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# Preface

*Health in the Americas* is the Pan American Health Organization's flagship publication. Published every five years, it reports on the Region of the Americas' health conditions and their determinants and trends. The publication analyzes the health situation regionwide and in each of the countries and territories of the Americas, reporting on both progress made and challenges to be faced. The 2012 edition is the 15th since the publication was launched in 1954; it will be presented to the 28th Pan American Sanitary Conference, which coincides with the 110th anniversary of the founding of the Pan American Health Organization (PAHO). This edition mainly focuses on the 2006–2010 period.

As did previous ones, this edition—whose full text will be published electronically\*—seeks to provide useful information to a broad and diverse audience that includes health authorities, academics, professionals, students, health workers and others in the health field, as well as technical and financial cooperation agencies and other international entities.

This printed version of the 2012 edition summarizes the leading health achievements and challenges in each of the 48 countries and territories that are members of PAHO. An additional chapter, which also is part of the electronic version, analyzes health conditions in the Region as a whole.

In preparing this report, the research team drew on data from a wide range of official sources, both national and international, as well as from unofficial sources, in an effort to identify and resolve possible data discrepancies. We are confident that the increased utilization of this important information will encourage the further production, processing, and analysis of data that are increasingly relevant, valid, and timely for improving health in the Americas.

Mirta Roses Periago  
Director

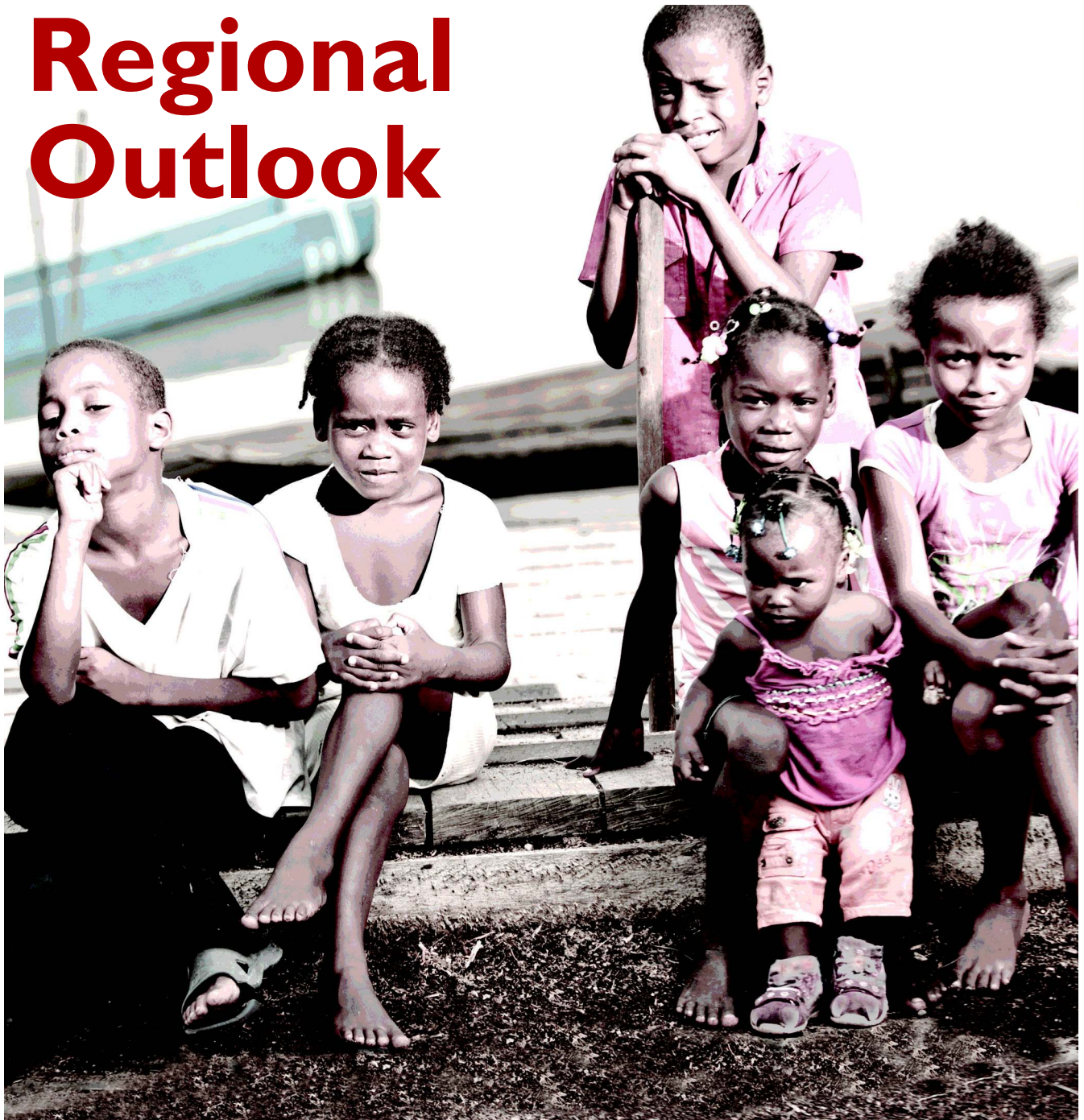
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# Regional Outlook



# Regional Outlook



## INTRODUCTION

This chapter summarizes some of the leading health gains, gaps, and trends in the Region of the Americas. The aim here is not to present alternative scenarios, whose methodology would go beyond this publication's objectives, but rather, to address issues related to the political, economic, and social contexts that have affected health in recent years. The chapter also touches on demographic and epidemiological changes, as well as certain transformations involving technology, culture, and risks. These have either a

direct or an indirect impact on health and well-being that is both concomitant and concurrent and determines the health services' response capacity. Finally, the chapter examines other relevant topics, such as those related to managing disasters and health alerts, as well as the ongoing evolution of ethics, human rights, and global health. The intention is to identify the predominant health trends during the period under review, along with their associated and determining factors, and to present some thoughts on future prospects for health in the Region.

## DEMOGRAPHIC SITUATION

Between 2005 and 2010, the Region's **total population** rose from 886 million inhabitants to 935 million. Were such a trend to continue, it is estimated that the population of the Americas will have risen to slightly more than one billion inhabitants by 2020, representing 13.4% of the world's population (1). However, even when considering the increase in the number of inhabitants, a relative deceleration in demographic expansion is already being witnessed. Between the 1995–2000 and 2005–2010 periods, the average annual population growth at the regional level dropped from 1.3% to 1% (2).

Between 2005 and 2010, the Region's **total mortality rate** continued to drop (from 6.9 per 1,000 population to 6.4), while the **total fertility rate** for the same period dropped from 2.3 children per woman to 2.1. **Demographic changes** show different evolutionary gradients from country to country: while Cuba reports a rate of 1.5 children per woman (considerably lower than the population replacement level), Guatemala and Bolivia show rates of 4.0 and 3.3 children per woman, respectively (3). Between 2005 and 2010, **life expectancy** in the Americas for both sexes is estimated to have risen from 72.2 to 76.2 years—a four-year increase in half a decade—with an additional increase of 6.5 years projected for 2050 (1). However, differences among countries persist: for example, between Bolivia and Chile, two neighboring countries, life expectancy in 2010 was 66.8 and 79.2, respectively (2). These differences are also seen within countries—in Colombia, mortality in children under 5 in 2010 was 11.3 times greater in the poorest quintile than in the wealthiest (4).

In 2006, there were nearly 100 million **people over 60 years of age** living in the Region. By 2020, this figure is expected to double, and more than half of these people will live in Latin America and the Caribbean (LAC). A total of 69% of all those born in North America and 50% of those born in LAC will live beyond age 80 (1). For the first time in the history of humankind, four generations are living at the same time. All this contributes to building important social capital (5). Doubtlessly, these trends are a reflection of the major gains in public health achieved over the past century; nonetheless, aging leads to an increase in chronic disease and disability. Based on the trends reported, estimates show a significant number of older adults will be living in poverty—particularly women, by virtue of both their greater longevity and the social exclusion they have historically faced. In developing

countries, where population aging is occurring more rapidly, it will be especially challenging to deal with these demographic and epidemiological changes (6). For example, in France, 7% and 14% of the population was over age 60 in 1864 and 1979, respectively, while in Mexico, these milestones will be reached by 2016 and 2038. It took France 115 years to move from 7% to 14%; Mexico will only take 22 years to make that leap (7). Healthy aging allows us to break with the stereotype of elderly people as passive recipients of social and health services. Nevertheless, ensuring healthy aging based on “self-management and self-care” programs calls for well-defined actions and investments planned throughout the individuals' lifecourse—an approach that to date has generally not received due attention, especially in those countries where pension and social security systems are either underfunded or not funded at all (7). In 2010, the estimated **total dependency rate** in LAC was 53.3, while in North America, it was 49.0. By 2050, these figures are expected to rise to 57.0 and 67.1, respectively. In 2010, the highest proportion of dependency in the Region occurred among lower-income populations—which, in a pessimistic scenario, could help perpetuate the cycle of poverty (8).

In LAC, the **infant mortality rate** dropped by 66% between 1990 and 2009 (from 42.0 per 1,000 live births to 14.8). This average hides differences among countries of up to 50 points, however—Cuba and Canada have the lowest rates in the region (4.8 and 5.1, respectively), and Haiti and Bolivia have the highest (57.0 and 50.0, respectively) (9). Between 1990 and 2010, the **maternal mortality ratio** (MMR) dropped by 43% in Latin America and by 30% in the Caribbean—figures lower than the average reduction of 47% observed in developing countries at the global level (10). In 2008, the vast majority of maternal deaths in LAC (over 35%) occurred in the least educated quintile of the female population, while the most educated quintile accounted for fewer than 10% of these deaths (11). Although coverage of family planning programs in LAC has grown, reaching contraception rates of 67% that are similar to the level recorded in developed countries, there is still a persistent gap between the supply and demand of contraceptive methods, particularly among marginalized populations and adolescents (12). Every year there are 1.2 million unplanned pregnancies in the Region, 49% of which occur among adolescents. Prenatal-care coverage in LAC is not low, since pregnant women receive an average of four to five checkups (9). However, these services are not necessarily



of good quality, which gives rise to one of the most flagrant expressions of inequity and calls for devoting greater efforts to rectifying it.

The Americas is already the **most urbanized** region in the world. In 2010, 82.1% of North America's population and 79.4% of LAC's resided in urban areas. By 2025, 9 of the 30 largest cities in the world are anticipated to be in the Americas: Bogotá, Buenos Aires, Chicago, Lima, Los Angeles, Mexico City, New York, Rio de Janeiro, and São Paulo. That said, recent data indicate that urban growth in LAC had begun to slow between 2005 and 2010 (13).

While the relative incidence of **urban poverty** in the Region fell from 41% in 1990 to 29% in 2007, the absolute number of urban poor paradoxically increased, from 122 million to 127 million (14). Cities tend to concentrate wealth, creativity, innovation, and opportunities on all fronts—from the artistic and cultural, to the technical and scientific, to employment and economic. Despite this context of greater affluence in urban environments, everything points to the fact that, in coming years, cities will continue to be home to populations in different gradients of poverty and vulnerability (15).

Estimates indicate that more than 20 million people from LAC (about 3.3% of the population) currently live outside their country of birth (11). **Immigrants** with little schooling who work in low-skilled jobs are the most vulnerable and excluded in their host country, which has a significant impact on their state of health (11). In the Region, the most attractive target country for immigrants continues to be the United States, where Hispanics currently represent one-sixth of the population and where 30% of them are of Mexican origin (1).

Another phenomenon of importance to health is associated with the rapid growth of **travelers**. In 2011, the number of national and international tourists in the Region grew by six million, reaching a total of 156 million travelers (16).

## THE POLITICAL SCENARIO

The Region continues to move towards greater democracy by embarking on new constitutional frameworks and more transparent electoral and participatory processes that enshrine basic freedoms as a civil right. Barring a few specific situations, the progress achieved in these areas has been notable.

Two processes—seemingly polar opposites but that do not contradict one another—are currently intensifying. On the one hand, there is a growing decentralization and greater community empowerment that serves as the basis for a growing participatory and pluralist democracy. On the other, countries are becoming more and more part of a globalized world. These processes are influencing power redistribution and citizenship-building processes. Added to other economic advances, these readjustments have contributed to the fact that countries are becoming more autonomous and self-confident. And yet, some problems continue to worsen in the Region, especially violence associated with delinquency and drug trafficking, conditions that are beginning to put some of the gains achieved to date at risk.

Social networks are in full development, fanned by the revolution in communication technologies that has brought about new perceptions, expectations, and demands in all everyday-life spheres. Expressions from different community groups—either in protest or in support of various causes—are becoming increasingly common, giving voice to these groups' points of view on such issues as the economy, the environment, education, and health. To a great extent, the future of health will depend on individuals' and communities' belief that good health is important for achieving and holding on to the kind of life to which they aspire and that they want for themselves and for their families and loved ones (17).

As vertical mobility grows and the middle classes expand in LAC—albeit modestly—new markets for goods and services emerge, including offers from the health and education sectors. Society's aspirations and political preferences are also changing: in some countries, civil society increasingly is losing confidence in the credibility of political parties and other traditional institutions (18).

Globalization has sparked new correlations of forces that bring together various pragmatic and ideological interests. In this context, the Region's countries have become increasingly proactive in ensuring that they have a growing presence in various commercial and political spaces within a rapidly changing world that is not exempt from turbulence and conflicts. Every country has expanded its horizons, simultaneously participating in various alliances, initiatives, and blocs that have come together either through geographical proximity or through commercial, cultural, or political motives. The presence of the countries of the Region in global strategic blocs is also becoming more prominent, such as in the Organization for Economic Cooperation and

Development (OECD), the Group of 20 (G20), the Asia-Pacific Economic Cooperation (APEC) forum, and the BRICS group (Brazil, Russia, India, and China). Furthermore, new partnerships and forums have recently emerged—such as the Bolivarian Partnership for the Peoples of Our America (ALBA, from the acronym in Spanish), the Union of South American Nations (UNASUR, also from the Spanish), and the Community of Latin American and Caribbean States (CELAC, likewise from the Spanish)—which coexist with other older regional entities.

## THE ECONOMIC LANDSCAPE

The 2008–2009 financial crisis had a profound impact on the international financial system, threatening the economic and social stability of all of the Region's countries. Although the world economy now seems to be on an upturn, the road to economic growth is not exempt from the turbulence that continues to affect even the greatest economies in the world market—the United States, Europe, and Japan (19, 20).

In LAC, the crisis was preceded by a period of four years of sustained growth in per capita gross domestic product (GDP), reaching an average annual growth rate of close to 4.4%. As a result of the crisis, in 2009 the majority of the countries of the Region reported a reduction in their economic growth rates, as well as in their per capita income. In 2010, LAC resumed its economic growth, with a 4.8% recovery in per capita GDP. Furthermore, that year marked the lowest levels of poverty (31.4%) and extreme poverty (12.3%) in the last 20 years. Even so, at the end of 2011, LAC had 177 million inhabitants living below the poverty line, 70 million of them in extreme poverty (21). The United States and Canada reported that 15% and 11%, respectively, of their populations were living below the poverty line (22, 23).

Between 2008 and 2010, faced with the economic crisis, most of the countries implemented anticyclical economic policies to counteract and mitigate the cycle. Such measures protected, and in some cases even expanded, public social spending, especially through conditional cash transfer programs that by 2010 amounted to 3% of the total GDP (21).

Trade and investments in LAC have grown. The so-called “Multi-Latins” are expanding their global markets. Brazil is already the world's sixth-largest

economy (24). The World Bank has classified several LAC countries as emerging economies, with income levels between middle and middle-to-high. Despite the level of macroeconomic stabilization that has been reached, however, there is an ongoing debate on the need to intensify reforms in certain critical areas—fiscal, labor, judicial, and scope of social protection, among others (25).

The crisis notwithstanding, the economy of the United States has risen to US\$ 16 trillion—three times greater than that of all of LAC combined—and that country continues to be the most important vis-à-vis trade with the countries of the Region. The United States exports more to LAC than to Europe, twice as much to Mexico as to China, and more to Chile and Colombia than to Russia. It purchases 40% of all LAC exports. In turn, United States investments represent 40% of all foreign investments in LAC. Of the US\$ 60 billion that LAC countries receive in the form of remittances, 90% come from the United States (18).

## SOCIAL CONDITIONS

Between 1980 and 2010, the Regional Human Development Index increased from 0.573 to 0.704. This is still below the 1980 figure (0.754) for OECD countries, but it is already close to the 0.717 defined by the United Nations Development Programme (UNDP) as an indication of high development. There are notable variations both among and within countries, however (26).

The linchpin of the Region's social agenda continues to be to reduce poverty and inequities in the context of an ambivalent reality. On the one hand, combined structural rigidities strengthen the intergenerational reproduction of inequities associated with scant wealth redistribution. These rigidities are coupled with inequitable access to decent employment, to good education, to healthy housing, and to health services offered evenly to the entire population, as well as with other markers related to social stratification. On the other hand, recent progress bodes well, as it opens up new possibilities for the continued establishment of more just societies with more widespread access to wellbeing. In net terms, over 60 million persons in LAC emerged from poverty in 2010, an unprecedented magnitude of change (21).

According to the United Nations Economic Commission for Latin America and the Caribbean (ECLAC), LAC remained the most inequitable region in 2009, with an average Gini coefficient of 0.52 in the 18 countries analyzed—higher than that of sub-Saharan Africa (0.44) and East Asia and the Pacific (0.41) (27). That said, recent studies show that in terms of income distribution, LAC has ceased to be the most inequitable region in the world, and that the Gini coefficient dropped from 0.56 in 2003 to 0.48 in 2008. Such progress appears to be explained not only by the changes wrought in the largest LAC economies (Brazil and Mexico) but also in another 11 of the economies analyzed. While this phenomenon has been taking place in LAC, an increase in income inequality has been seen in other developing regions (28, 29, 30).

Improvements observed throughout the Region are mainly due to an increase in employment income (21) and to the effect of redistributive income policies (31, 32) implemented through programs aimed at providing more progressive and sustained conditional cash transfers to the most vulnerable sectors. These processes have occurred within the context of greater democratization and decentralization (33) that is tied to technological changes and to improvements in basic education coverage among those groups in the population that lag furthest behind socially (34). It should be pointed out, however, that not all social protection systems in the Region's countries are sufficiently inclusive. Many show gaps that perpetuate the vulnerability and stratification in access to social protection (21, 35).

In terms of **employment**, nearly 468 million people in the Region were employed in 2011, accounting for 79% of the economically active population; 60.2% of them (283 million) were in LAC (21). Most of these jobs were in the service sector (61.6%), followed by the manufacturing sector. The agricultural sector provided work to one out of every six workers in the Region (36). Between 2000 and 2010, the massive entry of women into LAC's labor force has held, with the rate of working women rising from 47.3% to 52.8% in that period (37). Yet wage mobility continues to lag, especially for women who work in low-productivity sectors (21). LAC has lowered its urban unemployment rate to 6.8%—the lowest registered since the early 1990s, when the Region started using the current methods of measurement (38). Underemployment, informal employment, and unemployment persist, however, both in rural and in marginal urban areas, especially affecting youth 15–24 years old. The extent of the

informal economy varies from country to country, which encompasses not only the poorest population, but also other sectors, limiting their access to benefits such as social protection and health services (38). In the United States, the unemployment rate in April 2012 was 8.1%, but it affected ethnic groups differently: the rate was 13% among African Americans, 10.3% among Hispanics, 7.4% among Caucasians, and 5.2% among Asians (39).

In 2011, the International Labor Organization (ILO) estimated that nearly 1.3 million working people in LAC fell within the category of forced labor, and that 10.7 million children under 15 were working (40). There is enough evidence at hand to document the long-term ill effects of child labor, among them that it hinders children's individual physical and mental development, with subsequent social consequences (41). Information on occupational hazards in the Region is incomplete and of limited quality (42, 43). The registries available in LAC usually only refer to workers in the formal sector, whose insurance coverage for occupational hazards ranged between 12% and 87% in 2009 (43). The leading cause of underdiagnosing and underreporting occupational diseases remains the health professionals' ignorance regarding pathologies of occupational origin.

Recent data point out that 21% of young people in Latin America neither work nor study. There is an inverse relationship between income and the “neither-nor” phenomenon. The low middle class displays the highest percentage of this phenomenon, at 61%. Of the “neither-nor” generation, 74% comes from homes where attaining only basic education is the norm (44).

**Education** and health are enshrined as cornerstones of development. Clearly, there is a synergistic relationship between the two that can either enhance or diminish a country's economic and cultural status. A boost in educational levels is associated with improvements in population health and increases in productivity, social mobility, poverty reduction, and citizenship-building. In LAC, significant advances have been made towards making primary education universal. In 1990, access to primary education was available to 88% of all boys and girls; but by 2010, such coverage reached 95%, and in some countries, even 99% (27). The school lag—measured by the number of girls and boys who drop out of primary school or do not finish their last year in the period assigned—is very important for the health sector. It is precisely in that population where adolescent pregnancy is most concentrated and, subsequently, where the highest child mortality and morbidity rates are seen (21).

Educational capital is “inherited,” to a certain degree. Children whose parents did not complete their basic education are less likely to complete secondary education, for example. Around half of LAC’s population has completed secondary school; in six countries, this number does not exceed 38%. Various studies hold that finishing secondary education constitutes the bare minimum of schooling that a person needs to improve his or her living conditions (45).

**Gender and ethnic equity** is an issue that has become increasingly overt in the political agendas of many of the Region’s countries, as more and more women assume leadership positions. Although the number of women who hold such positions is still insufficient, women’s participation and representation in LAC’s political and electoral life hovered at around 20% in 2010 (46). In 2011, five of the Region’s countries were governed by women. There also has been greater empowerment and recognition of the rights and contributions of women and of indigenous and Afrodescendant populations, as well as groups of diverse sexual orientation, such as lesbians, gays, and transsexuals (47).

In LAC, it is women who take care of the elderly (90% of all caregivers), shouldering a physical and economic burden that is not remunerated nor acknowledged. All available evidence indicates that given the population’s aging, the epidemic increase in chronic diseases and disability, and the lack of an adequate institutional response, women’s unremunerated workload in providing care for the elderly will continue to rise (48).

Poverty reduction programs have promoted women’s greater control over their resources, including the access to health care and education. In the Region of the Americas, women as a group have surpassed men in terms of schooling, although these gains are not being equitably reflected, especially in terms of wages (49).

Some 1,100 indigenous ethnicities live in the Region: in LAC they represent 10% of the total population; in Canada, 4%; and in the United States, 1.6% (12, 50, 51). Regardless of their country of residence, these ethnic groups—as do Afrodescendants—find themselves in different gradients of social exclusion and vulnerability. According to the World Bank, some of these populations receive only between 46% and 60% of what nonindigenous populations earn (52). Given the current levels of poverty and social exclusion, the negative effects on health among some of these discriminated ethnicities persist across generations (53).

The Region of the Americas has advanced substantially in reaching the **Millennium Development Goals** (MDGs). Almost all of the MDGs bear some relation to health: three of them specifically (4, 5, and 6) and three more (1, 7, and 8) include goals closely related to health. This reflects a broad consensus on the importance of health as both an input and a product of sustainable development, in addition to showing that a person’s state of health is a key indicator of how well society is functioning. Although the aforementioned MDGs address the main problems and factors contributing to the burden of disease and mortality among the world’s most vulnerable populations, it has been striking that they make no mention of chronic disease (54).

Even though the Region of the Americas as a whole reports the greatest advances in reducing infant mortality, not all its countries will reach MDG 4 (to reduce the under-5 mortality rate by two-thirds), in that neonatal mortality continues to be a challenge in municipalities and populations living in conditions of vulnerability. On the other hand, the incidence of malaria and tuberculosis in the Region was reduced ahead of the deadline, and significant progress has been made towards reducing the spread of HIV/AIDS and providing access to treatment for people living with HIV/AIDS (MDG 6). Great strides have been made towards providing universal access to reproductive health (MDG 5), but available figures indicate that the goal of reducing the maternal mortality rate by three-quarters will not be reached (10, 54, 55, 56). The Region also met the coverage goals related to providing safe drinking water (MDG 7) ahead of time (57). Available regional information about basic sanitation (also part of MDG 7) indicates that this goal will not be reached, especially in rural areas. But current trends point towards the Region reaching the goal of halving the proportion of people who suffer from hunger (MDG 1). Furthermore, advances have been made in providing access to affordable, essential drugs (MDG 8) (46, 54, 56).

The MDGs have opened up unprecedented opportunities to promote health actions and investments at all levels: local, national, regional, and global (54). Such efforts as the Global Fund to Fight AIDS, Tuberculosis, and Malaria; the Roll Back Malaria initiative; and the Global Alliance for Vaccines and Immunization (GAVI) were created on the basis of the MDGs (58). Since 2003, the Global Fund has approved US\$ 1.54 billion to support national programs in the Region’s countries, with 70% of it allocated for HIV/AIDS (59). That said, evidence indicates that in coming years these resources will decrease

due to reductions in contributions to the Global Fund, as well as changes in the eligibility criteria for funding. The latter will mainly affect middle-income countries—which make up the majority of LAC beneficiary countries.

In the post-2015 phase—and projecting through 2030—if the Region is to continue to move towards sustainable development, a new set of objectives should be set forth. These new objectives should be able to reconcile key goals under the principles of universality and equity and to differentiate goals by region and country. In addition, they should consider gaps and gradients that affect all groups in society, with emphasis on the most disadvantaged and on older adults. In terms of health, priority is expected to be placed on the need to strengthen the health services' response capacity by taking a more comprehensive approach, rather than by continuing to invest in vertical actions aimed at specific diseases (58).

## THE ENVIRONMENT

It is estimated that 25% of the burden of disease is associated with environmental imbalances (60). The world is witnessing unprecedented population growth, coupled with the ongoing incorporation of vast population groups into a global economy based on a model of insatiable consumption. On the one hand, these factors have increased the demand for energy, water, textiles, minerals, and other products. On the other, the generation of industrial and municipal waste has seriously impinged on the resilience of various ecosystems. A recent evaluation shows that 15 of the planet's 24 ecosystems are suffering from degradation such as to render them unsustainable, and that the damage inflicted on several of them is irreversible, placing all of humanity at greater risk (61).

