

# Today's Research on Aging

PROGRAM AND POLICY IMPLICATIONS

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## Life Expectancy Gains and Public Programs for the Elderly in Latin America and the Caribbean

Life expectancy in Latin America and the Caribbean (LAC) has increased dramatically since 1950, largely as a result of medical and public health interventions that sharply cut the death toll from the most virulent infectious diseases and enabled many more children to survive to adulthood. Longer lives have combined with lower fertility to produce profound shifts in the age composition of country populations: As people live longer and women have fewer children older people have begun to represent a growing proportion of the total population in the region and children a shrinking share.

The National Institute on Aging (NIA) supports research that examines the social and economic implications of life expectancy trends and population aging. This newsletter highlights the work of NIA-supported researchers and others that can help policymakers plan for the well-being of aging populations in LAC countries, as well as offer insights to policymakers in other low- and middle-income countries.

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This publication summarizes research related to the objectives of the National Institute on Aging, with emphasis on work conducted at the NIA demography centers. Our objective is to provide decisionmakers in government, business, and nongovernmental organizations with up-to-date scientific evidence relevant to policy debates and program design. These newsletters can be accessed at [www.prb.org/TodaysResearch.aspx](http://www.prb.org/TodaysResearch.aspx)

### Life Expectancy Trends

Life expectancy at birth in the LAC region rose from 52 in the early 1950s to 73 in the 2005 to 2010 period, though wide variation occurs across countries (United Nations 2013). For example, in this same period, life expectancy in the region ranged from lows of 61 in Haiti and 66 in Bolivia to 78 or more in Chile, Costa Rica, and Cuba (see Table 1). Life expectancy also varies by gender (see Box 1, page 2).

Success combating infectious disease fueled much of the increase in life expectancy over the last six decades. The impact on child survival in the region has been dramatic. Infant mortality dropped from 128 deaths per 1,000 live births in 1950 to 22 per 1,000 in 2010 (Saad 2011). By 2010, 98 percent of children reached their first birthday, while in 1950 only about 87 percent did. Among adults, infectious diseases also “plummeted,” leading to increases in life expectancy among adults of all ages (Palloni and

**Table 1**  
**Life expectancy differs widely among countries.**

Life Expectancy at Birth, Both Sexes, Selected Countries, 2005-2010

Chile	79
Costa Rica	79
Cuba	78
Mexico	76
Uruguay	76
Argentina	75
Nicaragua	73
Brazil	72
El Salvador	71
Guatemala	70
Bolivia	66
Haiti	61

**Source:** United Nations, Population Division, *World Population Prospects: The 2012 Revision* (2013).

## Box 1 Gender Differences in Life Expectancy

Women in LAC countries tend to live longer than men, as they do in most countries. As a result, there were 82 men for every 100 women ages 60 and older in the region in 2010 (CEPAL 2011). The gap in male and female life expectancies in the LAC region widened between 1950 and 2010, increasing from a difference of 3.4 years to 6.2 years (Saad 2011). The growing disparity reflects declines in female deaths related to pregnancy and childbirth as well as increases in male deaths from violence and accidents. Women in the region also are less likely to smoke than men, reducing the role of smoking-related diseases on female mortality in many countries (Palloni, Novak, and Pinto 2013).

The gender differences in life expectancy may begin to narrow with medical and social advances. Improved treatments for diseases that tend to afflict men more than women would increase male life expectancy more than female life expectancy. Growing gender equality in the region might lead to convergence in men's and women's lifestyles. In that case, men's and women's health risks may become more similar in the future (CEPAL 2007).

