility rate (children per woman)	5.87	4.19	2.62	2.00
Lower secondary completion rate (% of relevant age group)	--	55.59	69.57	79.94
Secondary school enrollment (% gross)	--	72.17	85.29	97.94 <sup>b</sup>
Participation rate of women in economic activity (%)	--	35.35	46.42	54.57

Notes: <sup>a</sup> Data for life expectancy at age 60 are for five-year age groups; <sup>b</sup> The latest data available is from 2019.

--: No data

Sources: United Nations Department of Economic and Social Affairs. Population Dynamics. World Population Prospects 2019 [Internet]. New York: United Nations; 2019 [accessed 16 July 2023]. Available from: <https://population.un.org/wpp/Download/Standard/Population/>.

Economic Commission for Latin America and the Caribbean. CEPALSTAT. ECLAC Statistical Databases and Publications [Internet]. Santiago, Chile: ECLAC; [undated] [accessed 16 July 2023]. Available from: [https://estadisticas.cepal.org/cepalstat/WEB\\_CEPALSTAT/estadisticasIndicadores.asp?idioma=e](https://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/estadisticasIndicadores.asp?idioma=e).

World Bank. Data bank [Internet]. Washington, D.C.: World Bank; 2023 [accessed 16 July 2023]. Available from: <https://data.worldbank.org/indicator>.

Just as there is clear heterogeneity between countries, national figures also hide large socioeconomic, ethno-racial, and gender gaps. Despite efforts to reduce these gaps—and despite the progress made—Latin America and the Caribbean continues to be the most unequal subregion in the world. According to World Bank estimates for 2019 (37), the Gini coefficient—which measures income inequality—was 53.4 in Brazil, 51.3 in Colombia, and 49.8 in Panama. The income share of the population group representing the 10% most highly paid was, respectively, 42%, 40.3%, and 38%, while the share of the first decile did not reach 4% in any of these countries. These profound socioeconomic inequalities are further reproduced and exacerbated as they intersect ethno-racial and gender inequities, which have pushed certain population groups (e.g., indigenous and Afrodescendant women) into situations of extreme vulnerability (32).

As an example, Box 1 describes a longitudinal focus on people born in 1960, across different socioeconomic and demographic indicators.

**Box 1.** Longitudinal focus on people born in 1960 in Latin America and the Caribbean

BIRTH	EARLY CHILDHOOD	ADOLESCENCE AND YOUTH	ADULTHOOD	OLD AGE
<ul style="list-style-type: none"> <li>• Infant mortality 106.8 per 1000 live births (1960)</li> <li>• Prenatal care <sup>a</sup></li> <li>• Life expectancy at birth: 55.57 years (1960)</li> </ul>	<ul style="list-style-type: none"> <li>• Under-5 mortality: 187 deaths per 1000 live births</li> <li>• Poverty and inequality <sup>a</sup></li> <li>• Education – completion of the last year of primary school: males 48.99%; females 49.42% (1971)</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensive sexuality education <sup>a</sup></li> <li>• Adolescent fertility: 92.5 births per 1000 women (1975–1980)</li> <li>• Poverty: 13.7% of the population below the international poverty line (1981)</li> <li>• Education: secondary enrollment 31.88% (1972) and 34.13% (1973); Literacy rate (15–24 years old): 87.7 per cent (1975) and 89.5 per cent (1984)</li> </ul>	<ul style="list-style-type: none"> <li>• Employment: 7.79% unemployment (1995)</li> <li>• Informality: 50% of urban workers worked in the informal sector (2001)<sup>b</sup></li> <li>• Maternal mortality: 135 per 1000 live births</li> <li>• Adult mortality (15–50 years): 98 deaths among those under 50 per 1000 live 15-year-old persons (1990–1995)</li> <li>• Unpaid work: women exclusively engaged in domestic work: 32.3% (2001)<sup>b</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Social protection and care: 75.4% of the population over the legal retirement age receives a pension (2020)</li> <li>• Probability of dying from cardiovascular disease, cancer, diabetes, or chronic respiratory disease: 14.78% in the 30–70 age group (2019)</li> <li>• Life expectancy at 60 years of age: 21.95 years</li> <li>• Old-age dependency ratio (≥ 65 years/15–64 years): 13.4% (2020)</li> </ul>

Notes: <sup>a</sup> No data for the period; <sup>b</sup> does not include the Caribbean subregion.