Public opinion in LAC is increasingly aware of the importance of environmental harm. Between 2008 and 2010, the proportion of persons who believe that climate change affects the well-being and development of their country increased from 84% to 88%, while that of those who place greater priority on the economy than on the environment dropped from 37% to 17% (44).

In 2010, the United Nations General Assembly adopted a resolution recognizing access to **water and sanitation** as a human right and as an essential social determinant for poverty mitigation (61.b). Between 1992 and 2012, access to drinking water in LAC rose from 86%

to 92%, while basic sanitation rose only from 70% to 78% (62). Not meeting the expected targets of MDG 7 for sanitation, especially at the rural level, will have a significant negative impact on health. Furthermore, there is often a scarcity of reliable information on the quality of drinking water (63).

Between 2002 and 2010, although the proportion of the urban population that benefited from adequate **solid waste** (garbage) collection services surpassed the rate of urban population growth, these achievements were not uniform in all countries, nor in cities within countries (64). Fully half of all urban trash generated in the Region does not get an adequate final disposal (65).

It is estimated that in LAC, at least 100 million inhabitants are exposed to unsatisfactory **air quality** levels (66), and this is associated with nearly 133,000 deaths per year (67). Although the majority of countries have a legal framework for air pollution control, in several of them the standards setting exposure limits require updating, since they exceed internationally recommended exposure thresholds (68).

Furthermore, **indoor air pollution** continues to pose serious risks in low-income countries—particularly for women and children who spend more time at home in close proximity to inefficient stoves that emit toxic fumes. In 2007, estimates indicated that in LAC some 87 million people still burned biomass as their main source of fuel. The particles emitted by the resultant smoke can contain up to 60-fold the level of particulate matter as does outside air (69). Reports have indicated a direct association between exposure to indoor air pollution and premature death (70, 71).

Exposure to **chemical contaminants** continues to be a public health problem that is insufficiently addressed in the Region. Between 1970 and 2010, the global production and use of chemicals multiplied tenfold (72). In LAC, the value of chemical production more than doubled, rising from US\$ 127.5 billion to US\$ 260.5 billion between 1999 and 2009 (73). In recent years, efforts have been made to reduce exposure to certain contaminants, among them lead, mercury, and asbestos. Challenges persist regarding the use of chemical substances such as pesticides and persistent organic pollutants (POPs), however, and reports of their effects on health systems are not registered in an adequate or timely manner (74). This has an impact on high-risk groups—especially children—whose vulnerability is greater given their bodyweight, their metabolism, and the degree of development of their organs and tissues (75).

**Foodborne diseases** are recognized as a public health problem brought about by such causes as deficiencies in water quality and supply, in sanitation, in poor hygiene, and in the growth of the national and international food-production chain and industry (76). There is a persistent need to improve food-quality registries and to systematically monitor foodborne-disease cases and outbreaks.

Several global forces work together to undermine **food security**, among them a growing demand for food—a phenomenon related to climate change that affects agricultural productivity and increases energy costs—and the preference for producing biofuels over food. Recurrent economic crises and the influence of the stock market, with its commitment to futures markets, also tend to drive up the price of staples. This limits access to the kind of safe, nutritious food that enables people—especially the poorest of the poor—to live productive, healthy lives (77, 78).

There is evidence that **climate change** could bring about a gradual increase in sea levels; more intense heat waves, hurricanes, and storms; severe floods and droughts; a deterioration of air quality in urban environments; and the exacerbation of vector-borne and water-borne diseases. Climate change also could dampen food production and access to food, sparking population shifts and migrations of deep social impact. All these factors have the potential to act as causal agents in the unanticipated spread of disease (79).

Many of the Region's countries are signatory to multiple agreements, conventions, and international treaties aimed at protecting the environment that also are relevant to human health. For the most part, signing on to these instruments is voluntary, although some are binding; nevertheless, their implementation by the health sector has been very limited (80). Several projects linked to the so-called "**Green Economy**" initiative can help put a halt to greenhouse gas emissions generated in various sectors, thus improving environmental quality and public health worldwide (81). Their implementation, however, is not exempt from debates on such critical matters as technology and innovation transfer and the respect for national sovereignty in terms of a country's resources (82).

## EPIDEMIOLOGICAL OUTLOOK

All of the Region's countries are undergoing various phases of **epidemiological change** (12). At the regional

level, data from 2007–2009 indicate that 76.4% of all deaths were caused by noncommunicable diseases, 12.5% by communicable diseases, and 11.1% by external causes, with variations from country to country (2).

LAC countries face a complex epidemiological outlook (83) characterized by a triple disease burden. First, chronic diseases, in addition to their high mortality, carry burdens characterized by recurrent problems and growing disability that exert great pressure on health services. Second, infectious diseases, which despite the fact that the mortality caused by them is on the wane, continue to have high morbidity rates, especially among children under 5; moreover, they impose an important demand for services due to various endemoepidemic diseases for which control is insufficient. And third, there is the ever-growing burden of illness brought about by external causes, which results in a significant health service demand, particularly in emergency care.

In terms of **vaccine-preventable diseases**, immunization programs in the Americas have made enormous progress, preventing some 174,000 deaths in children each year between 2006 and 2011 (84). The Region has led the rest of the world in eliminating or reducing vaccine-preventable diseases: it was the first region to eradicate smallpox (1971) and eliminate polio (1991), the last endemic case of rubella in the Americas occurred in 2009, and the last endemic case of measles was reported in 2002, despite recent reports of a few isolated outbreaks of the disease associated with cases imported from outside the Region (85). Vaccination coverage averages 93% among children under 1 year of age. Diphtheria, tetanus, and whooping cough have been significantly reduced (86).

There are currently vaccines on hand to immunize all family and community members. The introduction of the rotavirus and antipneumococcal vaccines in LAC has been carried out in nearly parallel fashion throughout the countries of the Region, regardless of their development status (87). Forecasts indicate that new vaccines will be available in the foreseeable future, but these new vaccines also are expected to be more expensive than their traditional counterparts. These higher costs call for the strengthening of existing mechanisms for collective bargaining so as to guarantee access at affordable prices and to ensure that access to these vaccines is equitable (88).

Unlike what is occurring in other regions, 95% of all vaccines purchased in LAC are bought with national resources (89). PAHO's Revolving Fund for Vaccine Procurement has played an important role in ensuring that countries have access to quality vaccines at reduced, highly

competitive prices (90). Although national coverage for children's vaccines exceeds an average of 90%, over 40% of the more than 15,000 Latin American municipalities reach or exceed 95% coverage.

Vaccination Week in the Americas, an initiative that was born in the Andean subregion in 2003 (91), has become the standard-bearer in the Region's fight for equity and access to vaccination (92). Over the past nine years, more than 365 million people of all ages have been vaccinated in the course of campaigns carried out within the framework of Vaccination Week in the Americas. And in April 2012, all WHO regions joined together to hold the first World Immunization Week (86).

In 2010, the incidence rate for **tuberculosis** (TB) in the United States was 3.6 per 100,000 population—the lowest reported since 1953. Despite this very low incidence, various ethnic groups were affected by TB more than others: Asians, 22.4 per 100,000; African Americans, 7.0; Hispanics, 6.5; and Caucasians, 0.9 (93). And TB prevalence and mortality rates remain high in LAC, despite their continued decline (94). According to WHO estimates, TB prevalence dropped from 97 cases per 100,000 population to 38 between 1990 and 2009, with mortality from TB dropping from 8.0 to 2.1 in the same period. Individual countries have not progressed at the same pace, however. This unevenness requires that action be targeted to surveillance, prevention, and control areas, especially in cases involving multidrug-resistant tuberculosis, and that TB-HIV coinfection be managed. At the regional level, tuberculosis patterns reflect, and are an indicator of, major differences both among and within countries.

**Malaria** remains endemic in 21 countries. From 2000 to 2009, LAC reported a 52% reduction in the number of cases and a 68% reduction in the number of deaths. Almost 90% of all cases reported in LAC originate in endemic South American countries, especially among populations living close to the Amazon Basin. Considering malaria's downward trend, it is expected that control programs will begin to be aimed at eliminating this disease (95).

**Dengue** is a disease of growing importance for public health in the Region, with recurrent epidemic peaks every three to five years. Its four serotypes (DEN-1, DEN-2, DEN-3, and DEN-4) currently circulate in several of the Region's countries, which favors the appearance of more severe forms. Between 2006 and 2010, nearly five million cases were reported in the Americas—3% were severe, with an average case fatality rate of 1.6% (96, 97). Controlling the primary vector—*Aedes aegypti*—continues to be the

main focus of the strategy against dengue. New alternatives, carried out through ecosystem strategies involving community participation (98) and entomological surveillance, are undergoing operations research (99). The availability of a vaccine effective against all four dengue serotypes is foreseen in the near future. Given this scenario, comparative analyses are being conducted to determine how to best combine vaccination programs with comprehensive vector control, especially in light of the importance of *A. aegypti* as a vector for both yellow fever and Chikungunya virus (100).

The group of so-called "**neglected diseases**" are a reflection of the inequities that affect different population groups in LAC. In strategic terms the appearance of these diseases involves two interconnected elements—a set of **poverty-related pathologies** that are part of the unfinished health agenda, on the one hand, and **neglected populations** who live in highly marginalized situations, on the other. Fortunately, the fight against these diseases has gathered importance over the past few years, with reports of greater progress being made in reducing several of them, particularly leprosy, Chagas' disease, onchocerciasis, trachoma, and geohelminth infection. Others, such as filariasis and leishmaniasis, have been spreading, however. Recent estimates point out that the burden of neglected diseases in the Region exceeds that of malaria or tuberculosis (101). If progress is to be made in eliminating this group of diseases, it will become necessary to increase diagnostic and response capacity in primary care, to improve both the production and quality of the epidemiological data that will enable targeted interventions to be undertaken, and to ensure that there is an efficient production and supply of necessary medicines (102, 103, 104, 105, 106, 107).

The incidence of **rabies** in the Americas has shown a continuous decline; indeed, the Region is close to reaching its goal of eliminating this disease. In some countries, outbreaks of human rabies transmitted by wildlife have been reported, with vampire bats being the most important vectors (108). **Leptospirosis** is endemic throughout the Region, with occasional outbreaks in several countries, particularly in the aftermath of floods (109). A persistent challenge lies in improving epidemiological surveillance of other zoonoses, such as **brucellosis** and **hydatidosis**.

Interactions among humans, wildlife, and domestic animals create an environment in which the **interspecies transfer of pathogens** relevant to public health can occur. Nearly 70% of all events considered as potential public health emergencies in the Region are related to the animal-human interface. Anthropogenic drivers, the environmental and social context, and production systems do not, by

themselves, serve to sufficiently explain the complex web of epidemiological interactions. A new way of trying to analyze these challenges is based on the principles of the “One Health” initiative, with its converging and interrelating risk analyses linked to human, animal, and environmental health (109, 110).

The world’s growing interdependence, characterized by the rise in international travel and trade and other emerging factors, has rendered global and national health security a collective responsibility. International borders no longer constitute the line of first response in containing **diseases of epidemic potential** and other events with possible public health consequences. The successful and efficient application of the **International Health Regulations (IHR)** (111) increasingly will depend on strengthening national and subnational surveillance systems, in order to ensure that there is early detection and immediate response at the source to any risk threatening national and international public health. Even though, on the whole, the Region’s countries have attempted to improve their action plans and strengthen their national capacities, 27 of them have requested a postponement of the June 2012 deadline set by the World Health Assembly for implementation of the revised IHR (112).

In 2008, Paraguay reported an outbreak of **yellow fever**, with 28 cases and 11 deaths, with 9 of the cases occurring in the Asunción metropolitan area—containing the outbreak involved administering 3.6 million doses of yellow fever vaccine. Producing enough quality yellow fever vaccine remains a challenge (113).

**Influenza A(H1N1)**, which first appeared in Mexico in April 2009, became the 21st century’s first pandemic (114). In the 16 months following its onset, at least 600,000 cases and more than 18,000 deaths were reported worldwide. The Americas recorded more than 190,000 cases and 8,500 deaths, and the pandemic triggered an extraordinary demand for health services (115). Important lessons were learned during this pandemic—including finding ways to improve epidemiological surveillance, laboratory capacity, clinical management of severe cases, and the preparation of plans and operational response, ways that involved social participation and the coordination with the manufacturing sectors and with the health services. Producing vaccines against influenza H1N1 meant dealing with nontraditional regulatory issues. As never before, countries had to confront anti-vaccination groups and the proliferation of false information on adverse vaccination events that rapidly spread over the Internet and through the mass

media (116). The logistics for distributing 350 million vaccine doses was an extraordinary challenge, as was the production and timely distribution of thousands of antiviral treatments (117).

In October 2010, Haiti confirmed its first **cholera** epidemic in more than 100 years, ending a century of cholera-free status on the island of Hispaniola. Within the space of five weeks, cholera had spread throughout the country, impelled by inadequate sanitation and insufficient access to safe drinking water, as well as by the destruction of Haiti’s infrastructure caused by the earthquake in January of that same year. Shortly afterwards, the Dominican Republic was also affected. By the end of this epidemic’s first year, Haiti had reported nearly 500,000 cholera cases and 7,000 deaths from the disease (118). In the Dominican Republic the epidemic was less intense and was mainly confined to departments bordering Haiti and to areas surrounding large cities, with reports showing nearly 21,000 cases and 363 deaths (119, 120).

Between 2001 and 2009, the estimated rate of new **HIV infections** in LAC dropped from 22.5 per 100,000 population to 18.6. In North America, the rates of new annual infections have remained stable for at least the past five years. All the Region’s countries have established policies and programs to provide free access to antiretroviral therapy (ART). Deaths from AIDS and vertical transmission of the disease continue to decline, thanks to universal access to antiretroviral therapy and to preventive measures targeted at pregnant women. Regarding ART coverage, LAC leads other regions with low- and middle-income countries (LMIC). In 2009, 475,000 people in LAC received ART, representing an increase of 128% over 2003. Even so, estimates show a persistent gap in ART coverage, with the number of new infections continuing to exceed, many times over, those persons in treatment (121). Studies indicate that between 21% and 50% of all people living with HIV in the Americas do not know that they are infected. An estimated 250,000 young people (ages 15–24) are living with HIV (121). From 2007 to 2009, public spending allocated for preventing and controlling HIV in the Region accounted for 45%–97% of the total funding earmarked for fighting this epidemic (122). The latest scientific advances demonstrate that access to treatment is also an effective tool that contributes to the prevention and control of this disease (123). Every year in the Region of the Americas, some 89 million estimated new cases of **sexually-transmitted infections** (STIs) occur among people ages 15–49 (124), with STIs affecting 1 of every 20 adolescents each year.



Regarding congenital syphilis, several countries in the Region have reached rates compatible with the disease's elimination as a public health problem, among them Canada, Chile, Cuba, and the United States. Congenital syphilis elimination will only become a reality when countries can guarantee universal access to primary health care with improved and more expansive response capacity, better information systems, and revitalized public policies for preventing and treating STIs (124).

The use of **illicit drugs** poses a serious and growing public health problem in the Region. According to information provided by the countries, the most used illicit drugs are marijuana, cocaine, and volatile solvents, whose consumption among adolescents fluctuates between 3% and 22%. The development and implementation of drug control programs is an issue that appears prominently on the agendas of all of the Region's countries (125). In this regard, several countries recently have begun to consider legalizing the use of certain drugs in a search for new evidence-based alternatives designed to reduce demand and care for addicts (126).

Some 250 million people in the Region suffer from **chronic, noncommunicable diseases** (CNCDs). In 2007, 3.9 million people died from CNCDs, 37% of whom were under age 70. Shared risk factors for CNCDs are tobacco consumption, harmful use of alcohol, poor diet, and physical inactivity (127, 128). **Cardiovascular diseases** (CVDs) are the leading cause of death from CNCDs (129). Hypertension is a shared risk factor for other chronic diseases. Of premature deaths from CVDs, 30% occur in the poorest quintile, with only 13% corresponding to the richest quintile. Premature deaths from CVDs are more frequent among men than among women and occur at the age of greatest productivity, causing the greatest economic and social damage (130).

Between 2000 and 2007, mortality from CVDs in the Region dropped by 19%, from 207.8 deaths per 100,000 population to 167.9 (rates adjusted in 2007), with differences seen from subregion to subregion. During the same period, while North America experienced a 25% decline, or a drop from 192.3 deaths per 100,000 population to 144.2, the non-Latin Caribbean experienced a 14% drop, from 296.4 deaths per 100,000 population to 254.9. Latin America also experienced a 14% drop between 2000 and 2009, from 229.9 deaths per 100,000 population to 191.4. Although the reductions observed in North America and Latin America were linear and statistically significant, the decline in the non-Latin Caribbean was statistically significant but nonlinear (131, 132).

**Mental disorders** in LAC, despite low mortality rates, are responsible for nearly 22% of the total burden of disease as expressed in disability-adjusted life years (DALYs) (12, 133). Depression and alcohol-related disorders rank first and second place, respectively, in terms of disease burden (134). While most countries have made great progress in reforming services and protecting the human rights of people with mental disorders, challenges persist, particularly the underreporting of cases and the gap in access to, and quality of, treatment. Countries allocate less than 2% of their health budgets to mental health, and 67% of that percentage is earmarked for psychiatric hospitals (135).

**Malignant neoplasms** as a whole are the second leading cause of death in the countries of the Americas, with the most common sites being cancers of the lung, stomach, colon, and breast. Cancer incidence—including incidence of cervical cancer among women and prostate cancer among men—is highest in low- and middle-income countries (129). The incidence of malignant neoplasms depends on complex interrelationships among biological, genetic, and lifestyle factors; it also encompasses social determinants such as poverty, education, employment, housing, transportation, pollution, and nutrition. Another important factor to consider is whether exposure to risk factors is voluntary or involuntary. The weight of each of these factors varies by degree and intensity of exposure and by social gradient. These factors are not always sufficiently characterized, nor are the interconnections among them sufficiently well established (136). In the Americas, cancer deaths are on the decline. From 2000 to 2007, age-adjusted mortality from malignant neoplasms fell by 8%, from 131.3 deaths per 100,000 population to 121.3 (131, 132). Relying on available knowledge and technology, estimates indicate that between 50% and 60% of all cancer deaths can be prevented, but achieving this calls for embarking on many regulatory measures, as well as encouraging lifestyle changes throughout the lifecourse. Early detection and effective treatment also are critical for improving cancer patients' quality of life (136).

**Diabetes** causes around 242,000 deaths annually in the Region; estimates show that 22,000 (8%) of these deaths are avoidable, considering that they occur among people younger than 50 (137). The pattern of mortality from this disease varies among countries. While the rate of diabetes incidence tends to be declining in some countries (e.g., Argentina, Canada, and the United States), it is rising in others (e.g., Cuba, Ecuador, El

Salvador, and Mexico). It is important to keep in mind that, in many deaths in people with diabetes, the disease is not recorded as the underlying cause of death; rather, these deaths are recorded as being due to other diseases or associated chronic complications such as cardiovascular or renal disease (138). Forecasts indicate that the number of people with diabetes in the Americas will increase from 62.8 million in 2011 to over 91 million in 2030. This increase could be lowered if prevention measures were strengthened, the obesity epidemic curbed, and better results obtained in health care for those who are already suffering from the disease (139).

Reports indicate that in the Region of the Americas, reducing tobacco consumption by 20% and salt intake by 15%, together with treating patients at high risk of CVDs with a combination of appropriate drugs, could prevent up to 3.4 million deaths at reasonable cost in the space of 10 years (140). This type of evidence helps strengthen strategies so that countries, guided by well-informed leadership on the part of the ministries of health, can continue to promulgate multisectoral policies promoting responsible, prevention-based individual self-care and improving the availability of essential medicines.

At the regional level, deleterious changes in food consumption and eating habits are rapidly unfolding; these shifts affect broad sectors of the population, especially low-income and less-educated segments of the population (141). An alarming epidemic of **overweight** and **obesity** has been caused by the consumption of high-calorie processed foods rich in fats, sugars, and salt, coupled with a significant decrease in fruit and vegetable consumption and a reduction in physical activity. Regionwide, estimates indicate that between 50% and 60% of all adults, between 7% and 12% of all children under 5, and over one-third of all adolescents are either overweight or obese (142). Even worse, forecasts indicate that this figure will rapidly rise, reaching 289 million (or 39% of the total population) by 2015. In almost all countries, the problem is greater among women (143). An analysis of 57 prospective studies points out that every excess 5 kg/m<sup>2</sup> on the body mass index (BMI) is associated with an increase in mortality of nearly 30% (40% from CVDs, 60%–120% from diabetes-related complications, 10% from cancer, and 20% from chronic respiratory illnesses) (144).

Although the prevalence of **chronic malnutrition** in the Region is declining, nutritional deficits persist in some countries. For example, in Guatemala, half of all children show nutritional deficiencies, and in Honduras, one-third

do—the great majority of them in both countries are concentrated in the poorest quintile of the population (145, 146). This constitutes an extraordinary vulnerability in disasters, such as droughts that affect isolated rural populations who live in a subsistence economy.

Even acknowledging that several countries have seen reductions in **tobacco consumption**, its prevalence Regionwide remains as high as 22%, near the global average of 24% (147). South America shows the highest rates—44% among men and 30% among women (12). The Framework Convention on Tobacco Control has been ratified by 29 countries of the Region (148). Given the latency between exposure to smoking and its effects, the health impairments caused by tobacco use are expected to continue to rise in the Region for at least the next two or three decades (149). **Alcohol** consumption in the Americas is an important risk factor for disease and disability, one related to at least 1.3% of all deaths (150).

The United Nations High-level Meeting (UNLHM) on Noncommunicable Diseases, held in New York in September 2011, represented an exceptional global and regional milestone. The political declaration issued during this meeting recognizes that CNCs pose an enormous challenge for every country's socioeconomic development, and states that intersectoral alliances combining resources and competencies must be an inherent part of the solution. Such partnerships should include not only the public sector, but also nongovernmental organizations, professional associations, academic institutions, and the private sector (151). Several of the Region's countries—among them Argentina, Brazil, Canada, Mexico, and Trinidad and Tobago—have established national mechanisms for multisectoral work. The Pan American Alliance on Nutrition and Development is another mechanism that enables the launching of intersectoral programs to address the problem of obesity and noncommunicable diseases (141).

Mortality from **external causes** is a growing public health problem in the Region, and one that mainly affects 15–44-year-olds. Between 2000 and 2007, the death rate from external causes among men rose from 229.1 per 100,000 population to 237.8; women, although showing lower rates, also experienced a rising trend, from 63.2 per 100,000 population to 69.9 (152, 153).

Most of these deaths were due to accidental causes (37%), traffic accidents (27%), and violence (13%). The remaining 23% were due to suicide (10%), events of undetermined intent (9%), and other causes (4%) (153). Were this trend to continue, traffic accidents will be the

third leading cause of disease burden in the Region by 2020. In an effort to stem this tide, countries have adopted measures along two lines of action. The first involves undertaking structural changes in road safety through a long-term vision and a strong commitment on the part of all actors; this approach is intended to overcome the isolated and fragmented responses of the past. The second involves proposing a set of objectives, goals, and deadlines aimed at reducing accidents, including developing indicators that will make it possible to systematically evaluate progress. Colombia, Costa Rica, and the United States have successfully embarked on this course (154).

Some 600,000 **homicides** per year are reported in the Region, with a frequency 10 times higher among men than among women (12). These events show a marked social gradient defined by education. In the Americas, half of all homicides are concentrated in the least-educated quintile of the adult male population—with 73 times more killings in that group than in the most-educated quintile (152).

The leading causes of **violence** are associated with such factors as prevalent social inequities, unemployment, increased population density, and urban segregation where wealth and extreme poverty coexist. The growth in drug trafficking and organized crime also helps to fuel this 21st-century epidemic, increasing its severity (155). Violence-related expenditures drain the budgets of the health, social, and judicial sectors with costs to treat survivors and to apprehend the perpetrators. The Inter-American Development Bank (IDB) estimates that the financial costs of violence in Central America alone amount to US\$ 6.5 billion, equivalent to 8% of that subregion's annual GDP—half of these costs are related to health. Violence also wrests power from the citizenry: it erodes social cohesiveness and, by instilling fear and restricting a person's freedom to move about freely and safely, it limits society's capacity to forge partnerships and form movements that could strengthen democracy (156).

Between 140 and 180 million people in the Region live with some level of **disability** that limits their personal capabilities and quality of life (157, 158). The number of persons with disabilities is increasing due to population growth, the aging of the population, and the rise of chronic diseases, as well as the toll taken by accidents, disasters, acts of violence, poor eating habits, and substance abuse. Blindness and visual impediments are frequently associated with poverty and marginalization. Estimates indicate that in rural areas up to 88% of all cases

of blindness are curable, as is the case with cataracts where there has been no surgical intervention (159).

## THE HEALTH SYSTEMS

The Region's health systems are characterized by their segmentation, manifested by a variety of financing and affiliation types. The supply of health services also is fragmented, with many different institutions, facilities, or units that are not integrated into the health care network. Both of these characteristics increase the inequity in access and reduce efficiency in terms of health care and service management (160).

The underlying reasons for this segmentation and fragmentation are complex; they frequently reflect systemic factors of a social, political, and economic nature that have been accumulating over time and have passed down from one generation to the next. In this context, the health services themselves become an important health determinant. They have the potential to help improve equity insofar as they advance universal coverage financed through progressive public resources that reduce out-of-pocket expenditures to a minimum and eliminate discriminatory practices and differential quality of care (41).

In recent years, the Region's countries have progressed towards the **universalization of health systems** through policy reforms and changes that emphasize the right to health. That said, several challenges persist, particularly in how to advance towards comprehensive service coverage, reduce copayments and other out-of-pocket expenses, and guarantee similar benefits to all. Other important challenges include improvements to the quality of care and tailoring the services' response capacity to health care demand (161). Many of these issues remain unresolved and require strengthening (83, 161).

The Region recently celebrated the 30th anniversary of its launch of the **primary health care** (PHC) strategy and the goal of Health for All (162, 163, 164). These celebrations reaffirmed the importance of effectively implementing the values and principles of the PHC strategy, including its comprehensive and multisectoral approach. In some countries of the Region, PHC practice has been limited to offering of a first level of care, frequently to low-income groups, and only includes a few health promotion and preventive activities. In this approach, the response capacity is compromised during health crises (165).