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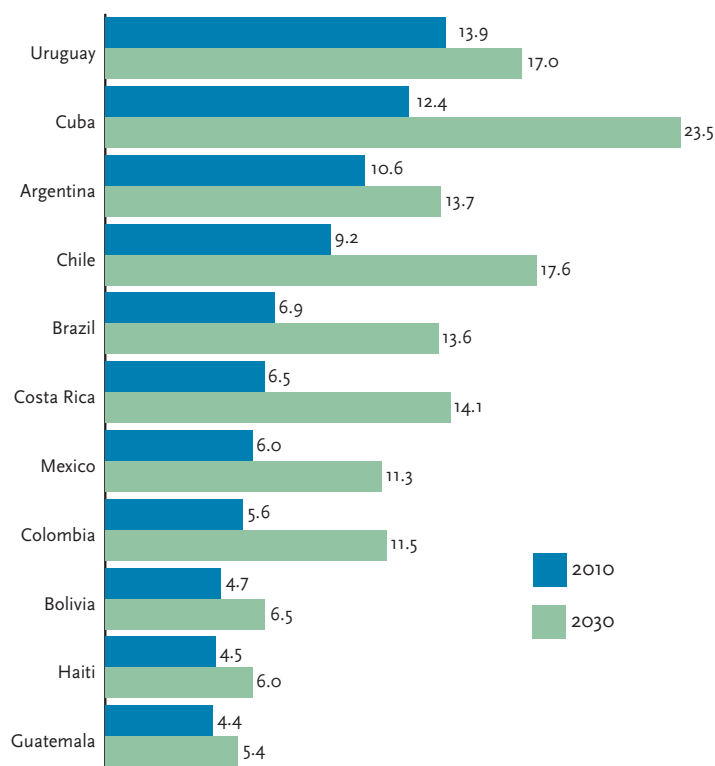
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**Figure 1**  
Populations in the region are aging at different rates.

Population Ages 65+ as a Percentage of Total Population, Select Countries



**Note:** Medium variant projections used. For the percentage of the population ages 65+ for all countries in the region for 2010 and 2030, see [www.prb.org/Publications/Reports/2014/latin-america-life-expectancy.aspx](http://www.prb.org/Publications/Reports/2014/latin-america-life-expectancy.aspx)

**Source:** United Nations, Population Division, *World Population Prospects, The 2012 Revision* (2013).

treatment), and better living standards. Deaths from circulatory diseases also declined during the period, while deaths from diabetes began to increase rapidly.

In a recent analysis, Palloni and Pinto-Aguirre (2011) conclude that more effective government management—rather than increases in wealth—explains differences in adult life expectancy among LAC countries between 1950 and 2000. They found that countries that achieved higher literacy levels also experienced greater increases in adult life expectancy, but they observed no such link between higher levels of wealth and adult life expectancy gains. The researchers theorize that governments that could deliver education to a growing share of their populations also had the capacity to promote public health improvements—such as launch vaccination campaigns and build water systems and sewage treatment facilities—that produced life expectancy gains.

Pinto-Aguirre 2011). Between 1950 and 2000, antibiotics, vaccines, and other medical technologies contributed the most to life expectancy gains among adults in Argentina, Chile, Costa Rica, Cuba, Panama, and Uruguay—countries that, by 1950, had already begun to improve water systems and experience rising living standards. In the same period, life expectancy gains among adults in the region's other countries reflected the combined impact of medical technologies, public health interventions (clean water, sewage

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The mortality level of the older population is reflected in the measure “life expectancy at age 60.” Palloni and Souza (2013) report that between 1950 and 1995 life expectancy at age 60 rose from roughly 18 years to reach 23 years. This pace reflects increases in life expectancy at age 60 of more than one year every decade, a rate close to gains seen in western Europe during the same period. Palloni and Pinto-Aguirre (2011) call this trajectory “astonishing,” but question whether this pace can be sustained, citing slower growth in life expectancy at age 60 in a handful of LAC countries after 1980.

These increases in life expectancy, coupled with declining fertility, have set in motion profound shifts in the age composition of the LAC region’s population. The number of people ages 65 and older is on course to more than quadruple between 2005 and 2050 (UN 2013). While the elderly population is rising steadily in relation to other age groups, countries are at different stages in the aging process. Population aging is quite advanced in Cuba, Argentina, and Uruguay, where the elderly ages 65 and older already represent 10 percent or more of the population (see Figure 1, page 2). By contrast, the 65 and older population in countries such as Haiti, Bolivia, and Guatemala will only begin to approach 10 percent by 2050. A majority of countries in the region will see the share of the 65 and older population reach at least 10 percent by 2030, but the pace of aging varies. For example, in Colombia and Costa Rica, the proportions of the population ages 65 and older are projected to more than double, to roughly 12 percent and 14 percent, respectively, between 2010 and 2030.