Sources: United Nations Department of Economic and Social Affairs. Population Dynamics. World Population Prospects 2019 [Internet]. New York: United Nations; 2019 [accessed 16 July 2023]. Available from: <https://population.un.org/wpp/Download/Standard/Population/>.

Economic Commission for Latin America and the Caribbean. CEPALSTAT. ECLAC Statistical Databases and Publications [Internet]. Santiago, Chile: ECLAC; [undated] [accessed 16 July 2023]. Available from: <https://statistics.cepal.org/portal/cepalstat/dashboard.html?lang=en>.

International Labour Organization - Department of Statistics. ILOSTAT [Internet]. Geneva: ILO; 2023 [accessed 16 July 2023]. Available from: <https://ilostat.ilo.org/>.

## Availability of cross-sectional and longitudinal data

Information from longitudinal surveys is needed to design and monitor public policies that incorporate the life course approach. However, much of the data available in Latin America and the Caribbean comes from cross-sectional surveys. Cross-sectional studies are limited to a specific period and, although they have a lower relative economic cost and better control of sample selection and response rate, they cannot correctly determine the difference between chance and causality in situations that influence aging. If they do not follow cohorts over time, it is not possible to differentiate whether the changes observed between two groups are due to the implementation of targeted policies or other reasons.

Cross-sectional surveys, especially those conducted over different periods, collect valuable information for the life course approach, as they allow analysis of general trends in socioeconomic and

demographic indicators<sup>1</sup>. In the absence of longitudinal studies in the countries of the subregion, some cross-sectional surveys can be used as proxy measures for those proposed by the Economic Commission for Latin America for the policies established in the Montevideo Consensus on population and development, - which are central to the life course. This instrument, agreed upon by the countries of Latin America and the Caribbean at the 2013 Regional Conference on Population and Development, consists of a compendium of priority public policy measures that seek to advance a comprehensive agenda on population issues (35). The agreement is aligned with the life course approach and recommends comprehensive policies aimed at childhood, adolescence, youth, adulthood, and old age, always considering demographic dynamics.

The following are some examples of indicators proposed by the Economic Commission for Latin America to monitor the Montevideo Consensus, alongside a set of surveys and instruments from countries in this subregion that can be used indirectly (36):

- **Poverty and inequality (indicators A1-A5):** household surveys, household income and expenditure surveys, and government agencies. Examples of useful surveys and tools in these countries include: in Mexico, the National Council for Assessing Social Development Policy and the National Household Income and Expenditure Survey; in Argentina, the Permanent Household Survey, the National Household Expenditure Survey, and the National Nutrition and Health Survey; in the Plurinational State of Bolivia, the Continuous Household Survey; and, in Brazil, the National Household Survey and the Household Budget Survey, among many others (37, 38).
- **Unemployment, informal work, and unpaid work (indicators A12, A14, B7):** household surveys and employment surveys. Examples: in Mexico, the National Occupation and Employment Survey; in the Dominican Republic, the National Continuous Labor Force Survey; in Ecuador, the National Employment, Unemployment, and Underemployment Survey; in Jamaica, the Labour Force Survey; and, in Argentina, the National Time Use Survey, among others (39, 40).

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<sup>1</sup> Due to the rotating schedule of the target population, some of the household surveys in the region can be considered quasi-longitudinal. For example, in Argentina's continuous Permanent Household Survey, a household is surveyed for two quarters, not surveyed for the next two, and then resurveyed for two more quarters (partial overlap). In this way, each household has a year and a half of follow-up (33, 34).