It is encouraging to see, however, that several countries of the Region are at different stages in their efforts to make PHC a substantial aspect of their efforts to renew their health models, and are not increasing resources to simply continue to do “the same old thing.” These countries, instead, are trying to make PHC a component of a service network that is better equipped to respond to new demands generated by demographic, epidemiological, social, technological, and cultural changes, among others (165, 166).

The most recent period has been characterized by a sustained dynamism in developing **human resource** policies, strategies, and plans in tune with global, regional, and national policies. In the Region, there is now broad consensus on the steering role of the “health authority” with regard to human resources. This implies seeking strategic coherence in the organization of health systems and services, on the one hand, and building a close relationship with training institutions, on the other. In more than one case, the most outstanding result has been an effective expansion of coverage through multidisciplinary family and community health teams, who are responsible for a given population and territory in rural, urban, outlying, and remote areas (167, 168).

Even when acknowledging that the Region’s countries have made progress in this area, they have not yet achieved a satisfactory distribution of their health workforce. Improving governance with the education sector in order to reduce some of the prevailing incoherencies and imbalances remains a critical challenge. The inordinate hierarchy that prevails among the different professional categories, whereby collaborative practices are nonexistent, also is an issue to be addressed (169, 170). In some countries, reforms and programs face structural problems that are difficult to resolve. A case in point is the massive emigration of health workers, frequently recent graduates, from the countries of the Caribbean (171).

In the United States, more than 15 million people were working in the health sector in 2009, representing 11% of the country’s total workforce (172). This included 784,000 doctors, of whom 305,000 were devoted to providing first-level care. However, if there is to be compliance with the Affordable Health Care Act by 2015, projections indicate a shortage of some 63,000 physicians that will progressively increase until 2025 (173).

Throughout the history of LAC, expanding health service coverage has been the main objective for several countries. Evidence indicates, however, that it is **quality of care** that is pivotal for maintaining and improving individual and population health (174).

From 2005 to 2010, **total health expenditure** in LAC as a percentage of the GDP rose from 6.8% to 7.3% (175, 176). During the same period, average **public health expenditure** in LAC increased from 3.3% to 4.1% of GDP, while in Canada it rose from 7.1% to 8.4% (177) and in the United States, from 6.4% to 8.0% (178). Also during that period, **out-of-pocket health expenditures** in LAC dropped from 3.5% to 3.2% of GDP (175, 176). In 2010, **total per capita health expenditure** ranged from US\$ 90 in Bolivia to US\$ 2,711 in the Bahamas (176), US\$ 5,499 in Canada (177), and US\$ 8,463 in the United States (178). Health expenditures related to purchasing goods and services were over eight times higher in the United States than in LAC (176).

Although per capita expenditure is, indeed, relevant, no linear relationship exists between the amount spent and health outcomes (166). And there are other variables that carry great weight, among them social protection policies (or a lack thereof), health system management and organization, the scope of public health programs and health promotion activities, and regulation of the health market (174).

**Direct out-of-pocket expenditures** have had an impoverishing effect on families. Experience indicates that providing universal coverage and pooling funds constitute the best options for protecting families’ finances when they face catastrophic medical expenses (174). In the United States, the cost of health insurance policies rose by 72% between 2000 and 2008, financially affecting employers and employees; out-of-pocket expenditures increased by 44% (179). In 2010, health expenses incurred by people with CNCDs represented 75% of all health expenditures (180). Hospitals that made up 1% of all health facilities spent 35% of the entire budget (181). Furthermore, as a result of the economic crisis, the population without health insurance in the United States rose from 15.4% in 2008 to 16.7% in 2009 (46.3 and 50.7 million persons, respectively) (182).

Although in the past five years LAC countries have moved forward in formulating and implementing **pharmaceutical policies**, only a few of them have updated them (183). Including **drugs** as part of health guarantees is critical to ensuring real universal access to health services. In 2008, estimates show that in LAC, average annual per capita out-of-pocket expenditures for medicines amounted to US\$ 97, ranging from US\$ 7.50 in Bolivia to over US\$ 160 in Argentina and Brazil. The use of generic drugs in the Region has not advanced as much as desirable, partly due to a lack of incentives and adequate regulatory frameworks (183, 184).

## MANAGING DISASTERS AND HEALTH ALERTS

Between 2006 and 2010, almost one-fourth of the world's disasters occurred in the Americas (442 out of 1,915), affecting 48 million people in the Region (who made up 5% of the global total of 904 million people who suffered the impact of such events). The economic impact of these disasters on the Region exceeded US\$ 157 billion, equivalent to 34% of the world's total losses. More than half of these costs involved tropical storms (US\$ 87.7 billion) (185).

If lives are to be saved during large-scale emergencies, it is critical for the health services to continue operating effectively. Between 2000 and 2009, more than 45 million people in the Americas remained without health care for months, and sometimes even years, due to damages directly caused by a disaster (186). To this end, intersectoral efforts must be pursued to guarantee safe hospitals (187). In recent years, the Region underwent three major events: in 2009, the rapid spread of the influenza A(H1N1) pandemic and the attendant uncertainty as to its potential impact, and in 2010, the devastating earthquake that severely affected Haiti, followed by the cholera epidemic that spread throughout the island of Hispaniola.

For the most part, the Region's countries can now respond to minor disasters in a self-sufficient manner; that said, external assistance will always be necessary during major disasters. An important lesson learned in the aftermath of Haiti's was that, in order to improve future relief activities in low-income countries, the international community—as part of its overall support vis-à-vis risk reduction and disaster preparedness—needed to help strengthen the governments' coordination capacity (188). Haiti continues to require international solidarity; the commitments made need to be met. Despite the two years that have passed since the earthquake and the cholera epidemic, the challenge of rebuilding the country still remains.

## INFORMATION, RESEARCH, AND HEALTH TECHNOLOGY

The countries of the Americas differ widely in terms of the coverage and quality of their **health information systems** (HIS). A 2008 study revealed that 7 out of 26 countries have improved the coverage of their vital statistics registries, exceeding 85% coverage at the national

level; 7 other countries only record up to 50% of these events, or one of every two births or deaths. In terms of data quality, 19 (59%) of the countries studied provided good data, and 7 (22%), poor or very poor data. Two Central American countries and 14 Caribbean countries were excluded from the study because their available mortality data had serious deficiencies (189).

In regard to infant and maternal mortality, analysis of available data shows differences in the way this indicator is measured; major differences in morbidity, resource, and service statistics limit their comparability. Given the importance of these issues, there is a need to improve data generation, coverage, and quality, as well as analysis capabilities (189).

In recent years, as a result of the growing number of research projects and the expansion in the use of information technologies and networks, significant advances have been achieved at the global level in **information and knowledge generation**. The resulting evidence has opened the door for innovations in policy and improvements in programming content, not only for preventing and controlling diseases, but also for extending the scope of health promotion.

The so-called “social web” (Web 2.0), with its philosophy of citizen empowerment, has enabled users to mobilize, in real time, opinions and experiences through collaborative Internet venues (e.g., Facebook, LinkedIn, Twitter, or YouTube). That said, the digital divide continues to be one of the main problems in the Region of the Americas. Socioeconomic limitations, the ongoing technological innovation, insufficient infrastructure, and the lack of digital literacy are some of the leading factors that have helped widen this gap (190).

The **Virtual Health Library** (VHL) is a success story (191) which is present in more than 30 countries of the Region. VHL acts as a facilitating mechanism, mediating access to scientific and technical information on a wide array of areas of interest in the field of health. These range from teaching, health promotion, and health care to formulating and evaluating evidence-based policies and interventions. The growing use of LILACS (Latin American and Caribbean Health Sciences Literature bibliographical database) in the Cochrane database also deserves mention: in 2011, LILACS accounted for 18% of all Cochrane reviews (192).

Between 1996 and 2010, bibliometric studies conducted at the global level on scientific output in all categories showed that only five of the Region's countries ranked among the first 50 places: 1st place, the United

States; 7th place, Canada; 15th place, Brazil; 28th place, Mexico; and 36th place, Argentina. Five countries also ranked among the top 50 in subjects related to medicine: 1st place, the United States; 7th place, Canada; 16th place, Brazil; 31st place, Mexico; and 47th place, Cuba. In topics related to biochemistry, genetics, and molecular biology, the ranking was as follows: 1st place, the United States; 8th place, Canada; 17th place, Brazil; 29th place, Argentina; and 32nd place, Mexico. In analyzing scientific production in subjects related to epidemiology, however, the number of countries of the Region that placed among the first 50 increased to 7: 1st place, the United States; 3rd place, Canada; 17th place, Brazil; 30th place, Mexico; 35th place, Chile; 44th place, Colombia; and 47th place, Costa Rica (193). Between 1960 and 2010, the number of publications in LAC on epidemiology-related subjects showed a sustained growth of 20% per decade. Together, Brazil, Mexico, Argentina, and Chile produced 65% of the nearly 47,000 publications indexed through MEDLINE (12).

In most LAC countries, research on subjects related to public health and epidemiology depends, to a great extent, on external financing, not only to start up new research projects but also to sustain long-term ones. This funding has stimulated North-South research projects. The diaspora of researchers out of LAC is another issue that has been insufficiently analyzed (12, 194).

Despite limitations and differences in the availability of resources among countries, LAC has highly qualified researchers who are interested in promoting South-South cooperation projects. Similarities in terms of culture, language, and shared challenges favor these exchanges. Initiatives such as SciELO (Scientific Electronic Library Online), created in 1997, offer open access to publications from selected journals in Spanish, Portuguese, and English. These efforts have helped to improve the visibility of Latin American scientific output, as well as to facilitate information exchange and to generate joint research projects. Brazil and Cuba, for example, have had successful experiences in implementing South-South collaboration projects on subjects related to biotechnology development, to the benefit of both countries (12).

In general, research and development projects in the different fields of health tend to respond to market-driven needs. In LAC, [the number of new clinical trials increased fourteen-fold between 2005 and 2010, from 51 to 732](#) (195). Although such growth represents notable progress, other sorts of projects also need to be promoted, particularly those that can help bridge the knowledge

gap in areas prioritized according to regional public health needs.

Given the prevailing limitations and the need to bridge gaps, it will be necessary to continually promote the development of shared research projects backed by internationally recognized protocols. It also will be necessary to broaden and deepen the relationships between researchers and decision-makers as much as possible, making use of communication technologies available through open access. In turn, investment in health research should increase, taking into consideration greater public-private participation (196).

Within an ever-expanding globalized reality, it is critical to ensure access to global public goods in areas such as the environment, health, culture, and peace. In this context, free, open access to information and knowledge is essential (197). Strengthening research capacity is one of the most cost-effective and sustainable proposals for effectively promoting health and development (198).

Based on cost-effectiveness studies, several of the Region's countries have improved the selection and the integration of **health technologies** to suit their national needs. Moreover, countries have collectively established networks that promote joint evaluations and information exchange on this matter (199). Considering the ongoing process of technological innovation, these types of networks will gather strategic importance in providing better, and more timely, scientific and technical support to the generation of new policies and regulations on the use and application of health technologies.

The trade in health products is directly related to and regulated by the different provisions included in negotiations that culminated in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) between the World Health Organization (WHO), the World Intellectual Property Organization (WIPO), and the World Trade Organization (WTO) (200). Within this legal framework, and as a way to preserve the interests of public health, several mechanisms have been adopted to give the necessary flexibility to the TRIPS Agreement. Through these mechanisms, the countries that lack installed production capacity have been able to find solutions that give them access to health inputs (201). In recent years, negotiations and lobbying initially transcended the decisions and agreements ratified in Doha (202). Nevertheless, the interests of public health concerning access to medicines and technologies were restored by new initiatives—especially through the WHO Global Strategy and Plan of Action on Public Health, Innovation and

Intellectual Property (203). Such initiatives ensure a certain balance in negotiations on the topic (204).

## ETHICS, HUMAN RIGHTS, AND HEALTH

Ethics and health are highly important issues that are continually evolving, insofar as paradigms come under review and the limits of knowledge and technology are expanded. The Region's countries have advanced in these areas, especially in basic issues, by setting up "ethics committees." These committees' mission has been to issue standards that guarantee individual rights and safety—particularly of the most vulnerable persons—by avoiding unnecessary risks associated with clinical research projects and/or projects involving medical practice. There are many other challenges that also require attention, however.

One emerging issue deals with the use of available resources for health, considering the premise that resources are always limited and needs are always endless. Thus, maximizing benefits is a must. This subject is no longer exclusively limited to the area of distributive justice and has become an ethical issue. Among current ethical debates that cannot be ignored are the questions of how priorities are to be set and how decisions are to be made regarding who gets what benefits and who does not. Likewise, the question of what proportion of funds are to be allocated to basic activities and what proportion to tertiary care is an ongoing dilemma. Equity in resource allocation is a complex issue and one not exempt from controversies, given that the principles of efficiency, equity, and ethics do not always coincide (205).

Other discussions relate to issues of "death with dignity" in terminal and irreversible cases, and to issues arising from technological innovations that generate new uncertainties in their individual and their collective applications (206). Current advances in genomics, proteomics, and cellular biology—that at times seem to challenge the very laws of evolution—are doubtlessly relevant. Their potential ranges from generating new individualized therapeutic agents based on the patient's own genetic and metabolic profiles to using stem cells capable of replacing tissues and organs (207). Although these and similar innovations do promise major improvements in treatment effectiveness, they can also drive up the price of services—and can create regulatory challenges. Likewise, new dilemmas have arisen regarding equity of access to these potential benefits, where the discussion is complex and at times paradoxical. On the one hand, the world needs

innovations if it is to continually advance; on the other, the challenge remains of how to ensure that sizeable population groups have access to the most basic health services. These subjects raise major expectations and controversies, with no end seen to the debate.

Several of the Region's countries hold that health is both a human right and a public good. To that end, several have made progress in complying with norms, standards, and principles related to this issue. In this context, national courts of law are intervening ever more frequently in conflict resolution. The search for a judicial solution to health care issues has become the citizen's recourse in demanding the right to health. However, the scope of these processes still requires fine-tuning, given the ongoing debate between the health and judicial sectors and the continuing search for consensus on these procedures within society as a whole (208).

## GLOBAL HEALTH

The concept of global health is currently expanding. In part, this is because health is considered to be a key element for sustainable development and in the fight against poverty, as well as a vital component for more effective governance in terms of global security. In fact, health has become a strategic tool in diplomacy and international relations; it is one of the fields showing greatest growth and interdependence in scientific, technological, economic, and commercial areas alike. The growing importance of health at the global level has generated an explosion of new actors and international initiatives, each trying to play the leading role in advancing different agendas. During the past two decades, global health's architecture and operations have changed dramatically. Nevertheless, such a heterogeneity of actors and interests—despite having created new opportunities for mitigating health problems—has also promoted fragmentation, redundancies, and gaps that make governance increasingly difficult and complex (209).

As an offshoot of this broad universe of interests, the flow of financial resources allocated to global health has been steadily rising. Recent data show that, despite the global financial crisis, development assistance for health continued to grow between 2009 and 2011 at an annual rate of 4%, reaching a total of US\$ 27.73 billion (210). WHO is no stranger to these challenges; by mandate of its Governing Bodies, it has initiated a reform process to strengthen its capacity to respond to new health challenges in the 21st

century, with the necessary flexibility to respond as efficiently as possible. The response ranges from how to cope with the unfinished agenda and still be able to eliminate lingering health problems to how to tackle emerging threats capable of altering global public health (211, 212). In light of the growing complexity of health agendas, WHO and PAHO have become preferential forums for facilitating dialogue and convergence among a multitude of interests and actors as they pore over the ethical, political, and social dimensions of health.

In this same sense, diverse issues interconnected with health are periodically analyzed to one depth or another in multiple forums held by agencies from both the Inter-American and United Nations systems. Moreover, at least 10 regional and subregional integration entities also analyze, propose, and articulate joint activities aimed at strengthening various priority health fields. Preference is given to surveillance; disease prevention and control; extending coverage and making health services universal; developing and managing human resources; providing access to essential medicines and technological innovation in health; strengthening reproductive health programs; and controlling risks related to, for example, basic sanitation and other health determinants.

At the subregional level, the Andean Community of Nations (CAN), the Caribbean Community (CARICOM) and common market, the Southern Cone Common Market (MERCOSUR), the Central American Integration System (SICA), the Amazon Cooperation Treaty Organization (ACTO), and the Summit of the Americas have all played noteworthy roles. More recently, the Union of South American Nations (UNASUR), the Bolivarian Alliance for the Peoples of Our America and its People's Trade Agreement (ALBA-TCP), and the Community of Latin American and Caribbean States (CELAC) have also become involved.

At the intraregional level, LAC also has prioritized health-related topics in different dialogue forums and through integration mechanisms. Among these are the Ibero-American Summit, the European Union–Latin America and Caribbean Summit (EU-LAC), and the Forum for East Asia–Latin America Cooperation (FEALAC) (213).

## PROSPECTS AND CONSIDERATIONS

The first decade of the 21st century has been characterized by vast population movements coupled with a growing

exchange of goods and products and an ever-growing number of health alerts. These scenario seems to reflect a similar historic moment, though of different proportions, to that which occurred at the beginning of the 20th century, when it became necessary to develop greater international capacity in the wake of health challenges resulting from the growing migration of populations from Europe, Asia, and Africa to the Americas. This so-called “Great Immigration” is associated with an increase in transcontinental trade, along with a high prevalence of infectious and vector-borne diseases. These very circumstances created the context that gave rise to the Pan American Health Organization (214). To the extent that the countries of the Americas have evolved, so have their processes of regional integration, including **Pan Americanism** as an expression of willingness on all fronts—diplomatic, political, economic, social, and cultural—to create and promote relations, associations, and cooperation among the countries of the hemisphere in various areas of mutual interest (215, 216).

There is consensus on the fact that public health is “the science and art of preventing disease, prolonging life, and promoting health ... through organized community effort” (217), based on the principle that measures taken today will protect the population's health and well-being tomorrow. Unlike care services—where the main responsibility is to solve present problems stemming from risk accumulation and, most especially, to deal with disease—public health practice is aimed at reducing or eliminating any risks that in the future could affect the community's and the individual's health. Public health's operational emphasis leads to joint activities, recognizing that society must make a commitment before it will be able to change the course of events. On the one hand, the knowledge and evidence of the past enable us to build possible trends and scenarios for the future—and, consequently, to develop and implement possible solutions. On the other, societies' values determine what is desirable and—to the extent possible—how to set priorities and goals to attain it. This dialectic, reiterative process makes us responsible not only for present generations but also for future ones (218). Moreover, the pillars that uphold health consist of sound principles of ethics and justice, which reaffirm that no human being is inherently superior to another. Such precepts involve intergenerational responsibilities that grant the same rights to tomorrow's generations as to today's (219).

It is well-known that current health levels are the result of public policies and personal decisions both past



and present. An example of this intergenerational influence is the current phenomenon of global warming: even if the concentration of greenhouse gases were to be stabilized today, its cumulative effects on the world's ecosystems would continue, because it is too late to avoid all of the impact of global environmental changes. Nonetheless, we still could act more effectively and efficiently by adopting damage-control measures (220). More and more, health is acknowledged to be simultaneously an indicator of, a product of, and an input for sustainable development. By definition, the concept of sustainable development involves a vision for the future, emphasizing intergenerational responsibility in such a way that current generations do not compromise future generations' ability to meet their needs (221). The fact that this paradigm has emerged implies that, if we wish to advance our health agendas, we must act not only to modify the immediate, short-term (proximal) causal factors, but also to firmly emphasize the importance of tackling intermediate and long-term (distal) factors whose effects will only become fully realized in the medium and long term.

The public health approach that has held sway so far has been based on a causality model that strives to modify proximal causal factors through cost-effective and, wherever possible, short-term interventions (218). Its advantage is that it can easily identify at-risk populations and can simplify the definition of policies and interventions. A successful example of the efficiency and effectiveness of this model is the immunization program: this program has made it possible to eradicate smallpox worldwide and—should efforts proceed as planned—will do the same with polio in the near future. Nevertheless, this model seems somewhat reductionist when applied to other public health problems, such as chronic disease prevention and control.

Dealing with hypertension, sedentary lifestyles, obesity and overweight, and tobacco consumption as proximal causes of CNCDs gathers importance, in that it, to some extent, resolves the disease and mortality burden. The sustainability of this notion, however, depends on acting on intermediate and distal causal factors and calls for multi- and intersectoral interventions that can bring about medium- and long-term change by modifying the underlying behaviors behind the aforementioned proximal causes. These “causes of the causes” are essentially structural. They can be changed, but only under certain conditions—by reviewing and reforming those policies that determine the conditions under which people are

born, grow, live, work, and age, in order to progressively and effectively reduce avoidable inequities that unfairly undermine the health of individuals and groups, regardless of their ethnic makeup, sexual orientation, beliefs, or political affiliations (222).

Despite philosophical differences between the two approaches—PHC, on the one hand, and the social and environmental determinants of health, on the other—their underlying principles are increasingly converging and becoming complementary. Their joint tenets now make it clear that health is more than the absence of disease, and that the emphasis is on reducing inequities and on how PHC and the social and environmental determinants of health are relevant in both poor and rich countries. Moreover, they promote community empowerment and foster multisectoral actions strategically steered by the health sector (223).

These new realities demand a progressive transformation of the health service delivery model, especially with regard to human resources. On the one hand, they make it necessary to establish multi- and interdisciplinary health teams at all levels of action. On the other, they call for an in-depth reorientation of human resource training and continuous education programs, such that these health teams can encompass the necessary abilities, attitudes, and approaches that will enable them to respond in a more comprehensive and coherent way to the challenge of caring for individual and collective health.

Ministries of health are faced with an ever-increasing number of challenges in the search for new ways to turn the principle of “health in all policies” into reality. At the same time, this complex search challenges the prevailing governance structure—not only in the countries (where ministries are organized along sectoral lines), but also within programs and international cooperation agencies (224).

If these types of multi- and intersectoral models and strategies are to move forward, methodological proposals will have to be partially renewed, as will the metrics that are to be used and the evidence that will be required to back up the necessary policies and actions. This approach will be subject to the requirement that information systems must be capable of establishing the necessary connections among policies, health determinants, and health risks. In this context, although evidence based on cost-effectiveness criteria is fundamental, it is also important to recognize the weight of perceptions and demands generated by different population groups, whose expectations, in turn, become a strategic input in defining new horizons for health at the national and international levels.

The Region of the Americas has made sustained progress in improving the health of its population. Clearly, there are still important gaps and emerging topics that the countries are attempting to resolve both individually and collectively. In light of the increased interdependence and globalization that characterize the current health situation, demographic and epidemiological changes continue to move forward in each country at different speeds. These changes advance concurrently with political, economic, cultural, techno-scientific, and other transformations whose short-, medium-, and long-term effects have yet to be sufficiently established or investigated. A door is opening to new opportunities for deliberation and action that, without doubt, are already part and parcel of the challenges to be faced by regional and global health agendas.

We live in a time of stark contradictions. The world that enjoys technologies of unimaginable sophistication is, at the same time, home to more than one million people who do not have enough to eat. While the world economy is advancing rapidly to new levels of productivity resulting from continuous improvements in technology, we also are destroying the environment. Despite the fact that educational levels are rising, we still face new crises associated with tobacco and drug use, depression, violence, and other problems that we attribute to living in a modern world. Income has not been justly distributed. The model of uneven economic distribution has brought along greater mistrust and insecurity that undermine everybody—even those who have supposedly benefited the most. This model of consumption strives to create artificial demands for all manner of things that are associated more with status than with real needs (225). As a by-product of the distortions and contradictions of the prevailing model of economic growth—which has backed the special interests of the privileged few and maximized short-term gains—three concomitant crises have sprung into being: an economic crisis, a social crisis, and an environmental crisis, which together have brought about a dire situation whose complexity humankind has never witnessed. Every one of these crises is onerous. They bring about human suffering, they are extraordinarily inefficient, and they squander investments and waste resources that will be needed for future development (226).

In order to meet this enormous challenge, goals, targets, and strategies will have to be redefined, so as to be able to purposely and proactively redirect ideas for a sustainable development that can narrow the gaps between nations and social groups. It will mean renewing

governance at all levels of decision making and implementation. It also will require that the building of common values in a democratic and participatory way be encouraged, such that they become reality in a new roadmap for action with a more generous, broad, inclusive, and peaceful vision sustainable in the long term.

The urgent need to move forward in constructing shared global public goods for all humanity will require international organizations to take on additional responsibilities. Such a commitment has multiple implications: from understanding and applying issues related to national sovereignty to the reform of the very United Nations system itself—including a progressive thematic convergence among multilateral and bilateral cooperation agencies that will enable them to improve the levels of efficiency and effectiveness needed to do their work.

These challenges apply to health. If we are to advance towards more integrated health models, with more sustainable benefits, we also need to strategically review the very architecture and operations of health governance at all levels—from the local to the national to the international and vice versa. It is fundamental to continue advancing towards improving sectoral efficiency, towards reducing segmentation and fragmentation in services, and towards strengthening new multi- and intersectoral proposals aimed at reducing not only short-term but also medium- and long-term risks. Such achievements will be reached to the extent that new—and more inclusive—governance models are introduced, and that they include multiple sectors and involve the participation of civil society, academia, and the private sector. Such models will allow for better coordinated and more convergent policies, programs, and actions to be generated. The health of current and future generations alike depends on this, making these issues relevant to all people, not just to governments.

## REFERENCES

1. United Nations, Department of Economic and Social Affairs. World Population Prospects: The 2010 Revision [Internet]; 2011. Available at: <http://esa.un.org/unpd/wpp/> Accessed on 12 January 2012.
2. Organización Panamericana de la Salud/Organización Mundial de la Salud. Datos básicos en salud. Mortalidad [Internet]; 2011.