## Population Aging and Social Support

As longer life expectancies fuel increases in the older populations in LAC countries, some analysts question whether government funds for social programs for the elderly (economic support, pensions, and health care) can keep pace. Such analysts raise concerns about levels of per capita income in LAC countries as these populations are aging. The majority of North American and western European countries experienced a much slower pace of population aging and had higher per capita incomes than LAC countries experiencing population aging now. High-income countries such as France and Sweden had 115 years and 85 years, respectively, to adjust as the proportion of older adults doubled from 7 percent to 14 percent, but countries such as Brazil and Chile will experience a similar shift in about 20 years (Kinsella and He 2009).

Wong and Palloni (2009) argue that the pace of economic growth required to keep up with the rate of population aging in LAC countries would be unprecedented in the region. For example, as the proportion of the elderly in the wealthiest Latin American countries reaches or rises above 10 percent, one estimate shows that per capita income in these countries would be only about one-tenth the per capita income that the United States, Sweden, and Japan enjoyed when their elderly populations reached similar proportions. In poorer countries, income levels would be even lower. Without unprecedented economic growth, LAC governments will not have the resources to provide the same level of old-age benefits to increasing numbers of eligible elderly.

Population aging in LAC countries is taking place in a social context that exacerbates the challenges confronting governments and individuals. Public programs that guaranteed basic old-age social and economic support are being scaled back or eliminated in many LAC countries (Wong and Palloni 2009). Changing social norms also affect the social context. Families in the region have long provided the social safety net for vulnerable older members, but family expectations appear to be shifting and fertility declines mean fewer adult children are available to support older parents. Noncontributory pension programs in some countries have expanded pension coverage to include the informal sector (such as street vendors and other self-employed people), yet despite political pressures to extend them, these programs may not be sustainable (see Box 2, page 4).

In an effort to better understand future challenges, analysts have examined how elderly in the region currently support themselves. The share of the older population receiving pensions varies widely among LAC countries, and a significant portion of elderly in the region continue to earn income into their 80s (Cotlear and Tornarolli 2011; Rosero-Bixby 2011; see Box 3, page 6). In some LAC countries, the elderly are more likely to provide financial support to their adult children, while in other countries adult children provide crucial economic support to their parents.

The National Transfer Accounts (NTA) project developed detailed estimates on the flow of economic resources among age groups in more than 30 countries. Researchers from the NTA project have identified social and economic policies that could buffer the negative impact of population aging in LAC countries (Mason and Lee 2011; Lee and Donehower 2011; Rosero-Bixby 2011). These researchers emphasize the economic implications of shifts in the age composition of populations, arguing that most LAC countries have a “window of opportunity for accelerated economic growth”

## Box 2 Social Insurance

Social insurance programs to protect households against risks associated with ill health, unemployment, disability, death, and poverty in old age were introduced in Latin America more than 50 years ago. Though the schemes vary with the size, income levels, and endowments of individual countries, social insurance in Latin America is often tied to labor force status. In most countries, salaried workers—those with a boss and receiving wages as opposed to the self-employed or those paid by the piece—receive a bundle of benefits. These benefits, paid from taxes on wages, often include health and disability insurance, life insurance, and retirement pensions.

Until recently, nonsalaried and illegally hired salaried workers have not been covered by social insurance except in the case of health care. Where countries provide universal health care, everyone is entitled to some basic care. Since the 1990s, several countries in Latin America have created or expanded health programs and pensions paid out of general revenues. These “noncontributory” programs have substantially expanded the coverage of pensions and health insurance in most countries where they were instituted (see table).

Noncontributory pensions have extended coverage to individuals who would not otherwise have been covered, reducing poverty among the elderly. But the programs can be costly and there is ongoing political pressure to increase coverage and benefits. With the aging of Latin America’s population over the next few decades, the cost of noncontributory pensions has the potential to increase substantially.

The RAND Center on Latin American Social Policy (CLASP) designed a noncontributory social security program in the Mexican State of Yucatan for towns with more than 20,000 inhabitants, and has evaluated the impact on the welfare of residents ages 70 and older (see [www.rand.org/labor/centers/clasp/research/projects/social-security-program.html](http://www.rand.org/labor/centers/clasp/research/projects/social-security-program.html)).