- **Homicides, discrimination, and other forms of violence (indicators A18-A20, C6, D19, D20):** vital statistics, national victimization surveys, public security management systems, gender information systems, and reproductive health surveys. Examples: in Mexico, the National Survey on Discrimination; and in Uruguay the National Survey on Adolescence and Youth, the First National Survey on the Prevalence of Gender-Based and Generational Violence, and the National Victimization Survey. The latter is also performed in Argentina (41–45).
- **Child mortality and child labor (indicators B1, B2, C8, D8):** vital statistics, national child labor surveys, civil registration systems, household surveys, and international organizations. Examples: in Mexico and Uruguay, the National Child Labor Survey; in Nicaragua, the National Child and Adolescent Labor Survey; and, in Argentina, the Children and Adolescents Activities Survey (46–49).
- **Education and participation of adolescents and young people (indicators B3-B7):** school records, standardized reading and mathematics tests, household surveys, and surveys on the participation of adolescents and young people performed by a mechanism or government body whose purpose is to define public policies. Examples: Programme for International Student Assessment (PISA), developed by the Organisation for Economic Co-operation and Development (OECD); in Uruguay, the Parliamentary Studies Program; and, in Mexico, the non-governmental organization *Ollin, Jóvenes en Movimiento* (50–52).
- **Fertility, health, and sexual, and reproductive education (indicators B8-B18, D1-D7, D10-D12, D17, D18, D21-D23):** specialized global surveys (U.S. Agency for International Development Demographic and Health Surveys Program, Centers for Disease Control and Prevention Reproductive Health Surveys, multiple indicator cluster surveys), national surveys (households, youth) with specialized modules, censuses with specialized questions, national population projections, and vital statistics. Examples: in Uruguay, the Sex Education Program Assessment; in Colombia, the National Demographic and Health Survey; and, in the Plurinational State of Bolivia, the Demographic and Health Survey (53–55).
- **Older persons (indicators C1, C5, C7):** national programs aimed at improving the quality of life of older adults, administrative records and official reports, follow-up questionnaires on adopting palliative care in the health system, and ministries of health. Examples: in Uruguay, the National Palliative Care Survey;

and, in Argentina, the National Survey on Quality of Life of Older Adults and the National Program for Promoting Personal Autonomy and Universal Accessibility in Older Adults (56–58).

- **Social security and social care (indicators C2, C4):** household, employment, and social characterization surveys, reports from agencies providing social protection and care, and data from international organizations. Examples: in Mexico, the National Occupation and Social Security Survey; in Argentina, the National Protection and Social Security, Survey; and, finally, the Social Security Survey developed by the International Labour Organization (59–61).

The main advantage of longitudinal surveys is that they monitor the target population over time, while permitting analysis of the impact of social, economic, and health events on the various stages of people's lives. This makes it possible to research the life trajectories of individuals with different socioeconomic and demographic contexts and observe what effects they have on aging and old age over time. Longitudinal studies therefore have great potential for designing public policies based on the life course approach and, subsequently, for monitoring their effectiveness.

However, few longitudinal surveys are carried out in Latin American countries. Furthermore, they present certain disadvantages. First, few studies of this kind can explain the connections between old age and the preceding stages of life, since they generally do not cover long periods. This is closely linked to the design of the surveys (in general, target groups are made up of very old people) and to the fact that countries in the region have only recently begun to perform this type of research. Second, observation units will inevitably be lost throughout the process (due to death, mobility, or simple refusal by the respondent). This prevents follow-up of the original sample group, a phenomenon known as “panel breakdown” (62). Because of these difficulties, these types of surveys are often more expensive than cross-sectional surveys.

Recent examples of longitudinal studies in Latin America include:

- The Longitudinal Social Protection Survey, a project promoted by six countries (Brazil, Chile, Colombia, El Salvador, Paraguay, and Uruguay) and supported by the Inter-American Development Bank and the Inter-American Social Security Conference. This survey, which has a common design that allows data to be compared between countries, seeks to facilitate policies to increase coverage and equity and adapt pension systems in the region. The pioneering countries were Chile (Social Protection Survey [EPS])

and Mexico (National Household Living Standards Survey). The survey was applied in 2002, 2004, 2006, 2009, 2012, 2015, 2019, and 2020. Another longitudinal study in Chile linked to the EPS is the Survey on the Quality of Life of Older Adults and on the Impact of the Pilar Solidario Pension System (63–65).