- Available at: <http://esa.un.org/unpd/wpp/index.htm> Accessed on 12 January 2012.
3. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Datos básicos en salud. Fecundidad [Internet]; 2011. Available at: <http://www.paho.org/Spanish/SHA/coredata/tabulator/newTabulator.htm> Accessed on 12 January 2012.
  4. Macro International Inc. Measure DHS STATcompiler [Internet]; 2011. Available at: [www.measuredhs.com/pubs/pdf/CS20/05Chapter05.pdf](http://www.measuredhs.com/pubs/pdf/CS20/05Chapter05.pdf) Accessed on 12 January 2012.
  5. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Con un envejecimiento saludable, los adultos mayores pueden ser un valioso recurso social y económico. Día Mundial de la Salud 2012. Press release [Internet]; 2012. Available at: [http://new.paho.org/hq/index.php?option=com\\_content&task=view&id=6444&Itemid=39366&lang=es](http://new.paho.org/hq/index.php?option=com_content&task=view&id=6444&Itemid=39366&lang=es) Accessed on 12 January 2012.
  6. World Bank. Population Aging: Is Latin America Ready? [Internet]; 2011. Available at: <http://external.worldbankimflib.org/uhtbin/cgisirsi/x/0/0/5/?searchdata1=885313%7Bkey%7D> Accessed on 12 January 2012.
  7. Lancet. Grey matter: ageing in developing countries [Internet]; 2012. Available at: [http://www.lancet.com/journals/lancet/article/PIIS0140-6736\(12\)60541-8/fulltext](http://www.lancet.com/journals/lancet/article/PIIS0140-6736(12)60541-8/fulltext) Accessed on 12 January 2012.
  8. Comisión Económica para América Latina y el Caribe. Población y salud en América Latina y el Caribe: retos pendientes y nuevos desafíos [Internet]; 2010. Available at: <http://www.un-ngls.org/spip.php?article2440> Accessed on 12 January 2012.
  9. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Situación de salud en las Américas. Indicadores básicos 2010 [Internet]; 2010. Available at: [http://new.paho.org/hq/index.php?option=com\\_docman&task=doc\\_download&gid=9048&Itemid=](http://new.paho.org/hq/index.php?option=com_docman&task=doc_download&gid=9048&Itemid=) Accessed on 12 January 2012.
  10. World Health Organization. Trends in maternal mortality, 1990 to 2010: WHO, UNICEF, UNFPA and The World Bank estimates [Internet]; 2012. Available at: [http://www.unfpa.org/webdav/site/global/shared/documents/publications/2012/Trends\\_in\\_maternal\\_mortality\\_A4-1.pdf](http://www.unfpa.org/webdav/site/global/shared/documents/publications/2012/Trends_in_maternal_mortality_A4-1.pdf) Accessed on 12 January 2012.
  11. Comisión Económica para América Latina y el Caribe. Transformaciones demográficas y su influencia en el desarrollo en América Latina y el Caribe [Internet]; 2008. Available at: <http://www.eclac.cl/publicaciones/xml/0/33220/2008-268-SES.32-CELADE-ESPANOL.pdf> Accessed on 12 January 2012.
  12. Barreto S, Miranda JJ, Figueroa JP, Schmidt MI, Muños S, Kuri-Morales PP, et al. Epidemiology in Latin America and the Caribbean: current situation and challenges [Internet]; 2012. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/22407860> Accessed on 12 January 2012.
  13. United Nations Human Settlements Program (UN-HABITAT). State of the World Cities Report 2010–2011. Cities for All: Bridging the Urban Divide [Internet]; 2011. Available at: <http://www.unhabitat.org/content.asp?cid=8051&catid=7&typeid=46&subMenuId=0> Accessed on 12 January 2012.
  14. United Nations Human Settlements Program (UN-HABITAT). State of the World's Cities Report 2006/2007 [Internet]; 2007. Available at: <http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=2101> Accessed on 12 January 2012.
  15. Malan P. Healthy People, Healthy Cities, Healthy Economies. Project Syndicate. A World of Ideas [Internet]; 2012. Available at: <http://www.project-syndicate.org/commentary/healthy-people—healthy-cities—healthy-economies> Accessed on 12 January 2012.
  16. United Nations, World Tourism Organization Network [Internet]; 2012. Available at: <http://americas.unwto.org/es> Accessed on 12 January 2012.

17. Marks JS. Preventive care. The first step in the future of public health [Internet]; 2005. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/advanced> Accessed on 12 January 2012.
18. Inter-American Dialogue. Remaking the Relationship. The USA and Latin America [Internet]; 2012. Available at: <http://www.thedialogue.org/PublicationFiles/IAD2012PolicyReportFINAL.pdf> Accessed on 12 January 2012.
19. Fondo Monetario Internacional. Perspectivas de la economía mundial [Internet]; 2011. Available at: <http://www.imf.org/external/spanish/pubs/ft/weo/2011/02/pdf/texts.pdf> Accessed on 12 January 2012.
20. Comisión Económica para América Latina y el Caribe. Balance preliminar de las economías de América Latina y el Caribe [Internet]; 2011. Available at: <http://www.un.org/spanish/millenniumgoals/> Accessed on 12 January 2012.
21. Comisión Económica para América Latina y el Caribe. Panorama social de América Latina [Internet]; 2011. Available at: [http://www.eclac.cl/cgi-bin/getProd.asp?xml=/dds/agrupadores\\_xml/aes31.xml&xsl=/dds/agrupadores\\_xml/agrupa\\_listado.xsl&base=/dds/tpl/top-bottom.xsl](http://www.eclac.cl/cgi-bin/getProd.asp?xml=/dds/agrupadores_xml/aes31.xml&xsl=/dds/agrupadores_xml/agrupa_listado.xsl&base=/dds/tpl/top-bottom.xsl) Accessed on 12 January 2012.
22. United States Census Bureau [Internet]; 2010. Available at: <http://2010.census.gov/2010census/> Accessed on 12 January 2012.
23. Statistics Canada [Internet]; 2009. Available at: <http://www.statcan.gc.ca/daily-quotidien/090326/dq090326a-eng.htm> Accessed on 12 January 2012.
24. Banco Mundial. Base de datos. Ranking mundial del PIB [Internet]; 2012. Available at: [http://datos.bancomundial.org/indicador/NY.GDP.MKTP.CD/countries?order=wbapi\\_data\\_value\\_2010%20wbapi\\_data\\_value%20wbapi\\_data\\_value-last&sort=desc&display=default](http://datos.bancomundial.org/indicador/NY.GDP.MKTP.CD/countries?order=wbapi_data_value_2010%20wbapi_data_value%20wbapi_data_value-last&sort=desc&display=default) Accessed on 12 January 2012.
25. World Bank. World Development Indicators [Internet]; 2012. Available at: <http://data.worldbank.org/data-catalog/world-development-indicators/wdi-2010> Accessed on 12 January 2012.
26. Sabina A. Multidimensional Poverty Index [Internet]; 2010. Available at: <http://www.ophi.org.uk/policy/multidimensional-poverty-index/> Accessed on 12 January 2012.
27. Comisión Económica para América Latina y el Caribe. Anuario estadístico de América Latina y el Caribe, 2010 [Internet]; 2010. Available at: [http://www.iadb.org/intal/intalcdi/integ/integ1B.asp?sub\\_base=INTEG&az=1&za=1&desc=CONVERGENCIA&orden=anioD&desc\\_tipo=and&origen=A&clase=M1](http://www.iadb.org/intal/intalcdi/integ/integ1B.asp?sub_base=INTEG&az=1&za=1&desc=CONVERGENCIA&orden=anioD&desc_tipo=and&origen=A&clase=M1) Accessed on 12 January 2012.
28. Gasparini L, Cruces G, Tornarolli L, Marchionni M. A turning point? Recent developments on inequality in Latin America and the Caribbean [Internet]; 2009. Available at: [http://cedlas.econo.unlp.edu.ar/archivos\\_upload/doc\\_cedlas81.pdf](http://cedlas.econo.unlp.edu.ar/archivos_upload/doc_cedlas81.pdf) Accessed on 12 January 2012.
29. Birdsall N, Lustig N, McLeod D. Declining inequality in Latin America: some economics, some politics [Internet]; 2011. Available at: [http://www.cgdev.org/files/1425092\\_file\\_Birdsall\\_Lustig\\_McLeod\\_FINAL.pdf](http://www.cgdev.org/files/1425092_file_Birdsall_Lustig_McLeod_FINAL.pdf) Accessed on 12 January 2012.
30. Lustig N, Ortiz-Juárez E, López-Calva L. The decline in inequality in Latin America: how much, since when and why [Internet]; 2011. Available at: <http://econ.tulane.edu/RePEc/pdf/tul1118.pdf> Accessed on 12 January 2012.
31. Hailu D, Dillon SS. What explains the decline in Brazil's inequality? International Policy Center for Inclusive Growth and the Institute for Applied Economic Research. One Pager 2009; 89: 2.
32. McLeod D, Lustig N. Inequality and poverty under Latin America's new left regimes [Internet]; 2011. Available at: <http://econ>.

- [tulane.edu/RePEc/pdf/tul1117.pdf](http://tulane.edu/RePEc/pdf/tul1117.pdf) Accessed on 12 January 2012.
33. Cecchini S, Madariaga A. Conditional cash transfer programmes. The recent experience in Latin America and the Caribbean [Internet]; 2011. Available at: <http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/6/45096/P45096.xml&xsl=/dds/tpl-i/p9f.xsl&base=/mujer/tpl/top-bottom-estadistica.xslt> Accessed on 12 January 2012.
  34. Lopez-Calva LF, Lustig N (eds.). Declining Inequality in Latin America. A Decade of Progress? [Internet]; 2010. Available at: <http://www.voxeu.org/index.php?q=node/5148> Accessed on 12 January 2012.
  35. Economic Commission for Latin America and the Caribbean. Conditional Cash Transfer Programmes: The Recent Experience in Latin America and the Caribbean [Internet]; 2011. Available at: <http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/6/45096/P45096.xml&xsl=/dds/tpl-i/p9f.xsl&base=/dds/tpl/top-bottom.xslt> Accessed on 12 January 2012.
  36. Organización Internacional del Trabajo. Estadísticas laborales. LABORSTATA [Internet]; 2011. Available at: <http://laborsta.ilo.org/STP/guest#BAR05> Accessed on 12 January 2012.
  37. Organización de Estados Americanos, Comisión Interamericana de Mujeres. Plan estratégico 2011–2016 [Internet]; 2011. Available at: <http://www.oas.org/cim> Accessed on 12 January 2012.
  38. Organización Internacional del Trabajo. Panorama laboral. América Latina y el Caribe [Internet]; 2011. Available at: <http://br.bing.com/search?q=Panorama%20Laboral.%20Am%c3%a9rica%20latina%20y%20el%20Caribe.%20ISBN%20978%2092%2020325889%204.&mkt=pt-br&FORM=HPDWBR&DI=2883&CE=14.0&CM=SearchWeb> Accessed on 12 January 2012.
  39. United States, Bureau of Labor Statistics [Internet]; 2012. Available at: <http://data.bls.gov/timeseries/LNS14000000> Accessed on 12 January 2012.
  40. International Labour Organization. Children in hazardous work. What we know, what we need to do [Internet]; 2011. Available at: [http://www.ilo.org/wcmsp5/groups/public/-dgreports/-dcomm/-publ/documents/publication/wcms\\_155428.pdf](http://www.ilo.org/wcmsp5/groups/public/-dgreports/-dcomm/-publ/documents/publication/wcms_155428.pdf) Accessed on 12 January 2012.
  41. World Health Organization. Improving Equity in Health by Addressing Social Determinants [Internet]; 2011. Available at: [http://www.globalhealthequity.ca/webfm\\_send/154](http://www.globalhealthequity.ca/webfm_send/154) Accessed on 12 January 2012.
  42. Miller G. Hidden Tragedy: Underreporting of Workplace Injuries and Illnesses [Internet]; 2008. Available at: <http://www.docstoc.com/docs/19968722/HIDDEN-TRAGEDY-UNDERREPORTING-OF-WORKPLACE-INJURIES-AND-ILLNESSES-House-Congressional-Hearing-110th-Congress-2007-2008> Accessed on 12 January 2012.
  43. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Población asegurada y tasas de accidentes de trabajo en países seleccionados de la Región de las Américas. Internal document. Washington, DC: OPS; 2011.
  44. LATINOBAROMETRO [Internet]; 2011. Available at: [http://www.infoamerica.org/primera/lb\\_2011.pdf](http://www.infoamerica.org/primera/lb_2011.pdf) Accessed on 12 January 2012.
  45. Comisión Económica para América Latina y el Caribe. El bono demográfico: una oportunidad para avanzar en materia de cobertura y progresión en educación secundaria. [Internet]; 2008. [http://www.eclac.cl/publicaciones/xml/2/34732/PSE2008\\_Cap3\\_BonoDemografico.pdf](http://www.eclac.cl/publicaciones/xml/2/34732/PSE2008_Cap3_BonoDemografico.pdf) Accessed on 12 January 2012.
  46. Comisión Económica para América Latina y el Caribe. Observatorio de Igualdad de Género [Internet]; 2011. Available at: <http://www.cepal.org/cgi-bin/getProd.asp?xml=/>

- oig/agrupadores\_xml/aes779.xml&cxsl=/oig/agrupadores\_xml/agrupa\_listado.xml&base=/oig/tpl/top-bottom.xml Accessed on 12 January 2012.
47. United Nations. Year of Afrodescendants [Internet]; 2011. Available at: <http://www.panafstrag.org/pages/news.php?id=22> Accessed on 12 January 2012.
  48. Durán MA. Los costes invisibles de la enfermedad. Madrid: Fundación BVA; 2003.
  49. Pan American Health Organization; Economic Commission for Latin America and the Caribbean; United Nations Population Fund; United Nations Children's Fund; United Nations Development Fund for Women; United Nations International Research and Training Institute for the Advancement of Women. Health of Women and Men in the Americas. [Internet]; 2009. Available at: <http://new.paho.org/hq/dmdocuments/2010/Profile-English-health-women-men.pdf> Accessed on 12 January 2012.
  50. Pulver LJ, Haswell MR, Ring I, Waldon J, Clark W, Whetung V, et al. Indigenous health—Australia, Canada, Aotearoa, New Zealand and the United States. Laying claim to a future that embraces health for us all [Internet]; 2010. Available at: <http://www.who.int/healthsystems/topics/financing/healthreport/IHNo33.pdf> Accessed on 12 January 2012.
  51. United States, Office of Minority Health [Internet]; 2011. Available at: <http://minorityhealth.hhs.gov/templates/browse.aspx?lvl=2&lvlID=52> Accessed on 12 January 2012.
  52. Lopez H, Maloney W. Poverty reduction and growth. Virtuous and vicious circles [Internet]; 2006. Available at: [http://siteresources.worldbank.org/INTLACINSPANISH/Resources/Reduccion\\_de\\_la\\_pobreza.pdf](http://siteresources.worldbank.org/INTLACINSPANISH/Resources/Reduccion_de_la_pobreza.pdf) Accessed on 12 January 2012.
  53. United States, National Cancer Institute [Internet]. Available at: <http://www.cancer.gov/statistics> Accessed on 10 November 2011.
  54. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Informe anual de la Directora [Internet]; 2011. Available at: [http://www.paho.org/annual-report-d-2011/chapter1\\_AR2011span.html](http://www.paho.org/annual-report-d-2011/chapter1_AR2011span.html) Accessed on 12 January 2012.
  55. Comisión Económica para América Latina y el Caribe. Informe de los Objetivos de Desarrollo del Milenio. Lograr los Objetivos de Desarrollo del Milenio con igualdad en América Latina y el Caribe: Progresos y desafíos [Internet]; 2010. Available at: <http://www.un.org/spanish/millenniumgoals/> Accessed on 12 January 2012.
  56. Naciones Unidas. Objetivos de Desarrollo del Milenio. Informe 2011 [Internet]; 2011. Available at: [http://www.undp.org/content/dam/undp/library/MDG/spanish/MDG\\_Report\\_2011\\_SP.pdf](http://www.undp.org/content/dam/undp/library/MDG/spanish/MDG_Report_2011_SP.pdf) Accessed on 12 January 2012.
  57. United Nations Children's Fund; World Health Organization. Progress on Drinking Water and Sanitation [Internet]; 2012. Available at: [http://www.wssinfo.org/fileadmin/user\\_upload/resources/JMP-report-2012-en.pdf](http://www.wssinfo.org/fileadmin/user_upload/resources/JMP-report-2012-en.pdf) Accessed on 12 January 2012.
  58. Lancet. Global health in 2012: development to sustainability [Internet]; 2012. Available at: [http://www.lancet.com/journals/lancet/article/PIIS0140-6736\(12\)60081-6/fulltext](http://www.lancet.com/journals/lancet/article/PIIS0140-6736(12)60081-6/fulltext) Accessed on 12 January 2012.
  59. Global Fund. The Global Fund to Fight AIDS, TB and Malaria [Internet]; 2012. Available at: <http://www.theglobalfund.org/en/> Accessed on 6 June 2012.
  60. World Health Organization. Environmental Burden of Disease [Internet]; 2006. Available at: [http://www.who.int/quantifying\\_ehimpacts/countryprofiles/en/](http://www.who.int/quantifying_ehimpacts/countryprofiles/en/) Accessed on 12 January 2012.
  61. Millennium Ecosystem Assessment. Ecosystems and Human Well-being: Current State and Trends, Volume 1. 2005. Available at: <http://www.maweb.org/documents/document.766.aspx.pdf> Accessed on 29 July 2012.

- 61.b. Naciones Unidas. Resolución sobre derecho humano al agua y saneamiento. A/64/L.63/Rev.1 [Internet]; 2010. Available at: <http://www.politicaspUBLICAS.net/panel/agua/dhagua/667-onu-2010-resolucion-agua.html> Accessed on 24 March 2011.
62. Comisión Económica para América Latina y el Caribe. Objetivos de Desarrollo del Milenio. Avances en la sostenibilidad ambiental del desarrollo en ALC [Internet]; 2011. Available at: <http://www.eclac.cl/mdg/reporteavances/> Accessed on 12 January 2012.
63. World Health Organization; United Nations Children's Fund. A Snapshot of Drinking-water and Sanitation in the MDG Region Latin-America & Caribbean [Internet]; 2010. Available at: [http://www.wssinfo.org/fileadmin/user\\_upload/resources/1284626181-LAC\\_snapshot\\_2010.pdf](http://www.wssinfo.org/fileadmin/user_upload/resources/1284626181-LAC_snapshot_2010.pdf) Accessed on 12 January 2012.
64. Organización Panamericana de la Salud/Organización Mundial de la Salud. Informe del Proyecto de Evaluación Regional del Manejo de Residuos Sólidos Urbanos en ALC [Internet]; 2010. Available at: [www6.iadb.org/Residuos/infogeneral/Acerca.bid](http://www.iadb.org/Residuos/infogeneral/Acerca.bid) Accessed on 12 January 2012.
65. Banco Interamericano de Desarrollo; Asociación Interamericana de Ingeniería Sanitaria y Ambiental; Organización Panamericana de la Salud/Organización Mundial de la Salud. Informe de la evaluación regional del manejo de residuos sólidos urbanos en América Latina y el Caribe [Internet]; 2010. Available at: <http://www.iadb.org/es/temas/residuos-solidos/gestion-de-residuos-solidos,2203.html> Accessed on 12 January 2012.
66. Romieu I, Alamo-Hernández U, Texcalac-Sangrado JL, Pérez L, Gouveia N, McConnell R. In: Galvao L, Finkelman J, Henao S (eds.). Determinantes ambientales y sociales de la salud. Washington, DC: Organización Panamericana de la Salud; 2010.
67. World Health Organization. Urban Outdoor Air Pollution Section: Mortality and Burden of Disease Attributable to Urban Outdoor Air Pollution [Internet]; 2011. Available at: [http://apps.who.int/gho/indicatorregistry/App\\_Main/view\\_indicator.aspx?iid=2259](http://apps.who.int/gho/indicatorregistry/App_Main/view_indicator.aspx?iid=2259) Accessed on 4 November 2011.
68. Organización Mundial de la Salud. Guías de calidad del aire [Internet]; 2006. Available at: <http://www.who.int/mediacentre/factsheets/fs313/es/index.html> Accessed on 12 January 2012.
69. World Health Organization. Population Using Solid Fuels. Global Health Observatory Data Repository [Internet]; 2007. Available at: <http://apps.who.int/ghodata/#> Accessed on 12 January 2012.
70. World Health Organization. Global Health Risks: Mortality and Burden of Disease Attributable to Selected Major Risks [Internet]; 2009. Available at: [http://www.who.int/healthinfo/global\\_burden\\_disease/GlobalHealthRisks\\_report\\_full.pdf](http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf) Accessed on 12 January 2012.
71. Rehfuess E, Mehta S, Prüss-Üstün A. Assessing Household Solid Fuel Use: Multiple Implications for the Millennium Development Goals [Internet]; 2006. Available at: <http://ehp03.niehs.nih.gov/article/fetchArticle.action?articleURI=info%3Adoi%2F10.1289%2Fehp.8603> Accessed on 12 January 2012.
72. International Program on Chemical Safety. WHO Human Health Risk Assessment Toolkit: Chemical Hazards [Internet]; 2010. Available at: <http://br.bing.com/search?q=%20International%20Program%20on%20Chemical%20Safety.%20WHO%20Human%20Health%20Risk%20Assessment%20Toolkit:%20Chemical%20Hazards.%20WHO.%20Geneva.%202010.%20ISBN%20978%2092%204%20154807%206&mkt=pt-br&FORM=HPDWBR&DI=2883&CE=14.0&CM=SearchWeb> Accessed on 12 January 2012.

73. American Chemistry. Global Business of Chemistry [Internet]; 2011. Available at: [http://www.americanchemistry.com/s\\_acc/sec\\_directory.asp?CID=292&DID=747](http://www.americanchemistry.com/s_acc/sec_directory.asp?CID=292&DID=747) Accessed on 12 January 2012.
74. International Program on Chemical Safety. Assessment of Combined Exposures to Multiple Chemicals: Report of a WHO/IPCS International Workshop [Internet]; 2009. Available at: <http://pt.scribd.com/doc/1037930/Toxic-Chemicals-and-Childrens-Health-in-North-America> Accessed on 12 January 2012.
75. Díaz B, García CL. Prevención de riesgo en poblaciones vulnerables. In: Galvao L, Finkelman J, Henao S (eds.). Determinantes ambientales y sociales de la salud. Washington, DC: Organización Panamericana de la Salud; 2010.
76. World Health Organization. Initiative to Estimate the Global Burden of Foodborne Diseases: A Summary Document [Internet]; 2008. Available at: [http://www.who.int/foodsafety/foodborne\\_disease/Summary\\_Doc.pdf](http://www.who.int/foodsafety/foodborne_disease/Summary_Doc.pdf) Accessed on 12 January 2012.
77. Instituto Interamericano de Cooperación para la Agricultura. La seguridad alimentaria en la Américas: una exigencia de un nuevo modelo de desarrollo para el siglo XXI [Internet]; 2009. Available at: [http://www.enlaceacademico.org/uploads/media/Seguridad\\_Alimentaria\\_\\_iica.pdf](http://www.enlaceacademico.org/uploads/media/Seguridad_Alimentaria__iica.pdf) Accessed on 12 January 2012.
78. Organización de las Naciones Unidas para la Alimentación y la Agricultura. El estado de la inseguridad alimentaria en el mundo [Internet]; 2011. Available at: <http://www.fao.org/publications/sofi/es/> Accessed on 12 January 2012.
79. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Mesa redonda sobre el cambio climático y sus repercusiones para la salud pública: una perspectiva regional [Internet]; 2008. Available at: <http://www.paho.org/spanish/gov/cd/cd48-16-s.pdf> Accessed on 12 January 2012.
80. Finkelman J, Galvao L, Henao S. Gobernanza de la salud ambiental en América Latina. In: Galvao L, Finkelman J, Henao S (eds.). Determinantes ambientales y sociales de la salud. Washington, DC: OPS; 2010.
81. World Health Organization. Green economic development can be good for health [Internet]; 2011. Available at: [http://www.who.int/hia/cop16\\_article.pdf](http://www.who.int/hia/cop16_article.pdf) Accessed on 12 January 2012.
82. Conferencia de las Naciones Unidas sobre el Desarrollo Sostenible [Internet]; 2012. Available at: <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N12/381/67/PDF/N1238167.pdf?OpenElement> Accessed on 12 January 2012.
83. Roses M. Las políticas de salud en América Latina y El Caribe. 7o. Congreso Internacional de Salud Pública [Internet]; 2011. Available at: <http://www.slideshare.net/OPSColombia/las-politicas-de-salud-en-amrica-latina-y-el-caribe-dra-roses-meelln> Accessed on 12 January 2012.
84. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Fortalecimiento de los programas de inmunización. Resolución CD50/R5 [Internet]; 2010. Available at: <http://new.paho.org/hq/dmdocuments/2010/CD50.R5-s.pdf> Accessed on 11 March 2012.
85. World Health Organization. PAHO Tracks Progress on the Documentation and Verification of Measles, Rubella and Congenital Rubella Syndrome Elimination in the Americas [Internet]; 2011. Available at: [http://www.who.int/immunization/GIN\\_September\\_2011.pdf](http://www.who.int/immunization/GIN_September_2011.pdf) Accessed on 11 March 2012.
86. Organización Panamericana de la Salud/ Organización Mundial de la Salud. El décimo aniversario de la Semana de Vacunación en las Américas se celebrará del 21 al 28 de abril de 2012 [Internet]; 2012. Available at: <http://>