### Noncontributory pension programs have helped reduce poverty among the elderly.

Percent of Elderly Covered by  
Noncontributory Pensions in Latin America, 2011

Country	Percent of Elderly Covered
Argentina	1.4
Bolivia	100.0
Brazil	32.5
Chile	53.5
Colombia	15.6
Costa Rica	30.6
Ecuador	58.2
El Salvador	3.4
Mexico	44.9
Panama	56.5
Paraguay	7.4
Peru	1.5
Uruguay	7.1
Latin America	33.4

**Note:** Brazil estimate includes two noncontributory pensions: *Benefício de Prestação Continuada* and *Previdência Rural*; Mexico estimate does not include 18 state and municipal noncontributory pension programs.

**Source:** Santiago Levy and Norbert Schady, “Latin America’s Social Policy Challenge: Education, Social Insurance, Redistribution,” *Journal of Economic Perspectives* 27, no. 2 (2013): 193-218.

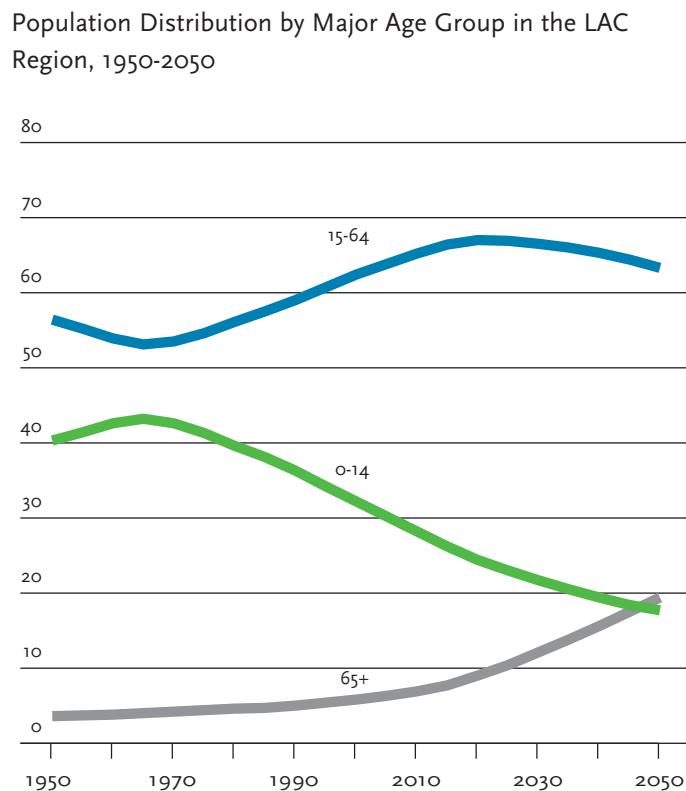
created by declines in fertility. Because birth rates have fallen over a period of time, the size of the young dependent population in many countries in relation to the size of the working-age population is smaller than it has been in the past (see Figure 2, page 5). With fewer young people to support and several more years before these countries face a rapid increase in the dependent older population, these demographic shifts may enable many LAC countries to reap economic benefits—known as a demographic dividend—if appropriate policies and investments are put in place. Recommendations based on NTA project data analysis include the following:

- Governments should make investing in the health and education of children a priority to ensure that the future labor force, though smaller, will be more productive, argue Lee and Donehower (2011). Government policy should “facilitate these investments in human capital and seek to protect them from being crowded out by fiscal pressures that population aging will bring,” they write.
- To enable the growing elderly population to better meet their own needs, LAC governments should work to strengthen banking systems and encourage higher rates of savings (Mason and Lee 2011; Lee and Donehower 2011).

- The numbers of working adults generating income could be kept higher by pension reforms that raise the retirement age (Rosero-Bixby 2011).
- Governments should consider taxing the assets of their elderly citizens (Rosero-Bixby 2011).