- The Chilean Social Longitudinal Study consists of a prospective study aimed at surveying 3000 people between 18 and 75 years of age annually over a decade, starting in 2016 (a second sample was incorporated in 2018). Its goal is to examine the behavior and attitude of Chileans regarding issues of coexistence and social conflict by analyzing changes (or continuity) in various social dimensions. This analysis pays particular attention to the factors that explain these behaviors (continuity or change) over time (66).
- The Longitudinal Early Childhood Survey monitors a sample of Chilean children from birth (2006–2009), with the aim of analyzing determinants in the early stages of life. So far, there have been three editions of the survey: 2010, 2012, and 2017 (67).
- Mexico's National Survey on Health and Aging is a longitudinal study of adults aged 50 and older. The first survey was conducted in 2001 and was geared toward adults born in 1951 or earlier. The following waves came in 2003, 2012 (the year in which the cohort born between 1952 and 1962 was added to the sample), 2015, and 2018 (when the cohort born between 1963 and 1968 was incorporated). Its main objectives include studying the aging process, the effect of chronic diseases, and the burden of disability among Mexicans over 50 (68).
- The Longevity and Healthy Aging Study in Costa Rica is a longitudinal survey representative of the total population of older adults in Costa Rica, seeking to determine their quality of life and analyze the factors that affect it. The study is composed of multiple waves from two distinct cohorts: the first includes people born in 1945 or earlier (surveyed in 2005, 2007, and 2009), and the second includes people born between 1945 and 1955 (interviewed in 2010 and 2012) (69).

A practical example of applying longitudinal surveys with a life course approach related to healthy aging is the study entitled *Health and Aging Trajectories: Opportunities and Longitudinal Synergies* (ATHLOS) (Box 2).

**Box 2.** ATHLOS, a study focusing on healthy aging that uses demographic data with a life course approach

The study entitled *Trajectories of Health Aging: Opportunities and Longitudinal Synergies* (ATHLOS) provides public officials, researchers, the private sector, and the general population with new evidence for creating strategies, making decisions, and formulating public policies that help to maintain the intrinsic capacity and wellbeing of older people.

This study includes data from eight other studies conducted in Australia, Spain, United States, England, Japan, Mexico, the Republic of Korea, and 19 European countries. These countries previously had at least one survey with more than three waves of follow-up with the same group of people to address issues related to individuals' physical and cognitive abilities, as well as their basic needs.

ATHLOS measures eight domains that provide data on the main characteristics of life course principles aimed at healthy aging. These include: 1) sociodemographic characteristics; 2) healthy lifestyles and behaviors; 3) health conditions and functional limitations; 4) diseases; 5) physical measurements; 6) psychological measurements; 7) laboratory measurements; and 8) social environment and life events. Knowledge of these domains and their traceability facilitates the study of factors associated with healthy aging and the possibility of using these factors when designing public policies and programs aimed at this objective.

The World Health Organization used data from the ATHLOS study to examine healthy aging trajectories and identified three categories: stable high (71.4%), stable low (25.2%), and accelerated decline (3.4%).

These trajectories are the result of numerous factors interacting with each other and with people. However, over time these factors may go through modifications (as a result of changes in lifestyle or in access to different living conditions, the implementation and effectiveness of public policies, or individual resilience, among others). These, in turn, drive changes in life trajectory trends.

It is therefore imperative to have cross-sectional and longitudinal data that help to improve these trajectories and achieve a healthy aging process based on the life course approach and its respective principles.

*Source:* World Health Organization. Decade of healthy ageing: baseline report. Geneva: WHO; 2020.

## Conclusions

Although demographic aging is a global phenomenon, its pace varies greatly depending on the region or country. Currently, this process is occurring most rapidly- and in conditions of great inequality - in the subregion of Latin America and Caribbean, with major social, economic, and public health implications. In this context, it is no longer enough to focus on old age or the future of retirement and pension systems. The life course approach, which considers intergenerational impacts, must be incorporated into the public policy agenda. This approach has the advantage of offering a comprehensive view of the aging process, as it is based on the premise that wellbeing in old age depends on socioeconomic and historical contexts, developing and maintaining abilities, changes and experiences that people go through in each period of their lives, and intergenerational effects.

In public policy, the life course approach emphasizes the need to accompany and ensure human rights from birth and throughout life. It is important not to underestimate the impact of early interventions, as well as interventions throughout the life course, in the creation of more just societies that allow healthy aging. Old age cannot be fully understood when studied separately from other life stages, as population aging does not concern older people exclusively. It is a phenomenon with impacts on the early stages of life and transitions to adulthood that are reflected in aging trajectories.

Priority actions should be cross-cutting and should include factors such as gender, migration status, ethnicity, and cultural diversity in order to reduce inequalities and discrimination, as recommended by the Montevideo Consensus. Consequently, this publication can serve as a reference tool for the main issues that countries must address to ensure wellbeing and dignity in old age, guarantee rights, and achieve sustainable development.