- [new.paho.org/vwa/?lang=es](http://new.paho.org/vwa/?lang=es) Accessed on 12 January 2012.
87. Organización Panamericana de la Salud/ Organización Mundial de la Salud. XIX Reunión del Grupo Técnico Asesor sobre Enfermedades Prevenibles por Vacunación [Internet]; 2011. Available at: [http://new.paho.org/hq/index.php?option=com\\_content&task=view&id=1862&Itemid=1674](http://new.paho.org/hq/index.php?option=com_content&task=view&id=1862&Itemid=1674) Accessed on 11 March 2012.
  88. Jauregui B, Sinha A, Clark AD, Bolanos BM, Resch S, Toscano CM, et al. Strengthening the Technical Capacity at Country-level to Make Informed Policy Decisions on New Vaccine Introduction: Lessons Learned by PAHO's ProVac Initiative [Review] [Internet]; 2011. Available at: <http://www.ncbi.nlm.nih.gov/pubmed?term=Jauregui> Accessed on 12 January 2012.
  89. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Inmunización en las Américas [Internet]; 2012. Available at: [http://new.paho.org/hq/index.php?option=com\\_content&task=view&id=3573&Itemid=2573&lang=es](http://new.paho.org/hq/index.php?option=com_content&task=view&id=3573&Itemid=2573&lang=es) Accessed on 12 January 2012.
  90. Pan American Health Organization. Progress Reports on Technical Matters. Immunization: Challenges and Outlook. 51st Directing Council [Internet]; 2011. Available at: [http://new.paho.org/hq/index.php?option=com\\_content&task=view&id=5723&Itemid=4139&lang=en](http://new.paho.org/hq/index.php?option=com_content&task=view&id=5723&Itemid=4139&lang=en) Accessed on 12 January 2012.
  91. REMSAA XXIV/383. Acuerdo de Sucre Sobre la Interrupción de la Transmisión Autóctona del Virus del Sarampión en los Países Andinos [Internet]. Available at: <http://www.orasconhu.org/remsa/remsa-xxiv> Accessed on 12 January 2012.
  92. Ropero-Alvarez AM, Kurtis HJ, Danovaro-Holliday MC, Ruiz-Matus C, Tambini G. Vaccination Week in the Americas: an opportunity for the integration of other health services with immunization [Internet]; 2012. Available at: <http://www.ncbi.nlm.nih.gov/pubmed?term=Ropero-Alvarez%20AM%20Kurtis%20HJ%20Danovaro-Holliday%20MC%20Ruiz-Matus%20C%20Tambini%20G.%20Vaccination%20Week%20in%20the%20Americas%3A%20an%20opportunity%20for%20the%20integration%20of%20other%20health%20services%20with%20immunization.%20J%20Infect%20Dis.%202012%20Mar%3B205%20Suppl%201%3AS120-5> Accessed on 12 January 2012.
  93. Centers for Disease Control and Prevention. Trends in Tuberculosis: United States 2010 [Internet]; 2011. Available at: <http://www.cdc.gov/tb/statistics/reports/2010/table1.htm> Accessed on 12 January 2012.
  94. World Health Organization. Global Tuberculosis Control Report [Internet]; 2011. Available at: <http://www.who.int/tb/publications/2011/en/index.html> Accessed on 12 January 2012.
  95. World Health Organization. World Malaria Report 2011 [Internet]; 2011. Available at: [http://www.who.int/malaria/world\\_malaria\\_report\\_2011/en/](http://www.who.int/malaria/world_malaria_report_2011/en/) Accessed on 12 January 2012.
  96. San Martin JL, Brathwaite O, Zambrano B, Solorzano JO, Bouckennooghe A, Dayan GH, et al. The epidemiology of dengue in the Americas over the last three decades: a worrisome reality [Internet]; 2010. Available at: [http://www.ncbi.nlm.nih.gov/pubmed?term=San%20Martin%20J.%20L.%20B%20Brathwaite%20O.%20Z%20Zambrano%20B.%20S%20Solorzano%20J.%20O.%20B%20Bouckennooghe%20A.%20D%20Dayan%20G.%20H.%20and%20Guzman%20M.%20G.%20\(2010\).%20The%20epidemiology%20of%20dengue%20in%20the%20americas%20over%20the%20last%20three%20decades%3A%20a%20worrisome%20reality.%20Am%20J%20Trop%20Med%20Hyg%2082\(1\)%2020128-35](http://www.ncbi.nlm.nih.gov/pubmed?term=San%20Martin%20J.%20L.%20B%20Brathwaite%20O.%20Z%20Zambrano%20B.%20S%20Solorzano%20J.%20O.%20B%20Bouckennooghe%20A.%20D%20Dayan%20G.%20H.%20and%20Guzman%20M.%20G.%20(2010).%20The%20epidemiology%20of%20dengue%20in%20the%20americas%20over%20the%20last%20three%20decades%3A%20a%20worrisome%20reality.%20Am%20J%20Trop%20Med%20Hyg%2082(1)%2020128-35) Accessed on 12 January 2012.
  97. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Dengue

- [Internet]; 2011. Available at: [http://new.paho.org/hq/index.php?option=com\\_content&task=view&id=264&Itemid=363&lang=es](http://new.paho.org/hq/index.php?option=com_content&task=view&id=264&Itemid=363&lang=es) Accessed on 12 January 2012.
98. International Development Research Center. Ecohealth Field Building Leadership in Prevention and Control of Vector Borne Diseases [Internet]; 2011. Available at: [http://www.idrc.ca/EN/Programs/Agriculture\\_and\\_the\\_Environment/Ecosystem\\_Approaches\\_to\\_Human\\_Health/Pages/ProjectDetails.aspx?ProjectNumber=106149](http://www.idrc.ca/EN/Programs/Agriculture_and_the_Environment/Ecosystem_Approaches_to_Human_Health/Pages/ProjectDetails.aspx?ProjectNumber=106149) Accessed on 12 January 2012.
  99. San Martin JL, Brathwaite-Dick O. Integrated strategy for dengue prevention and control in the Region of the Americas [Internet]; 2007. Available at: [http://www.ncbi.nlm.nih.gov/pubmed?term=San%20Martin%2C%20J.%20L.%2C%20and%20BrathwaiteDick%2C%20O.%20\(2007\).%20%5BIntegrated%20strategy%20for%20dengue%20prevention%20and%20control%20in%20the%20Region%20of%20the%20Americas%5D.%20Rev%20Panam%20Salud%20Publica%2021\(1\)%2C%2055-63](http://www.ncbi.nlm.nih.gov/pubmed?term=San%20Martin%2C%20J.%20L.%2C%20and%20BrathwaiteDick%2C%20O.%20(2007).%20%5BIntegrated%20strategy%20for%20dengue%20prevention%20and%20control%20in%20the%20Region%20of%20the%20Americas%5D.%20Rev%20Panam%20Salud%20Publica%2021(1)%2C%2055-63) Accessed on 12 January 2012.
  100. Centers for Disease Control and Prevention. Chikungunya Transmission [Internet]; 2012. Available at: [http://www.cdc.gov/ncidod/dvbid/chikungunya/CH\\_Transmission.html](http://www.cdc.gov/ncidod/dvbid/chikungunya/CH_Transmission.html) Accessed on 12 January 2012.
  101. Hotez PJ, Bottazzi ME, Franco-Paredes C, Ault SK. The neglected tropical diseases of Latin America and the Caribbean: a review of disease burden and distribution and road map for control and elimination [Internet]; 2008. Available at: <http://www.plosntds.org/article/info%3Adoi%2F10.1371%2Fjournal.pntd.0000300> Accessed on 12 January 2012.
  102. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Eliminación de las enfermedades desatendidas y otras infecciones relacionadas con la pobreza [Internet]; 2009. Available at: [http://new.paho.org/hq/dmdocuments/2009/CD49.R19%20\(Esp.\).pdf](http://new.paho.org/hq/dmdocuments/2009/CD49.R19%20(Esp.).pdf) Accessed on 12 January 2012.
  103. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Enfermedad de Chagas. Transmisión por el principal vector [Internet]; 2012. Available at: [http://new.paho.org/hq/images/stories/AD/HSD/CD/Chagas/int\\_trans\\_vector\\_chagas\\_800.jpg](http://new.paho.org/hq/images/stories/AD/HSD/CD/Chagas/int_trans_vector_chagas_800.jpg) Accessed on 12 January 2012.
  104. World Health Organization. InterAmerican Conference on Onchocerciasis, 2010: progress towards eliminating river blindness in the WHO Region of the Americas [Internet]; 2011. Available at: <http://www.who.int/wer/2011/wer8638.pdf> Accessed on 12 January 2012.
  105. Schneider MC, Aguilera XP, Barbosa da Silva JJ, Ault SK, Najera P, Martinez J, et al. Elimination of neglected diseases in Latin America and the Caribbean: a mapping of selected diseases. *PLoS Negl Trop Dis* 2011; 5:e964.
  106. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Control y eliminación de cinco enfermedades desatendidas en América Latina y el Caribe, 2010–2015 [Internet]; 2010. Available at: [http://new.paho.org/hq/dmdocuments/2011/Prioritization\\_NTD\\_PAHO\\_Dec\\_17\\_2010\\_Sp\\_cor.pdf](http://new.paho.org/hq/dmdocuments/2011/Prioritization_NTD_PAHO_Dec_17_2010_Sp_cor.pdf) Accessed on 12 January 2012.
  107. World Health Organization. Information resources. Soil-transmitted helminthiasis: estimated number of children needing preventive chemotherapy and number treated [Internet]; 2009. Available at: <http://www.who.int/wer/2011/wer8625.pdf> Accessed on 12 January 2012.
  108. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Sistema de Vigilancia Epidemiológica en Rabia de las Américas [Internet]; 2011. Available at: <http://siepi.panaftosa.org.br/> Accessed on 12 January 2012.
  109. World Health Organization. Report of the first meeting of the Leptospirosis Burden Epidemiology Reference Group [Internet];

2010. Available at: <http://www.who.int/zoonoses/diseases/lerg2009/en/index.html> Accessed on 12 January 2012.
110. Petersen A, et al. Las enfermedades infecciosas emergentes y el medio ambiente. In: Galvao L, Finkelman J, Henao S (eds.). *Determinantes ambientales y sociales de la salud*. Washington, DC: Organización Panamericana de la Salud; 2010.
111. World Health Organization. International Health Regulations [Internet]; 2005. Available at: [http://apps.who.int/gb/ebwha/pdf\\_files/WHA58/WHA58\\_3-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA58/WHA58_3-en.pdf) Accessed on 12 January 2012.
112. Organización Panamericana de la Salud/Organización Mundial de la Salud. *Reglamento Sanitario Internacional. Nivel de cumplimiento de los países de la Región de las Américas*. Internal data. Washington, DC: OPS; 2011.
113. Pan American Health Organization. *Emerging and reemerging infectious diseases, Region of the Americas* [Internet]; 2008. Available at: <http://www.ops-oms.org/Project.asp?SEL=TP&LNG=ENG&ID=73&PRGRP=periodicals> Accessed on 12 January 2012.
114. México, Secretaría de Salud [Internet]; 2009. Available at: <http://portal.salud.gob.mx/contenidos/noticias/influenza/estadisticas.html> Accessed on 12 January 2012.
115. World Health Organization. *Situation updates—pandemic (H1N1)* [Internet]; 2009. Available at: <http://www.who.int/csr/disease/swineflu/updates/en/index.html> Accessed on 12 January 2012.
116. Ropero-Alvarez AM, Kurtis HJ, Whittembury A, Dos Santos T, Danovaro-Holliday MC, Ruiz-Matus C. *Pandemic Influenza Vaccination: Lessons Learned from Latin America and the Caribbean* [Internet]; 2012. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/22155136> Accessed on 12 January 2012.
117. World Health Organization. *Influenza. FluNet Website*. Available at: [http://www.who.int/influenza/gisrs\\_laboratory/flunet/en/](http://www.who.int/influenza/gisrs_laboratory/flunet/en/) Accessed on 11 March 2012.
118. Haití, Ministère de la Santé Publique. *Rapport journalier MSPP Haiti du 19 Février 2011* [Internet]; 2011. Available at: [http://www.mspp.gouv.ht/site/index.php?option=com\\_content&view=article&id=117&Itemid=1](http://www.mspp.gouv.ht/site/index.php?option=com_content&view=article&id=117&Itemid=1) Accessed on 12 January 2012.
119. República Dominicana, Ministerio de Salud Pública. *Boletín epidemiológico N51-2011* [Internet]. Available at: <http://www.sespasdigepi.gob.do/> Accessed on 12 January 2012.
120. *Lancet* [Internet]; 2011. Available at: [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(12\)60031-2/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(12)60031-2/fulltext) Accessed on 12 January 2012.
121. Joint United Nations Program on HIV/AIDS. *Report on the Global AIDS Epidemic 2010* [Internet]; 2011. Available at: [http://www.unaids.org/documents/20101123\\_GlobalReport\\_em.pdf](http://www.unaids.org/documents/20101123_GlobalReport_em.pdf) Accessed on 12 January 2012.
122. Joint United Nations Program on HIV/AIDS. *AIDSinfo database* [Internet]; 2011. Available at: <http://www.unaids.org/en/dataanalysis/tools/aidsinfo/> Accessed on 12 January 2012.
123. Cohen MS, Chen YQ, McCauley M, Gamble T, Hosseinipour MC, Kumarasamy N, et al. *Prevention of HIV-1 infection with early antiretroviral therapy* [Internet]; 2011. Available at: <http://www.nejm.org/doi/full/10.1056/NEJMoa1105243> Accessed on 12 January 2012.
124. World Health Organization. *Towards Universal Access: Scaling Up Priority HIV/AIDS Interventions in the Health Sector: 2010 Progress Report* [Internet]; 2010. Available at: [http://whqlibdoc.who.int/publications/2010/9789241500395\\_eng.pdf](http://whqlibdoc.who.int/publications/2010/9789241500395_eng.pdf) Accessed on 12 January 2012.
125. Monteiro MG, Telles-Dias P, Inglez-Dias A. *Epidemiología del uso del alcohol y otras sustancias psicoactivas*. In: Rodríguez JJ,

- Kohn R, Aguilar-Gaxiola S (eds.). Epidemiología de los trastornos mentales en América Latina y el Caribe. Washington, DC: OPS; 2009 (Publicación Científica y Técnica No. 632).
126. Comisión Latinoamericana sobre Drogas y Democracia. Drogas y democracia: hacia un cambio de paradigma [Internet]; 2009. Available at: [http://www.drogasedemocracia.org/Arquivos/livro\\_espanhol\\_04.pdf](http://www.drogasedemocracia.org/Arquivos/livro_espanhol_04.pdf) Accessed on 12 January 2012.
  127. World Health Organization. InfoBase [Internet]; 2011. Available at: <https://apps.who.int/infobase/report.aspx> Accessed on 12 January 2012.
  128. The Global Economic Burden of Non-communicable Diseases [Internet]; 2011. Available at: [http://www3.weforum.org/docs/WEF\\_Harvard\\_HE\\_GlobalEconomicBurdenNonCommunicableDiseases\\_2011.pdf](http://www3.weforum.org/docs/WEF_Harvard_HE_GlobalEconomicBurdenNonCommunicableDiseases_2011.pdf) Accessed on 12 January 2012.
  129. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Datos básicos en salud. Mortalidad por enfermedades crónicas [Internet]; 2012. Available at: [http://new.paho.org/hq/index.php?option=com\\_content&task=blogcategory&id=2391&Itemid=2392](http://new.paho.org/hq/index.php?option=com_content&task=blogcategory&id=2391&Itemid=2392) Accessed on 12 January 2012.
  130. Belizán JM, Cafferata ML, Belizán M, Althabe F. Health inequality in Latin America [Internet]; 2007. Available at: [http://www.lancet.com/journals/lancet/article/PIIS0140-6736\(07\)61673-0/fulltext](http://www.lancet.com/journals/lancet/article/PIIS0140-6736(07)61673-0/fulltext) Accessed on 12 January 2012.
  131. United Nations. Population Division [Internet]; 2012. Available at: <http://esa.un.org/unpd/wpp/index.htm> Accessed on 12 January 2012.
  132. World Health Organization. Standard Population [Internet]; 2012. Available at: <http://www.who.int/healthinfo/paper31.pdf> Accessed on 12 January 2012.
  133. Rodríguez T, Malvezzi M, Chatenoud L, Bosetti C, Levi F, Negri E, et al. Trends in mortality from coronary heart and cerebrovascular disease in the Americas: 1970–2000 [Internet]; 2006. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/16537758> Accessed on 12 January 2012.
  134. Rodríguez J, Kohn R. Prevalencia y carga de los trastornos mentales en la población adulta de América Latina; Norris FH, Kohn R. La utilización de los servicios de salud mental y la brecha de tratamiento en América Latina y el Caribe. In: Rodríguez JJ, Kohn R, Aguilar-Gaxiola S (eds.). Epidemiología de los trastornos mentales en América Latina y el Caribe. Washington, DC: OPS; 2009 (Publicación Científica y Técnica No. 632).
  135. Organización Mundial de la Salud. Informes subregionales y de país WHO-AIMS [Internet]. Available at: [http://new.paho.org/hq/index.php?option=com\\_content&task=view&id=445&Itemid=1106](http://new.paho.org/hq/index.php?option=com_content&task=view&id=445&Itemid=1106) Accessed on 15 August 2011.
  136. Colditz GA, Wei EK. Preventability of cancer: the relative contributions of biological and social and physical environment determinants of cancer mortality [Internet]; 2012. Available at: <http://www.annualreviews.org/doi/abs/10.1146/annurev-publhealth-031811-124627?journalCode=publhealth> Accessed on 15 August 2011.
  137. Barceló A. Diabetes: epidemia en las Américas [Internet]; 2009. Available at: <http://www.slideshare.net/rdaragnez/diabetes-epidemia-en-las-americas> Accessed on 15 August 2011.
  138. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Diabetes mellitus: tendencias, muertes evitables y desigualdades [Internet]; 2012. Available at: [http://new.paho.org/hq/index.php?option=com\\_content&task=view&id=6150&Itemid=2395](http://new.paho.org/hq/index.php?option=com_content&task=view&id=6150&Itemid=2395) Accessed on 15 August 2011.
  139. Federación Internacional de Diabetes [Internet]; 2011. Available at: <http://www.idf.org/> Accessed on 15 August 2011.
  140. Gaziano T, et al. Scaling-up interventions for chronic disease prevention: the evidence [Internet]; 2007. Available at: <http://www.>

- [ncbi.nlm.nih.gov/pubmed/18063028](http://ncbi.nlm.nih.gov/pubmed/18063028)  
Accessed on 15 August 2011.
141. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Enfermedades no transmisibles en las Américas: construyamos un futuro más saludable [Internet]; 2011. Available at: [http://new.paho.org/hq/index.php?option=com\\_docman&task=doc\\_view&gid=14833&Itemid](http://new.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=14833&Itemid) Accessed on 15 August 2011.
  142. World Health Organization. WHO Global Database: Body Mass Index [Internet]; 2011. Available at: <http://www.who.int/bmi/index.jsp> Accessed on 15 August 2011.
  143. Pan American Health Organization. Non-communicable diseases basic indicators 2011: minimum, optimum, and optional data set for NCDs [Internet]; 2011. Available at: <http://new.paho.org/hq/index.php?option=content&task=view&id=1930&Itemid=1708&lang=en> Accessed on 15 August 2011.
  144. Whitlock G, Lewington S, Sherliker P, Clarke R, Emberson J, Halsey J, et al. Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies [Internet]; 2009. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/19299006> Accessed on 15 August 2011.
  145. Lutter CK, Chaparro CM, Muñoz S. Progress towards Millennium Development Goal 1 in Latin America and the Caribbean: the importance of the choice of indicator for undernutrition [Internet]; 2011. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/21346887> Accessed on 15 August 2011.
  146. Victora CG, de Onis M, Hallal PC, Blössner M, Shrimpton R. Worldwide timing of growth faltering: revisiting implications for interventions [Internet]; 2010. Available at: [www.ncbi.nlm.nih.gov/pubmed/20156903](http://www.ncbi.nlm.nih.gov/pubmed/20156903) Accessed on 15 August 2011.
  147. Organización Mundial de la Salud. Informe sobre la epidemia mundial de tabaquismo: advertencia sobre los peligros del tabaco [Internet]; 2011. Available at: [whqlibdoc.who.int/publications/2011/9789240687813\\_eng.pdf](http://whqlibdoc.who.int/publications/2011/9789240687813_eng.pdf) Accessed on 15 August 2011.
  148. Organización Mundial de la Salud. Convenio Marco de la OMS para el Control del Tabaco [Internet]. Available at: <http://www.who.int/fctc/es/> Accessed on 15 August 2011.
  149. World Health Organization. Report on Global Health Risks [Internet]; 2009. Available at: [http://www.who.int/healthinfo/global\\_burden\\_disease/global\\_health\\_risks/en/index.htm](http://www.who.int/healthinfo/global_burden_disease/global_health_risks/en/index.htm) Accessed on 15 August 2011.
  150. World Health Organization. Global Status Report on Alcohol [Internet]; 2011. Available at: [http://www.who.int/substance\\_abuse/publications/global\\_alcohol\\_report/en/index.html](http://www.who.int/substance_abuse/publications/global_alcohol_report/en/index.html) Accessed on 15 August 2011.
  151. United Nations General Assembly. Sixty-sixth Session. Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-Communicable Diseases [Internet]; 2011. Available at: <http://daccess-dds-ny.un.org/doc/UNDOC/LTD/N11/497/77/PDF/N1149777.pdf> Accessed on 15 August 2011.
  152. Pan American Health Organization. PAHO Data Base. Violence in the American Region [Internet]; 2007. Available at: [http://www.who.int/violence\\_injury\\_prevention/violence/en/](http://www.who.int/violence_injury_prevention/violence/en/) Accessed on 15 August 2011.
  153. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Muertes por causas externas. Sistema de Información de Mortalidad [Internet]; 2011. Available at: <http://www.paho.org/spanish/ad/dpc/hu-unit-page.htm> Accessed on 15 August 2011.
  154. Vasconcelos E, et al. Seguridad vial, salud y políticas públicas. In: Galvao L, Finkelman J, Henao S (eds.). Determinantes ambientales y sociales de la salud. Washington, DC: Organización Panamericana de la Salud; 2010.
  155. Guerrero R, et al. Violencia y salud: el desafío de un problema social en las Américas. In: Galvao L, Finkelman J, Henao S (eds.).

- Determinantes ambientales y sociales de la salud. Washington, DC: OPS; 2010.
156. International Development Bank. Fact Sheet—Citizen Security [Internet]; 2009. Available at: <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=36241927> Accessed on 15 August 2011.
  157. World Health Organization. The Global Burden of Disease. Disability [Internet]; 2008. Available at: [http://www.who.int/healthinfo/global\\_burden\\_disease/en/index.html](http://www.who.int/healthinfo/global_burden_disease/en/index.html) Accessed on 15 August 2011.
  158. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Situación de salud de las Américas. Indicadores básicos. Discapacidad [Internet]; 2010. Available at: [www.opas.org.br/informacao/UploadArq/eb\\_v22n4.pdf](http://www.opas.org.br/informacao/UploadArq/eb_v22n4.pdf) Accessed on 15 August 2011.
  159. Limburg H, Barria von-Bischhoffshausen F, Gomez P, Silva JC, Foster A. Review of recent surveys on blindness and visual impairment in Latin America. *Br J Ophthalmol* 2008; 92(3): 31315–9.
  160. World Health Organization. World Health Report 2008. Primary Health Care. Now More than Ever [Internet]; 2008. Available at: <http://www.who.int/whr/2008/en/index.html> Accessed on 15 August 2011.
  161. Organización Mundial de la Salud. Informe sobre la salud en el mundo: financiación de los sistemas de salud: el camino hacia la cobertura universal [Internet]; 2010. Available at: <http://www.who.int/whr/2010/es/index.html> Accessed on 15 August 2011.
  162. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Declaración de Alma Ata. Conferencia Internacional sobre Atención Primaria de Salud [Internet]; 1978. Available at: [http://www.paho.org/spanish/dd/pin/alma-ata\\_declaracion.htm](http://www.paho.org/spanish/dd/pin/alma-ata_declaracion.htm) Accessed on 15 August 2011.
  163. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Declaración Regional sobre las Nuevas Orientaciones de la APS. Declaración de Montevideo [Internet]; 2005. Available at: <http://br.bing.com/search?q=Declaraci%c3%b3n%20Regional%20sobre%20las%20Nuevas%20Orientaciones%20de%20la%20APS.%20Declaraci%c3%b3n%20de%20Montevideo.%20Washington%20DC.&mkt=pt-br&FORM=HPDWBR&DI=2883&CE=14.0&CM=SearchWeb> Accessed on 15 August 2011.
  164. Buenos Aires. Declaración “Hacia una estrategia de salud para la equidad, basada en la atención primaria” [Internet]; 2007. Available at: [www.fcm.unr.edu.ar/.../2007-Declaraci%c3%b3n%20de%20Buenos%20Aires](http://www.fcm.unr.edu.ar/.../2007-Declaraci%c3%b3n%20de%20Buenos%20Aires) Accessed on 15 August 2011.
  165. Vilaça ME. As redes de atenção a saúde [Internet]; 2011. Available at: <http://www.ncbi.nlm.nih.gov/pubmed?term=Vila%20A7a%20Mendes%20E.%20As%20redes%20de%20aten%C3%A7%C3%A7o%20a%20sa%C3%BAde.%20OPS%20FCONASS.%20Brasilia%20Brasil.%202011> Accessed on 15 August 2011.
  166. Organización Panamericana de la Salud/ Organización Mundial de la Salud. A Atenção á Saúde Coordenada pela APS. Construindo redes de atenção no SUS. Serie tecnica redes integrada de arenção a Saúde, No. 2. Washington, DC: OPS/OMS; 2011.
  167. Perú, Ministerio de Salud. Experiencias de planificación de los recursos humanos en salud: Perú 2007–2010. Lima: Ministerio de Salud; 2011.
  168. Brasil, Ministerio de Salud. Política Nacional de Atención Básica [Internet]; 2007. Available at: [http://www.rededespesquisaaps.org.br/wpcontent/uploads/UserFiles/File/biblioteca/pactos\\_vol4.pdf](http://www.rededespesquisaaps.org.br/wpcontent/uploads/UserFiles/File/biblioteca/pactos_vol4.pdf) Accessed on 15 August 2011.
  169. Dussault G, Franceschini MC. Not enough there, too many here: understanding geographical imbalances in the distribution of the health workforce [Internet]; 2006. Available at: <http://www.cmdtla.org/combuilder/userprofile/gdussault> Accessed on 15 August 2011.
  170. Frenk J, et al. Health professionals for a new century: transforming education to strengthen