While there are differences of opinion on the levels of economic growth that LAC countries can achieve as the age compositions of their populations shift, there is widespread agreement that the aging population in LAC countries will increase the volume and complexity of demands on health care systems. Not only does health care use rise with age, the health care needs of older people are often more time-consuming and costly than those of younger people (Cotlear 2011). Improvements in nutrition, public health, and medicine that led to longer lives also led to a shift in the types of diseases and health conditions prevalent among people in the

**Figure 2**  
The young dependent population represents a smaller share of the region's population than in the past.



**Note:** Medium variant projections used. For the population distribution by age group for all the region's countries, see [www.prb.org/Publications/Reports/2014/latin-america-life-expectancy.aspx](http://www.prb.org/Publications/Reports/2014/latin-america-life-expectancy.aspx)

**Source:** United Nations, Population Division, *World Population Prospects: The 2012 Revision* (2013).

region. Deaths from infectious diseases of childhood have declined, and the incidence of noncommunicable diseases (NCDs) in adulthood have increased. NCDs, also called chronic diseases, are of long duration and generally progress slowly, requiring more costly and extensive treatment than infectious diseases. The most common NCDs are cardiovascular disease (including heart disease and stroke); diabetes; cancer; and chronic respiratory diseases, which include chronic obstructive pulmonary disease and asthma. The Health, Well-Being and Aging (SABE) survey of people ages 60 and older in seven LAC cities (Bridgetown, Barbados; Buenos Aires, Argentina; Havana, Cuba; Mexico City, Mexico; Montevideo, Uruguay; Santiago, Chile; and São Paulo, Brazil) found that more than two-thirds of respondents reported a medical condition and nearly one-fifth had a disability, higher levels than their peers in high-income countries (Albala et al. 2005). Older Mexican adults with both a chronic disease and an infectious disease were more likely to have poor self-reported health than their counterparts with only one type of disease, according to findings from the Mexican Health and Aging Study (MHAS) (Samper-Ternent et al. 2012). Having an older adult household member increased the likelihood of a catastrophic health expenditure, according to a study of households in 12 LAC countries (Knaul et al. 2011). But the share of households with catastrophic expenses varied among the countries studied, from 1 percent to 25 percent, reflecting different levels of social protection available.

A number of LAC countries have enacted new economic support programs targeted at the poorest households, including “welfare pensions” for impoverished older people (Barrientos and Santibañez 2009; see Box 2, page 4). Some of these programs help low-income elderly to offset health care costs (Cotlear 2011). Bloom, Jimenez, and Rosenberg (2011) suggest that low-income countries consider seeking international aid to support programs that directly address the needs of the most vulnerable older people.

### Prospects for Continuing Life Expectancy Gains

The World Health Organization projects longer and healthier lives for the populations of LAC countries between 2004 and 2030, with improvements in health and declines in disability for people ages 60 and older (WHO 2008, cited in Medici 2011). But analysts have identified a number of trends that could threaten the health and longevity of older people in the region. These include the impact on adult health of deprivation in early life, obesity, diabetes, and smoking.

**Early life conditions:** Improvements in infant and child health in the LAC region between the 1940s and the 1960s could now be having unintended health consequences as the individuals who benefited reach older ages. The public health interventions that prevented deaths from infectious and waterborne diseases produced rapid increases in life expectancy among the region's people who began reaching age 60 after 2000 (Palloni and Souza 2013; Palloni, Noronha, and McEniry 2009). However, malnutrition and infectious diseases were widespread when these older adults were infants and

children, potentially leaving them highly susceptible to developing life-threatening chronic diseases in adulthood.

Growing evidence from LAC countries indicates that experiencing poor health conditions early in life, even during gestation, raises the risk of developing conditions such as diabetes, heart disease, and obesity in adulthood. Researchers examining data from the SABE study of seven urban centers in the LAC region found strong links between malnutrition in early childhood and self-reported diabetes in older adults (Palloni et al. 2006). Based on the same study, older urban adults who

### Box 3 Income Sources of Older People

On average, children and the elderly consume more than they produce through their labor, while working-age people create a surplus. The elderly, however, differ from children in that they might have accumulated savings over a lifetime of work. To understand the way economic resources flow to the young and old, the National Transfer Accounts (NTA) project has created various measures that capture how family support, government programs, labor income, and savings fund consumption at different life stages. An NTA analysis of the way resources are produced, saved, shared, and consumed in five middle-income Latin American countries (Brazil, Chile, Costa Rica, Mexico, and Uruguay) yields some surprising findings with respect to the elderly (Rosero-Bixby 2011):