The demographic transition faced by the countries of Latin America and the Caribbean requires measures to reduce poverty and inequality between and within nations. These are major barriers to development, quality of life, education, health, and wellbeing in old age. Eradicating poverty must always be at the center of the discussion, design, and implementation of public policies.

The demographic transition faced by the countries of Latin America and the Caribbean requires measures that make it possible to confront and reduce poverty and the inequalities that exist between nations and within them.



These two factors constitute strong impediments to people's development, good quality of life, education, health and, finally, well-being in old age. The eradication of poverty must always be at the center of the debate and the design and implementation of public policies.

The lack of long-term longitudinal studies is a major obstacle for the countries of Latin America and the Caribbean. Designing and implementing longitudinal surveys is imperative for developing, implementing, and monitoring public policies, especially those that incorporate the life course approach. Continuity and data quality in cross-sectional surveys must be improved in order to close gaps in access and availability. This will help to reduce the lack of longitudinal information. Generating timely and reliable information on indigenous, Afrodescendant, and other minority populations, is also a priority given their extreme vulnerability.

The lack of information—and the need for further research even when good age-disaggregated data are available—was highlighted in the action plan for the Decade of Healthy Aging, as this exacerbates the invisibility and exclusion of older people. The Decade is therefore a great opportunity to develop collaborative actions to improve the lives of older people and their families, and of the general population. Research will help provide a better understanding of the aging process and facilitate the work of decision makers and policymakers. Such studies should respond to the current needs of older people, anticipate future challenges, and link social, biological, economic, and environmental conditions and determinants with a life course approach, while evaluating possible interventions aimed at optimizing healthy aging trajectories.

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## Appendix. Basic concepts and principles for applying the life course approach

CONCEPTS	
<b>Trajectories</b>	A path throughout life that can vary and change direction, degree, and proportion and depends on a wide variety of domains (health, social environment, psychological capacity, and opportunities, among other factors). <sup>1</sup>
<b>Transition</b>	A change in status, position, or situation that is not predetermined nor foreseeable, but that is likely to occur.
<b>Critical and sensitive periods</b>	An event that causes a major change in biological programming or the social trajectory of the life course, and which can be positive or negative.

PRINCIPLES	
<b>Linked lives</b>	Denotes the interrelationships found between generations, especially when ties of kinship exist. People live their lives through relationships with other people.
<b>Temporality</b>	Shows the importance of historical and social context in the formation of each person's life.
<b>Timing</b>	Focuses on the importance of transitions and how they relate to the social context when people choose between various life options.
<b>Human agency</b>	Refers to the idea that planning and effort can change the life course.
<b>Long-term development</b>	Human development is a lifelong process. Relationships, events, and behaviors that occur early in life have consequences for adult relationships, social standing, and wellbeing. Critical periods (when an exposure may have adverse or protective effects on development) and sensitive periods (when an exposure may have a stronger effect) can be identified. The life course approach also allows "grey areas" to be identified.
<b>Cumulative impact</b>	Factors that accumulate throughout the life course and improve or reduce health or the risk of disease.
<b>Transfer of traits and resources</b>	Resources can be transferred across generations.

<sup>1</sup> Elder G. Lives and social change. In: Heinz W (ed.), Theoretical Advances in Life Course Research. Status Passages and the Life Course, Vol. I. Weinheim: Deutscher StudienVerlag; 1991.

This publication is part of the series *The Decade of Healthy Aging in the Americas, Situation and Challenges*. It presents current knowledge on the health and wellbeing of older persons in the Americas during the United Nations Decade of Healthy Aging (2021–2030). With the aim of guiding actions to promote healthy aging, this report also highlights the relevance of the life course approach when addressing difficulties related to aging and old age in societies in Latin America and the Caribbean, and examines how research and evidence can contribute to this area.

What is the life course approach? How can it help to ensure a comprehensive view of population aging? What role does it play in designing public policies for older persons? How can population-based research help implement the life course strategy? How can population-based research help implement the life course strategy? Examining these questions will encourage necessary discussion between government authorities, public institutions, and international organizations.

The approach suggested here involves looking at the dynamic and unique aspects of individual and generational trajectories and invites us to go beyond partial studies defined by age, sex, gender, ethnicity, or territory.

The Decade of Healthy Aging is the right time to focus actions on generating data, implementing public policy, and monitoring results—three key areas that will allow progress towards healthy aging throughout the life course.