- health systems in an interdependent world [Internet]; 2010. Available at: [http://u21health.mty.itesm.mx/sites/default/files/Julio\\_Frenk.pdf](http://u21health.mty.itesm.mx/sites/default/files/Julio_Frenk.pdf) Accessed on 15 August 2011.
171. World Bank. The nurse labor and education markets in the English-speaking CARICOM: issues and options for reform [Internet]; 2009. Available at: [siteresources.worldbank.org/INTJAMAICA/Resources/The\\_Nurse\\_Labor\\_Education\\_Market\\_Eng.pdf](http://siteresources.worldbank.org/INTJAMAICA/Resources/The_Nurse_Labor_Education_Market_Eng.pdf) Accessed on 15 August 2011.
  172. Centers for Disease Control and Prevention. Health: United States 2010. Persons employed in health service sites, by site and sex: United States, selected years 2000–2009 (Table 105) [Internet]; 2010. Available at: <http://www.cdc.gov/nchs/data/hus/hus10.pdf> Accessed on 15 August 2011.
  173. Association of American Medical Colleges. New Physician Shortage Estimates Post-News Alert September 30 [Internet]; 2010. Available at: <https://www.aamc.org/newsroom/newsreleases/2010/150570/100930.html> Accessed on 15 August 2011.
  174. World Health Organization. World Health Report 2010. Financing Health Care Systems: The Path to Universal Coverage [Internet]; 2010. Available at: <http://www.who.int/whr/2010/en/index.html#17> Accessed on 17 October 2011.
  175. Organización Panamericana de la Salud/Organización Mundial de la Salud. Salud en las Américas 2007 (Vol. I) [Internet]; 2007. Available at: [http://www.scielosp.org/scielo.php?pid=S1020-49892010000300009&script=sci\\_arttext](http://www.scielosp.org/scielo.php?pid=S1020-49892010000300009&script=sci_arttext) Accessed on 15 August 2011.
  176. Organización Panamericana de la Salud/Organización Mundial de la Salud. Indicadores básicos 2011 - Situación de salud en las Américas [Internet]; 2011. Available at: [http://ais.paho.org/chi/brochures/2011/BI\\_2011\\_ESP.pdf](http://ais.paho.org/chi/brochures/2011/BI_2011_ESP.pdf) Accessed on 15 August 2011.
  177. Canadian Institute for Health Information. National Health Expenditure Trends in Canada: 1975–2011 [Internet]; 2011. Available at: [http://secure.cihi.ca/cihiweb/products/nhex\\_trends\\_report\\_2011\\_en.pdf](http://secure.cihi.ca/cihiweb/products/nhex_trends_report_2011_en.pdf) Accessed on 15 August 2011.
  178. Center for Medicare & Medicaid Services. National Health Expenditure Data—NHE Web Tables 1960–2010, USA [Internet]; 2011. Available at: [http://www.cms.gov/NationalHealthExpendData/02\\_NationalHealthAccountsHistorical.asp#TopOfPage](http://www.cms.gov/NationalHealthExpendData/02_NationalHealthAccountsHistorical.asp#TopOfPage) Accessed on 15 August 2011.
  179. KaiserEDU.org. US Health Policy Explained, US Health Care Costs [Internet]; 2010. Available at: <http://www.kaiseredu.org/Issue-Modules/US-Health-Care-Costs/Background-Brief.aspx> Accessed on 15 August 2011.
  180. Kimbunde E, Salganicoff A, KaiserEDU.com. Health Policy Explained [Internet]; 2010. Available at: <http://www.kaiseredu.org/Issue-Modules/US-Health-Care-Costs/Background-Brief.aspx> Accessed on 15 August 2011.
  181. North Carolina Rural Economic Development Center, Inc. [Internet]; 2010. Available at: <http://www.ncruralcenter.org/events/485-2010-forum-background-health-care.html> Accessed on 15 August 2011.
  182. Galewitz P, Villegas A. Kaiser Health News. Uninsured Rate Soars, 50+ Million Americans Without Coverage [Internet]; 2010. Available at: <http://www.kaiserhealthnews.org/Stories/2010/September/16/census-uninsured-rate-soars.aspx> Accessed on 15 August 2011.
  183. Organización Panamericana de la Salud/Organización Mundial de la Salud. El acceso a los medicamentos de alto costo en las Américas: contexto, desafíos y perspectivas. Serie Técnica No. 1: Medicamentos esenciales, Acceso e innovación [Internet]; 2009. Available at <http://72.249.20.135/wordpress-mu/argentina/files/2010/06/Informe-MAC-OPS.pdf> Accessed on 14 November 2011
  184. Organización Panamericana de la Salud/Organización Mundial de la Salud. Estudio del impacto de la exclusión de los cuidados de

- salud sobre el acceso a medicamentos en Guatemala, Honduras y Nicaragua. Análisis comparativo [Internet]; 2010. Available at: [Www.durg-a.uab.es/pub/Home/DurglaPanama2009/DURG-LA\\_Panama\\_2009.pdf](http://www.durg-a.uab.es/pub/Home/DurglaPanama2009/DURG-LA_Panama_2009.pdf) Accessed on 15 August 2011.
185. Guha-Sapir D, Vos F, Below R, Ponserre S. Annual Disaster Statistical Review 2010: The Numbers and Trends [Internet]; 2011. Available at: [http://www.cred.be/sites/default/files/ADSR\\_2010.pdf](http://www.cred.be/sites/default/files/ADSR_2010.pdf) Accessed on 15 August 2011.
186. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Plan de acción de hospitales seguros [Internet]; 2010. Available at: <http://new.paho.org/hq/dmdocuments/2010/CD50-10-s.pdf> Accessed on 15 August 2011.
187. SafeHospitals [Internet]; 2011. Available at: [http://safehospitals.info/index.php?option=com\\_content&task=view&id=30&Itemid=1&lang=spash](http://safehospitals.info/index.php?option=com_content&task=view&id=30&Itemid=1&lang=spash) Accessed on 15 August 2011.
188. Pan American Health Organization. Health Response to the Earthquake in Haiti, January 2010 [Internet]; 2012. Available at: [http://new.paho.org/disasters/index.php?option=com\\_content&task=view&id=1626&Itemid=1](http://new.paho.org/disasters/index.php?option=com_content&task=view&id=1626&Itemid=1) Accessed on 15 August 2011.
189. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Fortalecimiento de los sistemas de información en salud [Internet]; 2012. Available at: [http://new.paho.org/hq/index.php?option=com\\_content&task=view&id=3558&Itemid=3972&lang=es](http://new.paho.org/hq/index.php?option=com_content&task=view&id=3558&Itemid=3972&lang=es) Accessed on 15 August 2011.
190. Comisión Económica para América Latina y el Caribe. Monitoreo del Plan eLAC 2010: Avances y desafíos de la Sociedad de la Información en América Latina y el Caribe [Internet]; 2011. Available at: <http://www.eclac.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/9/41729/P41729.xml&xsl=/ddpe/tpl/p9f.xsl&base=/elac2015/tpl/top-bottom.xsl#> Accessed on 15 August 2011.
191. Biblioteca Virtual en Salud [Internet]; 2011. Available at: <http://regional.bvsalud.org/php/index.php?lang=es> Accessed on 15 August 2011.
192. Centro Latinoamericano y del Caribe en Ciencias de la Salud; Organización Panamericana de la Salud/ Organización Mundial de la Salud [Internet]; 2011. Available at: <http://www.ncbi.nlm.nih.gov/pubmed?term=%28%22Cochrane%20database%20of%20systematic%20reviews%20%28Online%29%22%5BJournal%5D%29%20AND%20LILACS> Accessed on 15 August 2011.
193. Scimago. Country Rankings [Internet]; 2012. Available at: [http://www.scimagojr.com/countryrank.php?area=2700&category=2713&region=all&year=all&order=it&min=0&min\\_type=it](http://www.scimagojr.com/countryrank.php?area=2700&category=2713&region=all&year=all&order=it&min=0&min_type=it) Accessed on 15 August 2011.
194. Moloney A. Latin America faces hurdles in health research [Internet]; 2009. Available at: [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(09\)61688-3/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)61688-3/fulltext) Accessed on 15 August 2011.
195. Krleža-Jerić K, Lemmens T, Reveiz L, Cuervo LG, Bero L. Prospective Registration and Results Disclosure of Clinical Trials in the Americas: A Roadmap Toward Transparency [Internet]; 2011. Available at: <http://ssrn.com/abstract=1908351> Accessed on 15 August 2011.
196. Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura. Sistemas nacionales de ciencia, tecnología e innovación en América Latina y el Caribe [Internet]; 2010. Available at: <http://unesdoc.unesco.org/images/0018/001871/187122s.pdf> Accessed on 15 August 2011.
197. Kaul I, Grunberg I, Stern M. Bienes públicos mundiales. Cooperación internacional en el siglo XXI [Internet]; 1999. Available at: <http://web.undp.org/globalpublicgoods/Spanish/Spsum.pdf> Accessed on 15 August 2011.

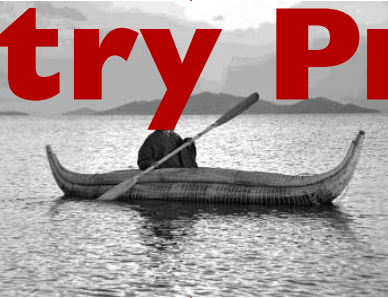


198. Tugwell P, Sitthi-Amorn C, Hatcher-Roberts J, et al. Health research profile to assess the capacity of low and middle income countries for equity oriented research [Internet]; 2006. Available at: <http://www.biomedcentral.com/1471-2458/6/151> Accessed on 15 August 2011.
199. World Health Organization. Global Strategy and Plan of Action on Public Health, Innovation and Intellectual Property [Internet]; 2008. Available at: [http://apps.who.int/gb/ebwha/pdf\\_files/A61/A61\\_R21-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/A61/A61_R21-en.pdf) Accessed on 14 November 2011.
200. World Trade Organization. Ministerial Declaration adopted on 14 November 2001 (Doha Declaration). Geneva: WTO; 2001 (WT/MIN(01)/DEC/1).
201. World Trade Organization. Implementation of Paragraph 6 of the Doha Declaration on the TRIPS Agreement and Public Health. Geneva: WTO; 2003 (WT/L/540 and Corr.1).
202. Smith R, Correa C, Oh C. Trade, TRIPS, and pharmaceuticals. The Lancet Series 2009 [Internet]; 2009. Available at: [www.thelancet.com/collections/publichealth?collexcode=125&collexyear=all&sort=date](http://www.thelancet.com/collections/publichealth?collexcode=125&collexyear=all&sort=date) Accessed on 14 November 2011.
203. World Health Assembly. Global strategy and plan of action on public health, innovation and intellectual property. Geneva: WHA; 2008 (WHA61.21).
204. Abbott FM. Intellectual property and public health: meeting the challenge of sustainability. Global Health Programme Working Paper No. 7 [Internet]; 2012. Available at: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1965458](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1965458) Accessed on 14 November 2011.
205. Dan WB, Wikler D. Ethical Issues in Resource Allocation, Research, and New Product Development [Internet]; 2006. Available at: <http://files.dcp2.org/pdf/DCP/DCP14.pdf> Accessed on 14 November 2011.
206. Rosoff PM. Unpredictable Drug Shortages: An Ethical Framework for Short-Term Rationing in Hospitals [Internet]; 2012. Available at: <http://www.tandfonline.com/doi/abs/10.1080/15265161.2011.634483> Accessed on 14 November 2011.
207. Weatherall D, et al. Science and Technology for Disease Control: Past, Present and Future. [Internet]; 2006. Available at <http://files.dcp2.org/pdf/DCP/DCP05.pdf> Accessed on 14 November 2011.
208. Organización Panamericana de la Salud/ Organización Mundial de la Salud. La salud y los derechos humanos. Documento conceptual [Internet]; 2010. Available at: <http://new.paho.org/hq/dmdocuments/2010/CD50-12-s.pdf> Accessed on 14 November 2011.
209. Kickbusch I. Advancing the global health agenda [Internet]; 2012. Available at: <http://graduateinstitute.ch/globalhealth> Accessed on 14 November 2011.
210. Institute for Health Metrics and Evaluation. Financing Global Health 2011: Continued Growth as MDG Deadline Approaches [Internet]; 2011. Available at: <http://www.healthmetricsandevaluation.org/publications/policy-report/financing-global-health-2011-continued-growth-mdg-deadline-approaches> Accessed on 14 November 2011.
211. World Health Organization. WHO Reform for a Healthy Future. Executive Board EBSS/2/DIV/2 Special Session on WHO Reform 7 November 2011 [Internet]; 2011. Available at: [http://apps.who.int/gb/ebwha/pdf\\_files/EBSS/EBSS2\\_DIV2-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/EBSS/EBSS2_DIV2-en.pdf) Accessed on 14 November 2011.
212. Organización Mundial de la Salud. Asamblea Mundial de la Salud apoya la agenda de reforma de la OMS [Internet]; 2012. Available at: [http://new.paho.org/hq/index.php?option=com\\_content&task=view&id=6836&Itemid=1926](http://new.paho.org/hq/index.php?option=com_content&task=view&id=6836&Itemid=1926) Accessed on 14 November 2011.
213. Organización Panamericana de la Salud/ Organización Mundial de la Salud. La diplomacia de cumbres y su impacto en la agenda de la salud global [Internet]; 2011. Available at: <http://new.paho.org/blogs/erp/wp-content/uploads/2011/05/Diplomacia>

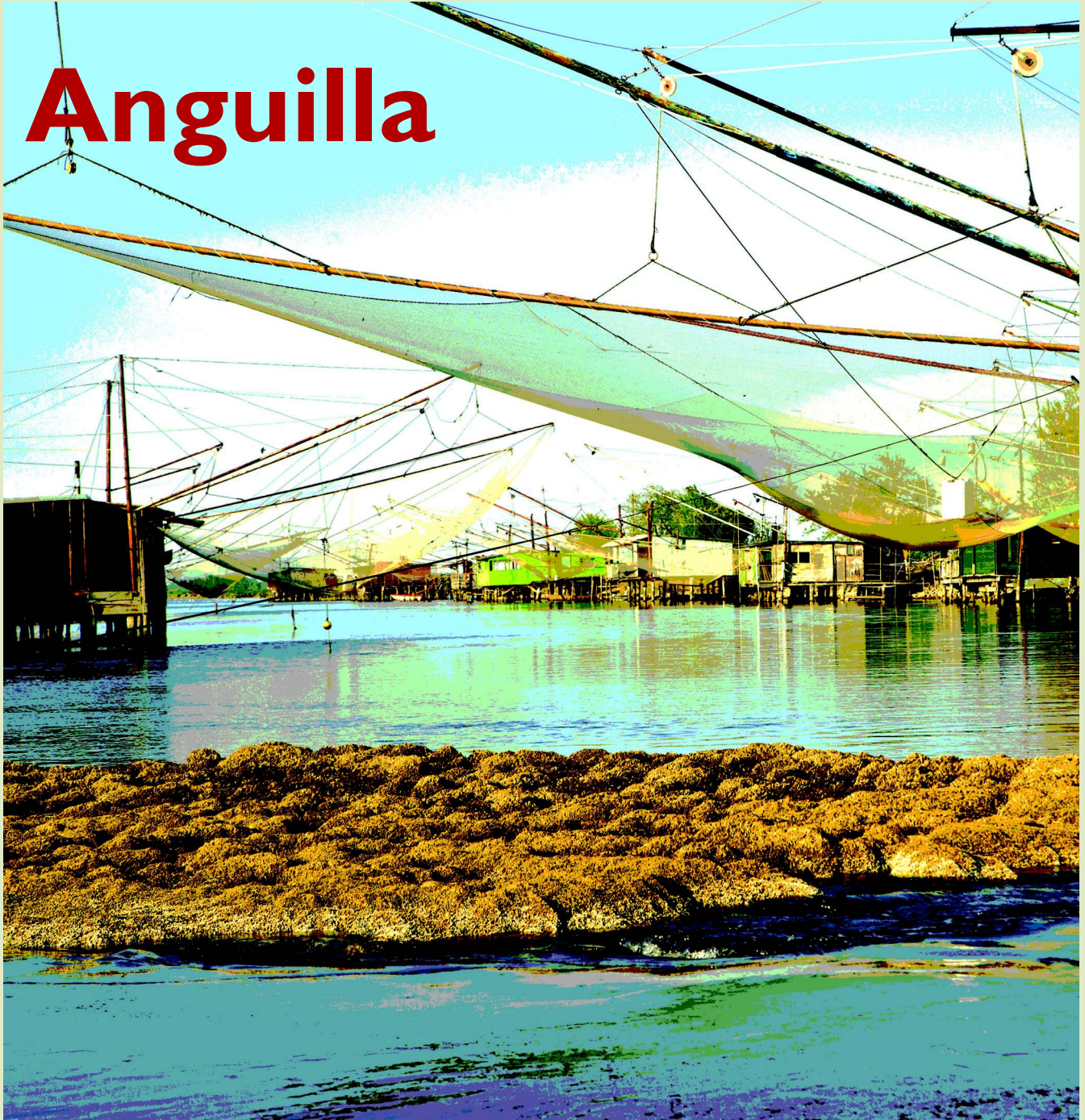
- CumbresV4.pdf Accessed on 14 November 2011.
214. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Centenario de la Organización Panamericana de la Salud [Internet]; 2002. Available at: <http://www.paho.org/spanish/dpi/100/spanish.htm> Accessed on 14 November 2011.
  215. Harrison LE. The Pan-American Dream. New York, NY: Westview Press; 2008.
  216. Kiernan P. Cien años de panamericanismo, 1902–2002 [Internet]; 2002. Available at: [http://www.paho.org/spanish/dd/pin/Numero12\\_article3\\_5.htm](http://www.paho.org/spanish/dd/pin/Numero12_article3_5.htm) Accessed on 14 November 2011.
  217. Council of Accredited MPH Programs. The relationship between public health and health education [Internet]; 2009. Available at: <http://www.mphprograms.org/publichealthhealtheducation.html> Accessed on 14 November 2011.
  218. Graham H. Where is the future of public health? [Internet]; 2010. Available at: <http://www.milbank.org/> Accessed on 14 November 2011.
  219. Pearce D, Groom B, Hepburn C, Koundouri P. Valuing the future [Internet]; 2003. Available at: [www.milbank.org/quarterly/8802featGraham.html](http://www.milbank.org/quarterly/8802featGraham.html) Accessed on 14 November 2011.
  220. Intergovernmental Panel on Climate Change. Climate Change Synthesis Report [Internet]; 2007. Available at: [http://www.google.com.mx/search?sourceid=navclient&ie=UTF-8&r1z=1T4DKUS\\_enMX261MX271&q=PCC%2c+2007++Intergovernmental+Panel+on+Climate+ChangeClimate+Change.+Synthesis+Report.+Geneva](http://www.google.com.mx/search?sourceid=navclient&ie=UTF-8&r1z=1T4DKUS_enMX261MX271&q=PCC%2c+2007++Intergovernmental+Panel+on+Climate+ChangeClimate+Change.+Synthesis+Report.+Geneva) Accessed on 14 November 2011.
  221. United Nations. Report of the World Commission on Environment and Development: Our Common Future [Internet]; 1987. Available at: <http://www.un-documents.net/wced-ocf.htm> Accessed on 14 November 2011.
  222. World Health Organization. Commission on Social Determinants of Health. Closing the Gap in a Generation: Health Equity through Action on the Social Determinants of Health [Internet]; 2008. Available at: [http://www.searo.who.int/LinkFiles/SDH\\_SDH\\_FinalReport.pdf](http://www.searo.who.int/LinkFiles/SDH_SDH_FinalReport.pdf) Accessed on 14 November 2011.
  223. Rasanathan K, Villar ME, Matheson D, Etienne C, Evans T. Primary health care and the social determinants of health: essential and complementary approaches for reducing inequities in health [Internet]; 2010. Available at: [http://www.who.int/sdhconference/resources/rasanathan\\_jepidemiolcommunityhealth2009.pdf](http://www.who.int/sdhconference/resources/rasanathan_jepidemiolcommunityhealth2009.pdf) Accessed on 14 November 2011.
  224. Organización Mundial de la Salud. Declaración de Adelaida sobre la Salud en Todas las Políticas [Internet]; 2010. Available at: [http://www.who.int/social\\_determinants/spanish\\_adelaide\\_statement\\_for\\_web.pdf](http://www.who.int/social_determinants/spanish_adelaide_statement_for_web.pdf) Accessed on 14 November 2011.
  225. The Earth Institute. World Happiness Report [Internet]; 2012. Available at: <http://issuu.com/earthinstitute/docs/world-happiness-report> Accessed on 14 November 2011.
  226. Organización Panamericana de la Salud/ Organización Mundial de la Salud. Informe de la consulta informal preparatoria de la Organización Panamericana de la Salud para la “cumbre de la tierra 2012” [Internet]; 2010. Available at: <http://br.bing.com/search?q=Informe%20de%20la%20consulta%20informal%20preparatoria%20de%20la%20Organizaci%3b3n%20Panamericana%20de%20la%20Salud%20para%20la%20e2%80%9ccumbre%20de%20la%20tierra%202012%e2%80%9d%20Washington%2c%20D%2c%20E%20U%20A.%208%20de%20noviembre%20del%202010&mkt=ptbr&FORM=HPDWBR&DI=2883&CE=14.0&CM=SearchWeb> Accessed on 14 November 2011.



# Country Profiles



# Anguilla



Anguilla is a British Overseas Territory located in the northernmost portion of the Leeward Islands, in the Caribbean's Lesser Antilles. It covers 91 km<sup>2</sup> and includes some nearby uninhabited small islands and cays. The government system is parliamentary according to the Westminster model. The Head of State, the monarchy of the United Kingdom, designates a Governor as representative, who in turn appoints the Chief Minister from the Assembly (legislative chamber). The capital is The Valley.

Anguilla, an island with 16,373 inhabitants, is a British Overseas Territory. Its economy is based on the sector services, especially tourism, offshore banking services, and remittances transferred from abroad. During 2006–2007, the economy grew 11%, mainly through the increase in tourism. However, this growth then fell, partly due to the global economic crisis.

Immigration is an important demographic factor. The boom in construction and tourism attracted large numbers of workers from other countries.

In the five-year period 2006–2010, general progress in health continued, including improved sanitation, an effective system to ensure food safety, and a primary-care-based health system. These advances help raise life expectancy and lower mortality rates.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Education is free at public schools and attendance is mandatory for 5–17-year-olds. In 2008, total enrollment at primary schools was 92.9%. In 2009, the Institute for Higher Education was established to provide access to postsecondary and tertiary education in the country. Anguilla participates in the open education program of the University of the West Indies, which offers international teaching, virtually and in-person, throughout the Caribbean.

In 2010, adult literacy was 97.7%. From 2007 to 2009, 8,736 work permissions were granted, enabling foreigners to work (79.9% of permissions were granted to men).

### THE ENVIRONMENT AND HUMAN SECURITY

The Department of Health Protection is responsible for the management of waste, food hygiene, vector control, monitoring of drinking water, environmental health, occupational health, and delivery of low-cost health services.

Anguilla does not have rivers and its supply of drinking water is obtained from rain, wells, and desalination. In 2000, 60% of the population had access to drinking water and 99% to improved sanitation services. The Anguilla Water Department, created in 2008, is responsible for the supply and distribution of drinking water for public consumption.

### Selected basic indicators, Anguilla, 2006–2010.

Indicator	Value
Population 2010 (thousands)	16.4
Poverty rate (%)	...
Literacy rate (%) (2010)	97.7
Life expectancy at birth (years) (2010)	80.2
General mortality rate (per 1,000 population) (2010)	4.9
Infant mortality rate (per 1,000 live births)	...
Maternal mortality rate (per 100,000 live births)	...
Physicians per 1,000 population (2006)	1.2
Hospital beds per 1,000 population (2010)	2.1
DPT3 immunization coverage (%) (2010)	100.0
Births attended by trained personnel (%) (2010)	100.0

## HEALTH CONDITIONS AND TRENDS

All pregnant women received prenatal care, and their deliveries are attended by trained health personnel. Measures to prevent mother-to-child transmission of HIV exist, and no HIV-positive mother was registered in the period.

There were no cases of malaria in the period 2006–2010 or cases of vaccine-preventable diseases. The coverage of the Expanded Program on Immunization is close to 100%. Leptospirosis caused one death in 2010. One case of imported tuberculosis was reported during the period 2006–2010.

Antiretroviral therapy is provided free of charge when HIV/AIDS patients cannot afford to pay for it.

## HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

In 2004, the Health Authority was established, a semiautonomous body formally responsible for health care services delivery. This delegation of authority enabled the Ministry of Health and Social Development to assume the steering role in formulation of policy, strategic planning, and the setting of standards, regulations, monitoring, and evaluation.

There is a strategic health plan for the period 2008–2014. Priorities include development of health systems; training and management of human resources; family health, food, nutrition, and physical activity; chronic, noncommunicable diseases; communicable diseases; environmental health; mental health; and use of psychoactive substances.

### Human Resource Development Policy

The human resource policy is governed by the Constitution and the general decrees (rules, procedures, and obligations governing civil service).

The immigration policy stipulates that foreigners shall not be included in the permanent plan, which grants security of tenure. For people hired abroad, multiple two- or three-year contracts are granted. For non-Anguillans contracted on the island, month-to-month appointments for up to one year are granted. The contracts are granted by the pertinent government agencies such as the Health Authority and private-sector organizations.

The country depends on health personnel from abroad. All the physicians and 20% of the nurses have been hired abroad.

In 2010, there were a total of 19 physicians and 29 nurses in the country. Most training of health professionals takes place outside the country.

In 2009, the Saint James Medical School was established as an offshore private medical education institute. The school offers two fellowships annually to Anguillans and the graduates can practice in Canada and the United States.

Princess Alexandra Hospital is the largest employer of health workers in Anguilla. Some 66% of the public-sector workers are employed in the hospital. Primary care services employ another 23% of the country's health personnel.

There are no primary care physicians, but two general practitioners were assigned to the community health services to provide primary care. There are specialists only in the areas of anesthesia, gynecology, internal medicine, pediatrics, and surgery.

Anguilla faces a major challenge in implementing strategies needed to increase the number of health professionals and improve their training, contracting, and retention.

In 2008, the National Health Fund Act was decreed, to ensure that all citizens have access to quality and equitable care when clinically necessary.

The financing of the sector comes mainly from the Ministry of Health, which provides funding to the Health Authority based on an annual agreement of services and the annual budget for programs.

There is a mental health policy, based on the Mental Health Law of 2006, although there is no effective plan in place. Mental health care is provided in primary health care. In 2007, a 10-bed psychiatric unit was put into service in the Princess Alexandra Hospital.