- Rather than being an economic burden, on average, those ages 65 and older in the five countries studied give more to other family members than they receive from them.
- Elderly in Brazil, Uruguay, Costa Rica, and Chile receive a high level of public pensions and public health care. These public transfers cover 81 percent of the consumption of Brazilian elderly and between 41 percent and 64 percent of the consumption of elderly in Uruguay, Costa Rica, and Chile. In contrast, public transfers cover only 21 percent of the consumption of Mexican elderly. By comparison, public transfers cover 32 percent of the consumption of U.S. elderly.
- On average, elderly people in the five study countries hold significant assets. The asset income for all elderly combined reaches or exceeds the level of combined labor income for all earners during peak earning years. Public pensions or asset income fund most old-age consumption in these countries.
- The elderly in these countries continue to work for pay, covering roughly 20 percent to 25 percent of their expenses with labor income.

Cotlear and Tornarolli (2011) also examined income sources of the elderly, focusing on poverty levels and including low-income countries in their analysis. The study drew on the

Socio-Economic Database for Latin America and the Caribbean, which includes household data from 18 countries in the region (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela). One goal was to probe the assumption that poverty among the region's elderly is widespread. Among the findings:

- People ages 60 and older were not more likely to be poor than those ages 59 and younger in all the countries studied with the exception of Colombia, Costa Rica, and Mexico. Higher levels of poverty exist among those ages 80 and older in all countries studied.
- In the Dominican Republic, Nicaragua, El Salvador, Honduras, Paraguay, and Guatemala, more than 30 percent of people ages 60 and older received economic support from family members outside their immediate household.
- Remittances from international migrants are an important source of income for older people living close to the poverty line. Poverty among the older population would increase 10 percent or more if remittances were ended in the Dominican Republic, Nicaragua, El Salvador, Honduras, Paraguay, and Guatemala.
- About 40 percent of people ages 60 and older without any pension income work for pay. These people tend to work nearly as many hours as middle-age workers but earn lower wages.
- Older people with incomes close to the poverty line tend to live in extended families, while those with higher incomes are more likely to live alone.

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experienced poor health and poverty early in life were more likely to have a disability by age 60 than their peers whose early years were characterized by good health and adequate income (Monteverde, Noronha, and Palloni 2009). Being born in times of food scarcity increased the likelihood of developing heart disease and diabetes among rural-born older adults in Puerto Rico (McEniry et al. 2008; McEniry 2011; McEniry and Palloni 2010). Specifically, the probability of developing heart disease was 65 percent higher for those born during food scarcity than for their counterparts born when food was more plentiful, suggesting a link between early malnutrition and heart disease. A review of more than 1,100 studies that examined associations between early life conditions and older adult health, including studies in Brazil, Costa Rica, Mexico, and Puerto Rico and in major LAC cities, documented the far-reaching impact of illness and deprivation early in life (McEniry 2013). Good socioeconomic conditions and healthy lifestyle choices (regular exercise, no smoking) later in life did not offset or blunt the impact of poor early life conditions on health in adulthood, according to many of these studies.

**Obesity and diabetes:** Obesity, an important risk factor for heart disease and diabetes, varies among older adults throughout the region: Data from the SABE study show that the share of urban residents 65 and older who were obese ranged from 13 percent in Havana to 38 percent in Montevideo, Uruguay (Al Snih et al. 2010). Analysis of surveys from Argentina, Chile, Colombia, Costa Rica, the Dominican Republic, Peru, Puerto Rico, and Venezuela found adults in their 50s had the highest obesity rates and one in three postmenopausal women was obese (Miranda et al. 2013).