The care model is based on primary care. The health facilities include a polyclinic, four health centers, and Princess Alexandra Hospital (with 32 beds). The hospital provides the principal specialties: internal medicine, obstetrics/gynecology, pediatrics, and radiology. There is also a private hospital and clinic. Given the small population and care network, many inhabitants go abroad to receive treatment.

Anguilla participates in the Pharmaceutical Procurement Services of the Organization of Eastern Caribbean States and can take advantage of bulk purchasing. Medications can be obtained at subsidized costs in the health facilities.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

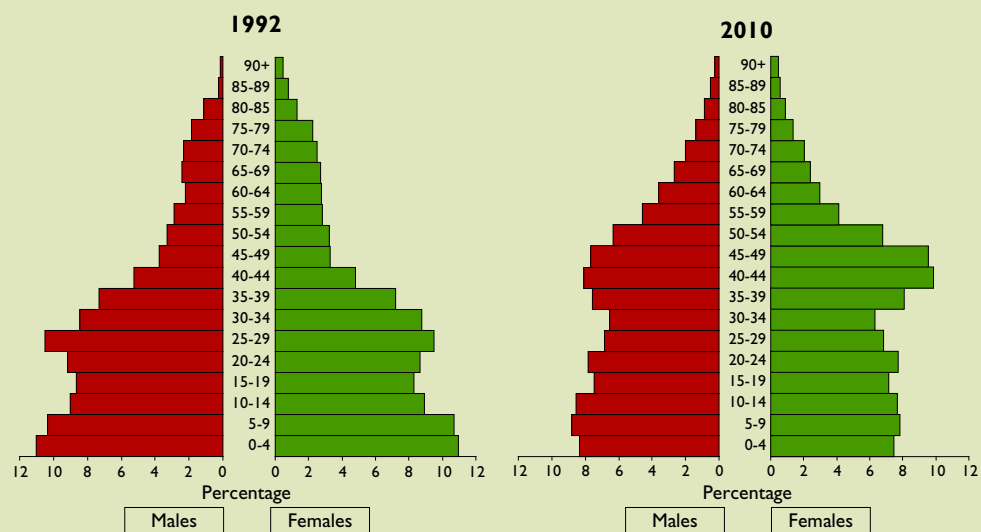
The use of information technology and communication grew between 2006 and 2010. The use of mobile telephones rose significantly, while the number of fixed telephone lines fell.

The number of Internet users also increased. There is no official health research agenda, but research activities are carried out depending on need.

### MAIN CHALLENGES AND PROSPECTS

Gender issues are a priority area, given salary differences between men and women in all labor categories, as well as the level of domestic violence. Data from 2006 show that not one woman held a ministerial position in the government. Of the seven permanent secretariats that year, only one

Population structure, by age and sex, Anguilla, 1992 and 2010.



was held by a woman, but the number of permanent secretaries increased to four in 2010. Of the heads of public service departments in 2006, 24 were men and 9 were women; by 2010, the number of women had increased to 13.

The quantity of solid waste, domestic waste, and industrial waste rose significantly from 2006 to 2010. Erosion is a problem along the coast due to the extraction of sand.

The main natural disasters include hurricanes, tropical storms, and floods. Anguilla's low topography increases the risk of flooding. In 2008, the territory was ravaged by Hurricane Omar, which caused substantial erosion of the beaches. With climate change and its effects, there is an increase in extreme weather phenomena, especially hurricanes and droughts, the rise in temperature of the ocean's surface, the elevation of sea level, deterioration of coral reefs, and destruction of species and their habitats.

The most significant vector-borne disease is dengue; seven cases were reported in 2008 and one in 2010.

Despite universal institutional birth coverage by skilled personnel, there was one maternal death in the period 2006–2010. In 2010, there was one maternal death (due to ectopic pregnancy) and one infant death (due to respiratory distress syndrome). In children under 5 years of age, the incidence of low birthweight was 16.1% in 2009. In the group of children 1–9 years old, the leading causes of morbidity were acute respiratory infections and gastroenteritis.

Between 2009 and 2010, the incidence of AIDS was 23.7 per 100,000, with a male/female ratio of 1.3:1. Heterosexual relations were the principal mode of transmission. From 1996 to 2010, there were no cases of HIV/AIDS in adolescents, seven cases in the 20–29-year-old group, 18 in the 30–39-year-old group, and two in the 44–64-year-old group.

In 2010, the most common specific causes of death were diabetes mellitus, prostate cancer, and Alzheimer's disease. Chronic, noncommunicable diseases were the leading cause of death.

The health status of the adolescent population presents several challenges in health promotion, especially

related to risk factors and unhealthy lifestyles. In 2010, 19 adolescent girls (13–19 years old) got pregnant (10% of pregnancies). In the period 2006–2010, 32 cases of sexual abuse were reported in people under 18. According to the global school-based student health survey (GSHS) conducted in 2009 in the 13–15-year-old group, 30% of the respondents had had sex, 76.5% of whom had started before 14 years of age, and approximately 69% had used condoms in their last sexual relations. At some point, 19% had seriously contemplated the possibility of suicide; 6.1% had smoked cigarettes in the 30 days prior to the survey and, among those who smoked, 87.8% had tried it for the first time before 14 years of age. Some 45.8% had consumed at least one alcoholic beverage during the 30 days prior to the survey.

There is no national health insurance system, but the social security system provides the availability of benefits for disease, maternity, and disability. At the end of 2006, 13,364 people were registered in the social security system (7,537 men and 5,827 women).

The Mental Health Act and National Health Fund Act need to be complemented with the necessary legal mechanisms, plans, regulations, and financing to enable their application and thus achieve the objectives for which they were designed.

There are some new challenges and an unfinished agenda with regard to health conditions that need to be addressed, especially the financial cost associated with the treatment of infectious diseases, such as tuberculosis, HIV infection, and the control of noncommunicable diseases.

The shortage of trained health professionals at the national level is a challenge that needs to be addressed, including the strategies that need to be drafted for their training, contracting, and retention.

The health information system and national surveillance system need to be strengthened to provide timely and accurate information. Permanent preparation and response capacity are needed to handle health emergencies associated with natural disasters.

# Antigua and Barbuda



Antigua and Barbuda is located north of the Leeward Islands in the eastern Caribbean. It comprises three islands: Antigua (280 km<sup>2</sup>), Barbuda (160 km<sup>2</sup>), and Redonda, a small, uninhabited island (1.6 km<sup>2</sup>). The islands are of volcanic origin, with mostly flat terrain. Antigua and Barbuda gained its independence from the United Kingdom in 1981, and is a member of the Commonwealth of Nations and the Organization of Eastern Caribbean States. The capital is Saint John's and its political and administrative divisions include six parishes and two dependencies (the islands of Barbuda and Redonda).



Between 2006 and 2010, Antigua and Barbuda made progress in health outcomes in various areas, despite experiencing a decline in gross domestic product (GDP) that resulted from the 2008 global economic crisis.

During this period, there was a reduction in the crude, maternal, and infant mortality rates and an increase in life expectancy. Moreover, the burden of communicable diseases declined owing to prevention policies as well as an expansion of immunization coverage.

The country has significant challenges in terms of reducing inequities, addressing the increase in cardiovascular diseases, and ensuring the quality of health services.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Gross national income (GNI) per capita in 2009 was US\$ 17,670 (adjusted in accordance with purchasing power parity). According to a 2007 survey on living conditions, 18.3% of the population was living in poverty (14.6% non-indigent poor and 3.7% indigent). In addition, 10% of the population was in vulnerable economic conditions. The poverty level on the island of Barbuda declined to 10.5% in 2007.

Access to education has improved and the country has achieved universal primary education, thus meeting Millennium Development Goal 2. For the period 2009–2010, net enrollment at the country's primary schools was 80.1% and the adult literacy rate reached 99%.

In terms of gender equity and women's rights, several initiatives have been carried out to reduce gender-based violence.

### THE ENVIRONMENT AND HUMAN SECURITY

The country's vulnerability as a small island state has led authorities to take steps to adapt to environmental changes. Among these measures are improving response capacity to natural disasters, establishing an institutional basis for managing the effects of climate change, and executing a comprehensive plan for water utilization.

### HEALTH CONDITIONS AND TRENDS

Life expectancy at birth increased, reaching 77.4 years for women and 73.3 years for men in 2010. The crude death

#### Selected basic indicators, Antigua and Barbuda, 2007–2011.

Indicator	Value
Population 2011 (thousands)	88.0
Poverty rate (%) (2007)	18.3
Literacy rate (%) (2009)	99.0
Life expectancy at birth (years) (2011)	75.5
General mortality rate (per 1,000 population) (2010)	4.9
Infant mortality rate (per 1,000 live births) (2008)	17.4
Physicians per 1,000 population (2010)	1.2
Hospital beds per 1,000 population (2010)	2.2
DTP3 immunization coverage (%) (2010)	98
Births attended by trained personnel (%) (2009)	100

rate declined from 5.82 per 1,000 population in 2006 to 4.86 in 2010. Likewise, infant mortality has continued to decline (17.4 per 1,000 live births in 2008).

With regard to maternal health, considerable progress has been achieved in prenatal care services, which covered 100% of pregnant women during this period.

The Expanded Program on Immunization (EPI) achieved 100% coverage of the country's infants.

The aforementioned achievements have been accompanied by sanitation and environmental health improvements, which have led to a decrease in the burden of communicable diseases. Vector-borne diseases, such as dengue and leptospirosis, have remained at endemic levels.

Free antiretroviral drugs are provided to patients with HIV and to pregnant women who are HIV-positive as a part of the national program for the prevention of mother-to-child transmission of HIV.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Although no structural reforms have been made to the health system in recent years, significant progress has been made in terms of public-sector planning. In 2007 an institutional plan was prepared covering the period 2008–2010, which established the priorities for the health sector.

Available resources to finance the sector have increased in recent years, although health expenditure as a percentage of GDP has fluctuated, representing 8.8% in 2008, 10.2% in 2009, and 7% in 2010. Financing for the sector was obtained from various donor agencies and international organizations.

### Study of Adolescent Eating Habits

A cross-sectional survey on nutritional knowledge, practices, and iron intake among adolescents was carried out in 2006 among the country's secondary school student population. Prior to this study, such information was only available for young children and pregnant women.

The survey, which was conducted by the Ministry of Health in collaboration with the Caribbean Food and Nutrition Institute and the Brescia University College (affiliated with the University of Western Ontario, Canada), made it possible to identify the percentage of these students who were overweight, to collect information on adolescent eating habits, and to evaluate the students' basic knowledge about nutrition.

The study has already proven beneficial for the young people of Antigua and Barbuda. Targeted interventions have been carried out to address problems detected in the survey and some schools are using teaching materials promoting an iron-rich diet and healthy lifestyles. An evaluation of this intervention shows that the students have improved their knowledge of nutrition and that eating habits are beginning to improve.

With regard to the organization of service delivery, the country focused on primary care as the core strategy to ensure that the population had adequate and equitable access to health care. In 2009, the Mount Saint John Medical Centre was inaugurated; it provides a wide range of both secondary- and tertiary-level services.

As part of the strategies aimed at preventing cardiovascular diseases, in 2008 a program was launched to improve the health of school-age children through exercise and better eating habits. Moreover, since 31 May

2010, smoking is prohibited in all civil service offices, vehicles, and facilities.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Noteworthy research conducted over the reporting period includes the Global School-based Student Health Survey (GSHS) and nutrition studies conducted in collaboration with the Caribbean Food and Nutrition Institute. Moreover, projects were carried out with PAHO/WHO technical assistance to create a mental health information system for the country and a system to monitor patients with HIV/AIDS.

### MAIN CHALLENGES AND PROSPECTS

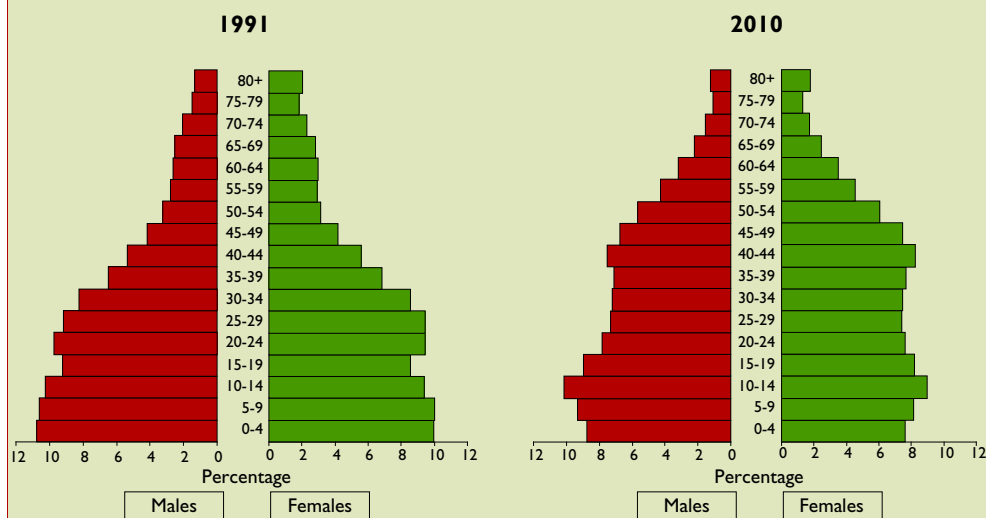
In Antigua and Barbuda, there are disparities in the distribution of poverty by geographic region and age group. In 2007, poverty in Saint John's—the country's most urbanized city—reached 22.3%, while poverty in the parish of Saint Philip—located at the extreme eastern end of the island of Antigua—reached 25.9%. One complex problem concerns the percentage of indigent children and young people. While children from 0 to 14 years old made up 26.6% of the country's population, they accounted for 32.5% of indigents and 36.2% of the non-indigent poor.

In spite of progress with regard to sanitation, challenges persist. In 2007, the population without access to drinking water was 10.7%. In addition, 22.7% of the population resided in substandard dwellings and used pit latrines or other more rudimentary installations for excreta disposal.

Environmental conditions are unfavorable in several areas of the country. Sources of drinking water are scarce, meaning that the country primarily depends on water desalination systems and wells for its drinking water. In addition, soil erosion is a significant problem for the country.

The country was impacted by two major hurricanes between 2006 and 2010. Hurricane Omar damaged and destroyed homes and caused flooding in 2008. Hurricane Earl struck in 2010 and costs of reconstruction and other tasks associated with that event were estimated at US\$ 12.8 million.

Population structure, by age and sex, Antigua and Barbuda, 1991 and 2010.



The 2009 influenza A(H1N1) pandemic served as a warning for the country's health system. It underscored the importance of continuing to improve response capacity for this type of event, as well as implementing the International Health Regulations of WHO.

Although the disease burden in terms of communicable diseases has improved, in the 2006–2010 period mortality was mainly due to chronic, noncommunicable diseases, and this continues to be one of the main challenges facing the country. The three leading causes of death were heart disease, cancer, and diabetes. The survey on living conditions carried out in 2007 showed a high prevalence of cardiovascular disease. The results show that 37% of the sample presented with diabetes and 69.4% with hypertension.

With regard to the availability of human resources, the country has staff shortages in areas such as nursing, laboratory personnel, radiology, and environmental health. The country should take steps to strengthen the quality of individual and collective health services in areas where deficiencies have been identified.

According to the Assessment Instrument for Mental Health Systems (AIMS-WHO, 2007), the country faces various challenges with regard to legislation and developing health policy in this area.

Antigua and Barbuda relies on facilities outside the country to cover certain medical treatments. The greatest

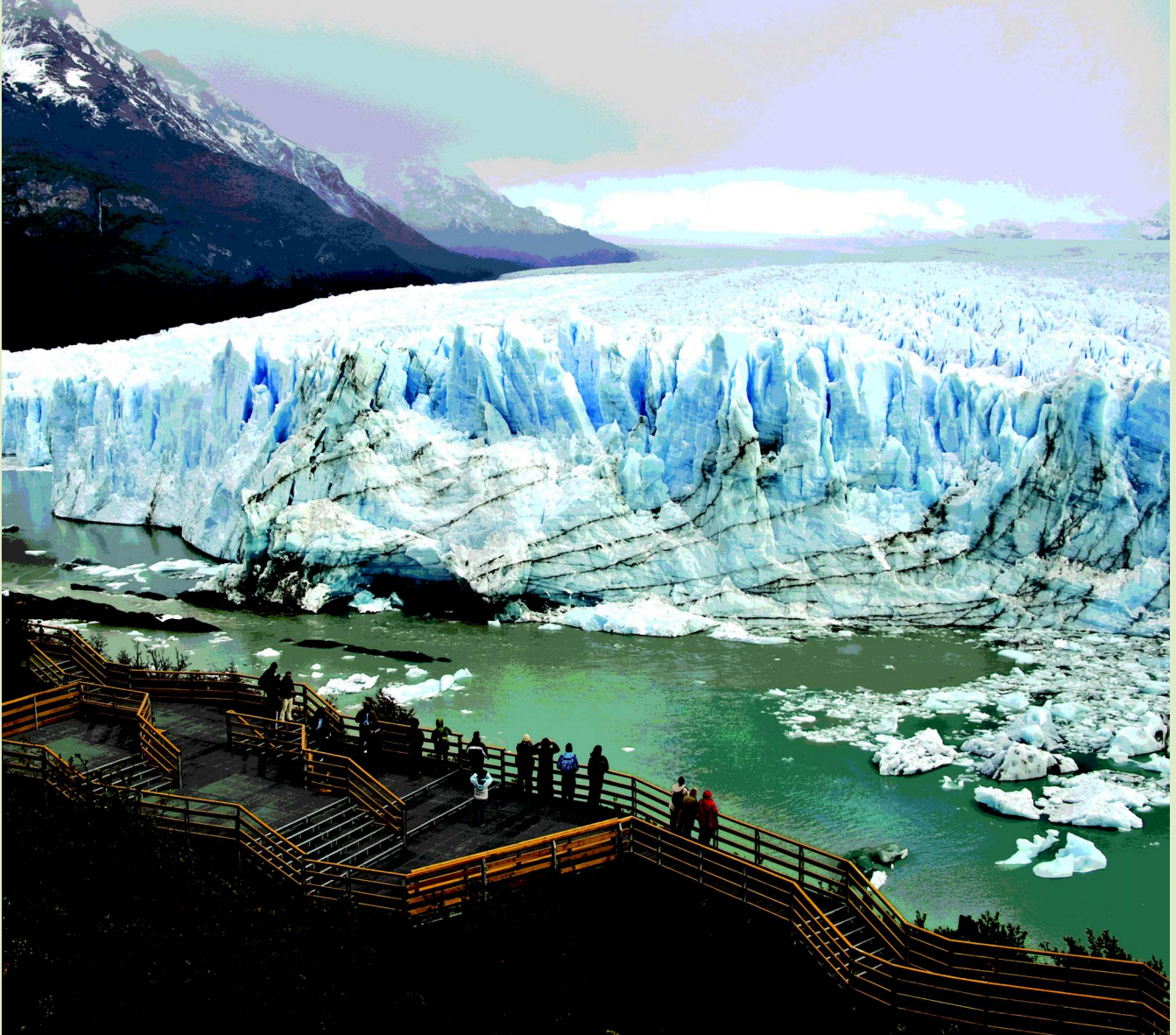
number of resources was allocated to radiation therapy for cancer, cardiopulmonary surgical interventions, and limb prostheses. Most of these procedures were carried out in the Caribbean.

A crucial challenge for the country is the need to address the unfinished health agenda. In addition, the country needs to continue to strengthen its health system, especially primary care, using strategies for equity, social participation, and health promotion.

There are several challenges related to limitations of the health information system. These include the need to formulate and disseminate an information policy that regulates and improves procedures for the flow and coverage of data, that protects and respects confidentiality, and includes training for staff that work in these areas. The country has scant research on public health issues.

The country's institutional health plan points to specific challenges with regard to the retention, availability, and distribution of health care professionals. The plan also considers the need to increase the financing of primary care services, to expand disease surveillance, to formulate policies for quality assurance, and to improve health information systems. The epidemiological situation of the country underscores the need for policies to address the growing burden of chronic diseases.

# Argentina



Argentina is the southeasternmost country in South America and shares borders with Chile, Bolivia, Paraguay, Brazil, and Uruguay. It borders the Atlantic Ocean on the east and the Andes on the west. Its mainland area is 2,791,810 km<sup>2</sup>, divided into five geographical regions: the northwest, the northeast, Cuyo, the central or pampa region, and Patagonia. Argentina is governed as a representative federal republic. Its political and administrative divisions include the autonomous city of Buenos Aires (the nation's capital and seat of the federal government) and 23 provinces, which in turn have departments and municipalities.

Argentina is a middle-income country that experienced sustained economic growth in the 2006–2010 period, despite a temporary contraction due to the international crisis of 2008–2009.

The country has extremely good capacity in the health field, and has made significant advances, most notably in improving the coordination of the health system and strengthening it in various sectors and levels.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Between 2006 and 2010, Argentina consolidated the recovery that followed the political and economic crisis of 2001. Between 2003 and 2009, the incidence of poverty declined from 54% to 13%, and extreme poverty from 27.7% to 3.5%.

After peaking at 20.7% in 2003, unemployment began to decline steadily and systematically in 2004, reaching 7.4% in the first quarter of 2011. The proportion of the employed receiving less than US\$ 1 a day fell from 12.9% in 2002 to 0.5% in 2009.

The literacy rate in the 15- to 24-year age group differs little by gender, with values close to 100% for both sexes. The country has exceeded its goal of ensuring that 40% of employed women work in non-agricultural jobs. Women hold 40% of senior public and private posts, and occupy over 30% of the seats in the National Legislature.

### THE ENVIRONMENT AND HUMAN SECURITY

Sanitation conditions have continued to improve. In 2010, 83.9% of the population had access to water from the public network (79.7% in metropolitan Buenos Aires and 94.3% in Patagonia). Currently, 74% of municipalities have municipal solid waste management plans.

Road safety has been addressed with advocacy and mechanisms that include the Federal Pact on Traffic and Road Safety and the National Agency of Road Safety.

### HEALTH CONDITIONS AND TRENDS

Life expectancy at birth has continued to rise (75.7 years as of 2010), and the infant mortality rate declined from 25.6 per 1,000 live births in 1990 to 12.1 in 2009 (a 52.7% reduction).

#### Selected basic indicators, Argentina, 2005–2010.

Indicator	Value
Population 2010 (millions)	40.1
Poverty rate (%) (2009)	13.0
Literacy rate (%) (2009)	97.7
Life expectancy at birth (years) (2010)	75.7
Crude mortality rate (per 1,000 population) (2007–2009)	7.0
Infant mortality rate (per 1,000 live births) (2009)	12.1
Maternal mortality rate (per 100,000 live births) (2009)	55.0
Physicians per 1,000 population (2005)	3.2
Hospital beds per 1,000 population (2008)	4.1
DPT3 immunization coverage (%) (2009)	94.0
Births attended by trained personnel (%) (2008)	99.5

In 2009, indigenous transmission of the rubella virus was interrupted. The two cases reported in the country that year were the last cases of indigenous transmission of the virus in the Americas, while 2008 marked the last case of human rabies in Argentina. Reports of canine rabies declined gradually (six cases in 2009). The last cases of indigenous measles transmission were reported in 2000 in Córdoba, though various cases of imported measles occurred between 2008 and 2011.

In 2009, 81.4% of the adult population reported having monitored their blood pressure in the last two years. Between 2005 and 2009, blood glucose monitoring in diabetic patients increased from 69.3% to 75.7% of that population. In 2009, tobacco consumption in those 18 years and older was 27.1% (a 2.6% reduction from the 2005 level), while second-hand exposure to smoke declined to 40.4%. The HIV screening test is administered to 90% of pregnant women, and 80% of those infected receive antiretroviral treatment to prevent vertical transmission of the virus.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Ministry of Health developed the nation's Federal Health Plan for 2010–2016, and the Office of Health Promotion and Chronic Disease Prevention and Control was created to address the growing problem of chronic diseases from an intersectoral perspective. In 2010, the National Bureau of Mental Health and Addictions was reestablished, and the National Mental Health Law was enacted.

### Insurance in Argentina's Health System

Argentina's public health system provides coverage for basic services to everyone, even if they also are covered by social security or private insurance.

In 2011, the public sector provided universal coverage. The national health plans (*obras sociales*) covered formal workers and their dependents (38.8% of the population); the National Institute of Social Services for Retirees and Pensioners, better known by the acronym PAMI, covered retirees and pensioners along with their spouses and children (8.3%); provincial social systems covered provincial civil servants and retirees and their dependents (13.7%); and the private sector provided coverage to its voluntary members (9.0%). The system provides coverage for goods and services needed for prevention, diagnosis, and treatment, both medical and dental, as stipulated by the Compulsory Medical Program.

The National Health Authority's mandate includes ensuring the population's access to the Compulsory Medical Program, as well as regulating and monitoring fulfillment of obligations and service quality by the social protection system (social security) and prepaid medical plans (private sector). The public sector also ensures that the population has insurance through specific plans, programs, and law. For example, Plan Nacer provides public health insurance for mothers and infants without coverage, and the Programa Remediador ensures access to essential drugs.

The Compulsory Medical Program includes coverage of less common, high-cost services by administering special programs that are funded by the Collective Redistribution Fund.

Social coverage has been strengthened thanks to the various entities that manage social insurance (social protection programs), at various levels and for various population groups. The last five years have seen a notable increase in financial resources, with health spending reaching 10% of the gross domestic product (GDP) in 2008.