High rates of obesity and diabetes in some of the region's older populations may reflect the combined impact of both childhood deprivation and later lifestyle choices. Urban living and increased wealth contribute to obesity in the region by increasing access to and the affordability of convenience foods and sedentary lifestyles (Wong et al. 2008; Wheaton and Crimmins 2013). Poor early nutrition, low levels of physical activity, and a diet filled with fat and inexpensive staple foods could combine to lead to obesity, diabetes, and atherosclerosis, threatening health and slowing life expectancy gains, suggest Monteverde and colleagues (2010). Older Mexicans are less likely to suffer obesity-related diseases than U.S. residents, but when they do, they are more likely to die from those diseases. This difference could either reflect inferior health care in Mexico or indicate that exposure to infectious diseases and poor nutrition make chronic diseases more lethal. "Unless Mexico and LAC countries experience medical improvements,

like those observed in the United States, that partially negate the deleterious effects of obesity, longevity among older individuals may be compromised in the future," write Monteverde and colleagues (2010).

Another recent study, based on data from the 2006 Mexican National Health Nutrition Survey, found very little present-day undernutrition in Mexico but widespread evidence of excess food intake (Beltrán-Sánchez and Crimmins 2013). The researchers estimated that 60 percent of Mexicans ages 60 and older are overweight. Among the elderly, they found evidence of stunting, reflecting malnutrition and infections in childhood. Some analysts recommend promoting healthy eating and physical exercise to reduce the impact of obesity-related chronic diseases in later life (Andrade 2009).

Will life expectancy in the region continue to increase if the survivors of poor early life circumstances are at greater risk of obesity, heart disease, and diabetes and face the mortality consequences of those conditions? In the short term, life expectancy gains in many countries likely will slow or stop, argue Palloni and Souza (2013). For their analysis, they estimated the impact of adverse early life conditions on future gains in life expectancy. They calculated the share of the older population that experienced early deprivation and survived instead of dying from infectious and parasitic diseases as they would have in earlier periods. These surviving older adults likely have a higher-than-average probability of dying at any given age. Their analysis suggests that the United Nations projections of life expectancy at age 60 in LAC countries for 2010 to 2050 are 8 percent to 20 percent too high. For example, life expectancy at age 60 in Guatemala would be 1.5 years lower than projected due to mortality associated with poor early conditions. Based on these results, they conclude that early deprivation appears to be "a powerful force" contributing to high levels of disease and disability for a subset of these populations, thus hindering progress in life expectancy for several decades.

**Smoking:** Mortality from lung cancer, other cancers, chronic respiratory disease, and diseases of the circulatory system suggests that the effects of past smoking in LAC populations have already taken a toll in some countries, including Cuba, Argentina, Uruguay, and Chile (Palloni, Novak, and Pinto 2013). The smoking epidemic is still on the upswing in many LAC countries such as Peru and Guatemala, with health impacts following a 20-year to 30-year time lag between initiating tobacco use and disease risk. Without new treatments for heart disease and cancers, smoking is expected to have a profound impact on the life expectancy of older adults in the region. An analysis that took into account tobacco use patterns in Argentina, Brazil, Chile, Mexico, and Uruguay found that

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smoking reduced life expectancy at age 50 by between four and five years. These findings underscore the importance of public health initiatives aimed at smoking prevention and cessation. Mexico, for example, has fewer anti-smoking policies and campaigns compared to the United States, which may explain why there are smaller differences in smoking rates across older age groups in Mexico than in the United States (Wong et al. 2008). Another study in Mexico found smokers tended to have higher incomes and assets than nonsmokers, suggesting that economic growth could lead to higher smoking rates if effective smoking prevention efforts are not in place (Beltrán-Sánchez et al. 2013).

### Examining Longer, Healthier Lives

To identify characteristics and practices that contribute to longer lives, researchers are studying exceptionally long-lived and healthy people. Using data from the Costa Rican Study on Longevity and Healthy Aging (CRELES) that tracked a representative sample of elderly Costa Ricans between 2005 and 2010, Rosero-Bixby and Dow (2012) found that having low levels of physical strength is the strongest prospective predictor of elderly participants' likelihood of death. The researchers also found links between death and levels of blood sugar, stress hormones, and inflammation, but found no association between death and high blood pressure and cholesterol levels. In another study based on CRELES data, Rehkopf and colleagues (2013) examined residents of Costa Rica's Nicoya Peninsula whose life expectancy at age 60 is two to three years higher than the rest of the country's population. Compared to other Costa Ricans, Nicoyans had longer telomeres—a DNA sequence at the tips of chromosomes that reflects cellular age. Longer telomeres are associated with lower levels of chronic disease and mortality, regardless of the person's chronological age. While studies in other populations have linked short telomeres to low socioeconomic levels, the researchers could not explain Nicoyans' advantage based on connections between telomere length and income, diet, or demographic factors. In another study, SABE survey data showed that nearly 13 percent of older adults in Jalisco and Colima, Mexico, were aging “successfully,” that is, without major disease, disability, or impairments to mental functioning or physical activity (Arias-Merino et al. 2012). Men were twice as likely as women to be aging successfully. More-educated people also were more likely to be among those aging without disease or disability.

Researchers are also probing the way education, migration, and gender differences influence health and longer lives. A study that examined MHAS and SABE data tracking older adults in São Paulo, Brazil, and urban areas in Mexico found

that those with some education lived longer than those who had none (Beltrán-Sánchez and Andrade 2013). The researchers also found that women were more likely to be disabled than men, and theorized that gender discrimination and the social and economic marginalization of women may play a role. Another study examined the dynamics of adopting healthy lifestyles and found that among Mexican adults ages 55 and older, more education was linked to lower levels of obesity and more physically active lifestyles, but also higher levels of smoking, particularly among men (Wong et al. 2008). Migration appears to have differing impacts on men and women: Evidence suggests that among older Mexicans, rural-to-urban migration and urban living within Mexico takes a greater toll on the health of men than women—increasing the likelihood of hypertension and diabetes for only men, but of obesity for both sexes (Wheaton and Crimmins 2013). Additionally, Mexican women ages 60 and older who return to Mexico after living in the United States are more likely to be disabled, while male return-migrants tend to be wealthier than their peers who remained in Mexico, according to MHAS data (Wong and Gonzalez-Gonzalez 2010). Understanding the root causes of male-female health differences in later life and the old-age benefits of education in these populations may inform public health initiatives and policy.

### Conclusion

Throughout the LAC region, deaths from infectious diseases declined as a result of improvements in nutrition, public health, and medicine that led to longer lives. These gains in life expectancy also are contributing to unprecedented population aging in many countries in the region, increasing demands on health care systems and other social and economic support programs for the elderly. Some analysts have proposed policies to buffer the economic impact of population aging, including pension reforms to lower costs, and investment in banking systems to increase personal savings for retirement. A growing body of research suggests that the health impact of tobacco use, early deprivation, and the related trends of obesity and diabetes will likely slow improvements in longevity in the region. Public health initiatives to prevent smoking, promote physical activity, and encourage healthier diets can play a role in efforts to improve the health of the older population and may be the key to sustaining or even building on the gains in life expectancy observed over the past decades.



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## For More Information

**Costa Rican Longevity and Healthy Aging Study (CRELES)**  
<http://ccp.ucr.ac.cr/creles/>

**Mexican Family Life Survey**  
[www.ennvih-mxfls.org/en/mxfls.php?seccion=1&subseccion=1&session=](http://www.ennvih-mxfls.org/en/mxfls.php?seccion=1&subseccion=1&session=)

**Mexican Health and Aging Study (MHAS)**  
[www.mhasweb.org](http://www.mhasweb.org)

**Puerto Rican Elderly Health Conditions (PREHCO)**  
<http://prehco.rcm.upr.edu/>

**Salud, Bienestar y Envejecimiento en America Latina y El Caribe (SABE)**  
[www.ssc.wisc.edu/sabe/home.html](http://www.ssc.wisc.edu/sabe/home.html)

## The NIA Demography Centers

The National Institute on Aging supports 14 research centers on the demography and economics of aging, based at the University of California at Berkeley, University of Chicago, Duke University, Harvard University, Johns Hopkins University, University of Michigan, National Bureau of Economic Research, University of Pennsylvania, Princeton University, RAND Corporation, Stanford University, Syracuse University, University of Southern California/University of California at Los Angeles, and University of Wisconsin-Madison. This newsletter was produced by the Population Reference Bureau (PRB) with funding from the University of Michigan Center on the Demography of Aging.

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## POPULATION REFERENCE BUREAU

1875 Connecticut Ave., NW  
Suite 520  
Washington, DC 20009 USA

202 483 1100 PHONE  
202 328 3937 FAX  
popref@prb.org E-MAIL