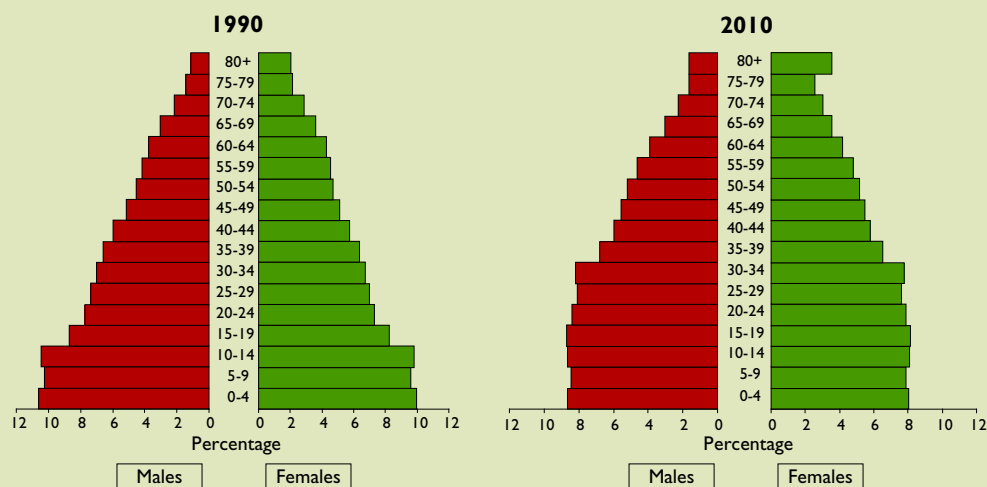
The health sector is composed of a number of systems and institutions, including 24 national and provincial systems, social programs at the provincial level and in other governmental sectors, the National Institute of Social Services for Retirees and Pensioners, and multiple companies that provide prepaid medical care, as well as several mutual insurance companies in the private sector. This complex system of social protection and health care coverage provides for the country's various populations. The public sector has continued to ensure care for the maternal and infant population through *Plan Nacer* and access to essential drugs through *Programa Remediador*.

In 2008, the National Cervical Cancer Program was created, and in 2011 the human papillomavirus vaccine was introduced for 11-year-old girls. The 2007–2010 period saw enhanced rehabilitation services and the execution of the Federal Program of Recreation and Sports for Persons with Disabilities.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The use of information technology has been strengthened, with interconnections among the various entities related to the health sector. Increased scientific output of Argentine institutions in 2008 was reflected in 7,928 documents being issued, representing annual growth of over 20%.

Population structure, by age and sex, Argentina, 1990 and 2010.



### MAIN CHALLENGES AND PROSPECTS

Despite the progress made, 23.5% of the indigenous population still has unmet basic needs, as opposed to 14.3% of the overall population. In 2005, some indigenous communities had illiteracy rates in excess of 20%.

The conversion of forest to agricultural land has contributed to intense deforestation in some areas, with concomitant deterioration in environmental conditions. Along with climate change (melting glaciers and increasing rains), this has had various economic and health impacts. In some rural areas, sanitation (safe drinking water and connection to sewerage systems) remains poor.

Most emergencies and disasters in Argentina are associated with intense snowfalls, forest fires, periods of drought, and floods. In 2007, northern Patagonia suffered a drought that was responsible for the death of some 800,000 head of cattle, and an estimated loss of 15 to 20 million tons of grain. The eruptions of the Chaitén and Puyehue volcanoes (in 2008 and 2011, respectively), which are both located in Chile, produced ash clouds that affected three provinces in Argentina and caused economic damage to fish farming, livestock operations, and tourism.

The maternal mortality rate was unchanged between 1990 and 2008, fluctuating between 40 and 42 deaths per 100,000 live births annually, though there are significant differences between and within provinces (the averages are two to three higher times in the poorer provinces than they are nationally). In 2009, maternal mortality reached 55 per 100,000 live births, an increase of 38.5%, attributed to the A(H1N1) influenza pandemic. Although infant mortality has continued to decline (12.1 per 1,000 live births as of 2009), it could be further reduced by action directed at preventable deaths, in particular those involving problems originating in the perinatal period, which represent 49.3% of deaths. Infant mortality rates range from 8.3 per 1,000 live births in the province with the lowest rate to 24.2 per 1,000 in the province with the highest.

Some preventable communicable diseases related to vectors and zoonoses persist, including dengue (at epidemic levels), residual foci of malaria, and the occasional re-emergence of jungle yellow fever. Leprosy continues to be a public health problem (354 cases were reported in 2010). The HIV epidemic is concentrated, with an estimated prevalence of 0.4% in the population 15 years and older (12% among men who have sex with men, 6.1% among drug users, 5% among sex workers, and between 24% and 34% among transsexuals). In 2009, 11,000 new cases of tuberculosis were reported (26.6 per

100,000 population). In 2010, over 6 million inhabitants were estimated to suffer from mental disorders, including 1.6 million with depression and 1.7% with alcohol abuse or dependency.

Chronic, noncommunicable diseases are responsible for 80% of deaths (2008 figure), with 33% caused by cardiovascular disease and 20% by cancer. The population continues to have a high proportion of risk factors: physical inactivity (68.9%), overweight (64.2%), obesity (29.7%), hypertension (36.7%), and daily smoking (23.6%).

Levels of violence and injury have persisted or increased. There were 47 deaths per 100,000 population due to external causes in 2009, 55% of which were due to accidents (primarily traffic accidents). Of note in this connection is risky behavior on the roads, including failure to use seat belts and drinking before driving.

The great number and diversity of entities that make up the social protection system and health care system continue to present a challenge for the leadership role of the national health authority, making it more difficult to achieve integration and coordination in the fragmented and segmented health sector.

Economic, social, and democratic progress is expected to continue in the next five years. Despite efforts toward greater equity in health, inequities and inequalities between different population groups will persist, to the detriment of marginalized groups. The implication of this is that improving health conditions in the provinces of the north and the marginalized areas of the metropolitan Buenos Aires area is a health priority.

The fragmentation of health services will continue to be one of the major challenges for organizing health and social services response, particularly given the increasing aging of the population and the increase in chronic diseases and associated disabilities.

To the extent that leadership is strengthened at various levels, it should help further the integration and strengthening of the health system's various entities. In addition, it will be necessary to make the sector more financially sustainable, make the distribution of its resources more equitable, and improve performance at the country's different decision-making levels and in its different areas of action, so as to achieve a more efficient and equitable health system.

# Aruba



Aruba is a Caribbean island located in the Lesser Antilles, approximately 32 km off the coast of Venezuela, and covering an area of 180 km<sup>2</sup> (with a length of 31 km and a width of 8 km). Along with Bonaire and Curaçao, it is one of three Dutch Leeward Islands. It is an autonomous country within the Kingdom of the Netherlands, and the Queen of the Netherlands is its head of state, while the Governor of Aruba is her representative. The Prime Minister of Aruba is the head of government. The country's political and administrative divisions include the capital city of Oranjestad and eight administrative districts.



Aruba is a small country with an active, open economy that primarily depends on banking and international tourism. The growth of the island's population reflects both natural growth and immigration.

The National Development Plan for 2003–2007 included specific goals and actions for the Ministry of Health and the Environment that continue to be a challenge. Between 2006 and 2010, the health situation continued to improve, with increased coverage of maternal and child care and a progressive reduction of mortality. Most significant are the absence of maternal deaths, low infant mortality, and the decrease of vaccine-preventable diseases.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Aruba's average per capita monthly income from employment was US\$ 1,543 in 2006; those in the lowest income decile earned US\$ 562 a month, while those in the highest decile earned US\$ 2,778.

In 2009, the adult literacy rate was 99.4% (99.3% for men and 99.5% for women). The net total primary enrollment rate was 96.8% (95% for boys and 98.4% for girls), and the rate of primary school completion was 94.8%. In 2006, there were 34 primary schools, 13 high schools, and two institutions of higher education. The gender parity index in primary and secondary education was close to 1.0 but was 1.4 (favoring girls) at the tertiary level.

### THE ENVIRONMENT AND HUMAN SECURITY

Aruba has no natural source of potable fresh water, and precipitation on the island is very limited, so drinking water is obtained through desalination. The distilled water produced by this process is safe to drink and is piped to all the island's inhabitants. The water and energy company that conducts the desalination and distribution

#### Selected basic indicators, Aruba, 2006–2010.

Indicator	Value
Population 2010 (thousands)	107.8
Poverty rate (%)	...
Literacy rate (%) (2009)	99.4
Life expectancy at birth (years) (2010)	75.5
General mortality rate (per 1,000 population) (2007)	4.7
Infant mortality rate (per 1,000 live births) (2010)	9.3
Maternal mortality rate (per 100,000 live births) (2006–2010)	0.0
Physicians per 1,000 population (2006)	1.3
Hospital beds per 1,000 population (2009)	3.2
DPT3 immunization coverage (%) (2009)	98.0
Births attended by trained personnel (%) (2009)	100.0

has the world's second largest desalination plant, and supplies the drinking water and electricity for the island's residents and businesses.

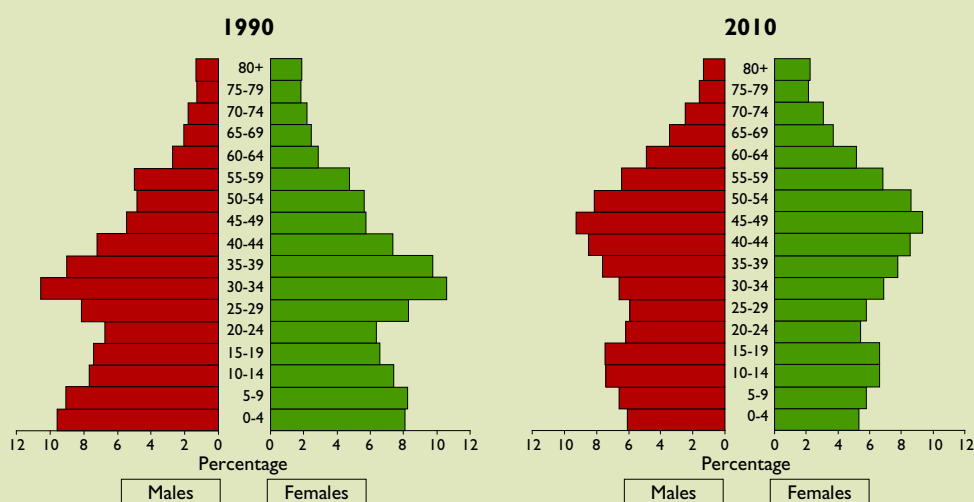
Drinking water and sanitation coverage is 100% for both residences and businesses. The sewage system is adequate, and all homes have their own septic tanks.

Aruba lies outside the hurricane zone, although it frequently experiences marginal effects from passing tropical storms. Hurricane and flood warnings are monitored closely, and disaster preparedness programs are in place.

### HEALTH CONDITIONS AND TRENDS

Maternal health care (and birthing care, in particular) is universally available. Prenatal care is provided by a general practitioner, midwife, or gynecologist, as per a physician's

Population structure, by age and sex, Aruba, 1990 and 2010.



### A Multisectoral Approach to Illegal Drugs

*The use of illegal drugs, as well as drug trafficking and dealing, are of great concern to the island's authorities. Aruba is a convenient transshipment point for illegal drugs, which results in their being available to residents at low cost.*

*In 2008, approximately 10% of residents surveyed stated that they had used illegal drugs, and 4% of the population is estimated to have had psychiatric disorders associated with drug use. Some 400 to 500 drug addicts, the so-called "chollers," are homeless.*

*Aruba's National Security Plan for 2008–2012 identifies international drug trafficking and marketing and the impact of this activity on the community's security as ranking fourth among six serious threats to national security. Accordingly, it calls on all sectors to take part in controlling the problem.*

*The Ministry of Health coordinates policies on illegal drugs to combat the mental, social, and physical dependency associated with drug use.*

*The Anti-Drug Foundation of Aruba is the most active nongovernmental organization in the prevention of drug use, conducting awareness campaigns and organizing conferences and programs for young people, parents, and workers.*

advice. No maternal deaths were reported in the 2006–2010 period. There were 44 infant deaths between 2007 and 2010, for a rate of 9.3 deaths per 1,000 live births; the leading causes were disorders stemming from the perinatal period.

Although there were cholera outbreaks in other parts of the Caribbean, Aruba did not report any cases between 2006 and 2010. There were 36 confirmed cases of influenza A(H1N1) in 2009. That year, a cruise ship with influenza A(H1N1) cases aboard was refused entry to numerous ports in the Caribbean. Aruba received the vessel, and the Department of Public Health, in collaboration with other agencies, implemented the necessary public health measures, which were effective.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Public Health Law of Aruba, in effect since 1989, provides for monitoring the quality of the island's public health and medical services in order to promote the population's health. The law mandates that the Department of Public Health, under the Ministry of Public Health and

Environment, carry out surveillance, monitoring, and inspection of various aspects of health care on the island. Since 2008, the Department of Public Health has worked on revising and updating the country's health policies and regulations.

In 2007, annual health spending totaled US\$ 215.7 million, or nearly 8.4% of the gross domestic product (GDP). Funding for the health sector comes from the government of Aruba (52.4%), from premiums paid by employers and people registered in the general health insurance fund (*Algemene Ziektekosten Verzekering*, or AZV), and from other sources such as public-sector entities, companies, international donors, and private parties.

In 2010, there was one general practitioner per 2,560 population. General surgeons in 2010 numbered 1 per 21,520 population, and psychiatrists 1 per 35,867. AZV contracts health care providers, including all primary care physicians and specialists, physical therapists, midwives, and the majority of dentists.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The Epidemiology and Research Unit of the Department of Public Health has various functions, including the routine collection of health information, epidemiological surveillance, and investigation of outbreaks. It supplies data to support needs assessment, policy-making, research, surveys, and health promotion activities. The Unit also provides information to the medical sector by publishing periodic bulletins.

### MAIN CHALLENGES AND PROSPECTS

There are major inequalities in household income in Aruba. In 2010, half of the island's households (50.5%) had monthly incomes between US\$ 1,681 and US\$ 5,040, 28.7% received between US\$ 841 and US\$ 1,680, and 12.2% earned US\$ 840 or less. Fewer than 10% of households earned in excess of US\$ 5,000 a month.

Persistent unemployment, particularly among young people, constitutes a complex situation. The proportion of working age citizens who were employed in 2007 was 62.4%, while the percentage of young people (ages 15 to 24) with jobs was only 23.3%.

Between 2006 and 2010, there were three severe outbreaks of dengue in Aruba: in the largest one in 2006, there were 1,486 laboratory-confirmed cases; 617 cases were confirmed in 2010. From 2005 to 2010, 116 new cases

of HIV infection were reported (75.9% of them in men and 24.1% in women). The 25- to 44-year age group was most affected (50 men and 17 women infected). In the same period, 39 cases of pulmonary tuberculosis were reported.

The highest age-adjusted mortality between 2005 and 2009 was associated with diseases of the circulatory system, malignant neoplasms, and external causes. Chronic diseases were the leading cause of morbidity and mortality. Mortality due to ischemic heart disease was 37.6 per 100,000 population (48.2 per 100,000 in men, 28 per 100,000 in women). Malignant neoplasms were the second leading cause of death. Diabetes was responsible for 31.5% of deaths.

In 2000–2009, the most common malignant neoplasm sites in men were the trachea, bronchus, and lung (70.2%), while almost all deaths from neoplasms in women (97.8%) were due to breast cancer. Cancers of the trachea, bronchus, and lung were responsible for 13.9% of all deaths due to neoplasms.

In 2006, the prevalence of diabetes in the 25–64-year-old population was 8.3%, while the figure for hypertension in this group was 19.8% for men and 12.2% for women. The prevalence of risk factors is high. In 2006, 77% of adults between the ages of 25 and 64 were overweight or obese (82.8% of men, 72.5% of women). In addition, 38.3% of this age group reported having ingested alcohol in the last 30 days (52.9% of men and 26.6% of women). There was limited participation in sports activities at schools: 27% of children in primary school engaged in sports activity one day a week or less. Seventy percent of adults reported not engaging in physical recreation, and 60% stated they engaged in no type of physical activity.

In recent years, there has been an increase in the number of private geriatric homes. Given the lack of

regulation, however, there is uncertainty concerning the quality of care provided in these institutions.

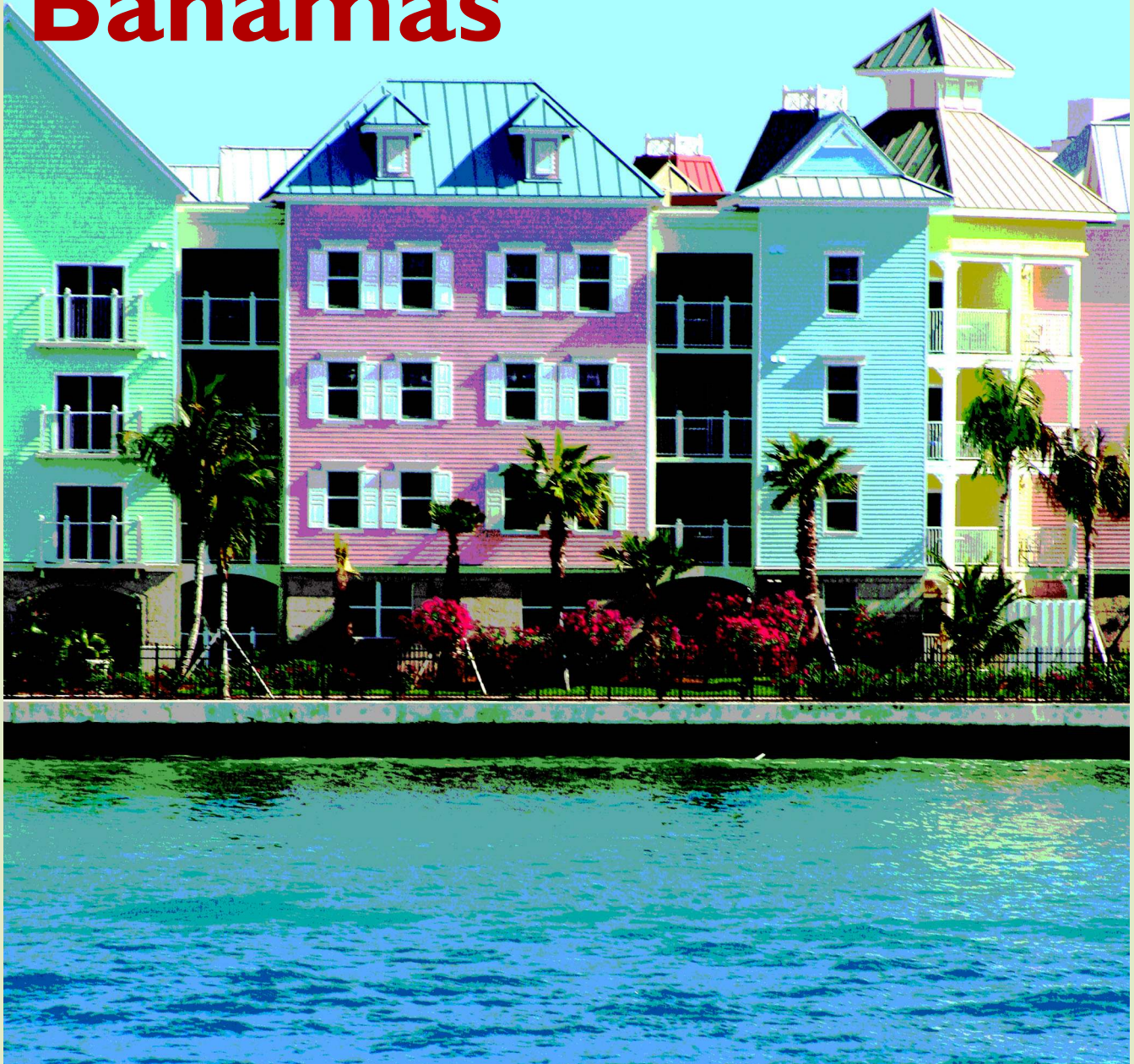
Aruba does not have a medical school, and health professionals are trained mainly in the Netherlands, the United States, and Costa Rica. There are two foreign medical schools in Aruba, but their graduates cannot practice in Aruba. Moreover, many professionals emigrate, in particular because those who get degrees abroad tend to remain abroad, where there are more professional opportunities and higher salaries.

Diseases of the circulatory system continue to be a major public health priority, since they are the leading causes of death and disease in the adult population, and the population has a high proportion of risk factors for them. However, this problem and the lifestyle-related issues associated with it are amenable to prevention and control measures, both by the health sector and by the population itself; such measures could have a major impact on the problem.

The specific goals and activities that the National Development Plan for 2003–2007 detailed for the Ministry of Health and Environment continue to represent a challenge. The general health insurance system provides universal coverage, and while there is a well-organized network of health care services, high costs are a problem.

Secondary and tertiary care outpaces primary care, and curative services generally outpace prevention services. In the future, Aruba is expected to increase health promotion, disease prevention, and treatment of chronic, noncommunicable diseases, as well as focus on funding and reducing the high cost of health care while increasing the availability of trained health workers at all levels of the health care system.

# Bahamas



The Commonwealth of the Bahamas is an archipelago of approximately 700 islands and 2,400 cays and rocks spread out in the Atlantic Ocean near the southeast coast of Florida and the northeast tip of Cuba. The country has a total land area of 13,878 km<sup>2</sup>. The main islands are Great Bahama and New Providence (where Nassau, the capital, is located). The country gained its independence from the United Kingdom in 1973, and it is a parliamentary democracy based on the Westminster model. The Queen of England is the head of state, and she is represented by a Governor General. The country is divided politically into a central district, called New Providence, and 32 local districts.

The per capita gross domestic product (GDP) of the Bahamas was US\$ 20,312 in 2009, one of the highest in the Region. Tourism and financial services are the sectors that contribute the most to the GDP.

Health care is financed from general tax revenue, health insurance, and direct payments. In 2009, total health expenditure represented 7.2% of GDP (US\$ 1,558 per capita). In 2008, public spending was equivalent to 3.4% of GDP (US\$ 771 per capita). Private expenditure was 52.3% of the total health expenditure.

Between 1980 and 2008, life expectancy for men increased from 64.3 to 71.0 years, and from 72.1 to 76.7 for women. The country has allocated substantial resources to addressing the social determinants of health, and it has also sought to make high-quality health care accessible to the entire population.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

The population's income has increased, although its distribution continues to be unequal. The Gini coefficient of income distribution was 44% in 2009.

In 2001, poverty was 9.3%, and 5.1% of households had annual incomes below an even lower threshold, of just US\$ 2,863 per person.

In 2005, literacy among adults was 95.8% (95.0% for men and 96.7% for women). School attendance is compulsory from age 5 to 16, and public primary and secondary education is free and universal. During the 2006–2007 school year, enrollment was 97.2%. Spending on education represented 18% of public spending and 4.8% of GDP.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2009, 93.6% of the population had access to a water supply through house connections and other acceptable piped means. The population without access to piped water (6.4%) relied on wells, rain barrels, and other sources.

Most dwellings (81%) had flush toilets connected to a cesspit or septic tank, and 13% were connected to the sewerage system. Of the rest, 4.5% used pit latrines and 1.1% had no sanitary facilities.

The Department of Environmental Health Services is responsible for disposing of solid waste in designated

#### Selected basic indicators, Bahamas, 2001–2010.

Indicator	Value
Population 2010 (thousands)	353.7
Poverty rate (%) (2001)	9.3
Literacy rate (%) (2005)	95.8
Life expectancy at birth (years) (2010)	75.4
General mortality rate (per 1,000 population) (2008)	5.5
Infant mortality rate (per 1,000 live births) (2008)	17.9
Maternal mortality rate (per 100,000 live births)	..
Physicians per 1,000 population (2002)	1.7
Hospital beds per 1,000 population (2010)	3.1
DPT3 immunization coverage (%) (2010)	99.0
Births attended by trained personnel (%) (2009)	99.0

landfills, although some rural communities dispose of their refuse in open dumps.

With multilateral financial assistance, traffic safety is being addressed through initiatives to improve roads.

Food safety is monitored through slaughterhouse inspections, sampling and testing of imported canned products at ports of entry, and inspections of food establishments. Bahamian law requires that any person involved in food production, storage, transportation, or handling be properly certified.

#### The Role of the Public Hospitals Authority

*The Ministry of Health is responsible for health policy and planning, regulation and surveillance, preparation and implementation of national programs, and health services delivery.*

*The Public Hospitals Authority was created in 1998 to take over development and management of the three government hospitals: Princess Margaret Hospital, Sandilands Rehabilitation Center, and Rand Memorial Hospital. It is governed by a council, which answers to the Minister of Health, and it has a managing director who serves as chief of operations and reports to the council.*

*The Authority has been empowered to purchase, rent, acquire, maintain, and dispose of land or properties. The Authority has also been responsible for planning and managing shared services, including the National Medical Emergency Services, the Bahamas National Drug Enforcement Authority, and the Bureau of Materials Management (which is charged with procuring disposable surgical supplies). Finally, responsibility for the administration of community clinics on Great Bahama has been assumed by the Public Hospitals Authority.*

## HEALTH CONDITIONS AND TRENDS

In 2008, 94% of pregnant women received prenatal care, with an average of 6.5 consultations. There were three maternal deaths, and the prevalence of low birthweight was 11.6%. Infant mortality was 17.9 per 1,000 live births.

Data on dengue, malaria, and yellow fever show that none of these diseases is endemic. During 2006–2009, vector control programs focused on controlling and eradicating *Aedes aegypti* and anopheles mosquitoes. A total of 19 imported cases of malaria, none of them fatal, were reported in 2006. One case of dengue was reported in 2008.

No cases of poliomyelitis, diphtheria, measles, or neonatal tetanus were noted during the 2006–2008 period, and only one case of *Haemophilus influenzae* meningitis was reported in 2006. These successes are attributed to vaccination coverage of over 95%.

In 2007, the prevalence of HIV infection in blood donors was 0.4%, and the percentage of persons being treated for sexually transmitted infections was 3.9%, down from 5.3% in 2006. The incidence of AIDS has been declining since 1997, and differences between men and women in incidence rates have narrowed.

New cases of tuberculosis ranged between 49 and 64 per year over the 2006–2008 period. In 2006 there were 17 deaths from the disease, but in 2008 the number fell to 7. The rate of tuberculosis-HIV co-infection was 50% in 2006, but in 2008 it was down to 35%.

## HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The health system consists of a public sector and a private, for-profit sector. The system's most important institutions

are the Ministry of Health, the Department of Public Health, and the Public Hospitals Authority.

The public system (which has 87% of the hospital beds) is responsible for providing most of the care to the population. The public-system network includes 95 clinics and 3 hospitals. Preventive and primary health care services are provided at clinics overseen by the Department of Public Health (except in Great Bahama), while tertiary care is provided in training hospitals under the Public Hospitals Authority.

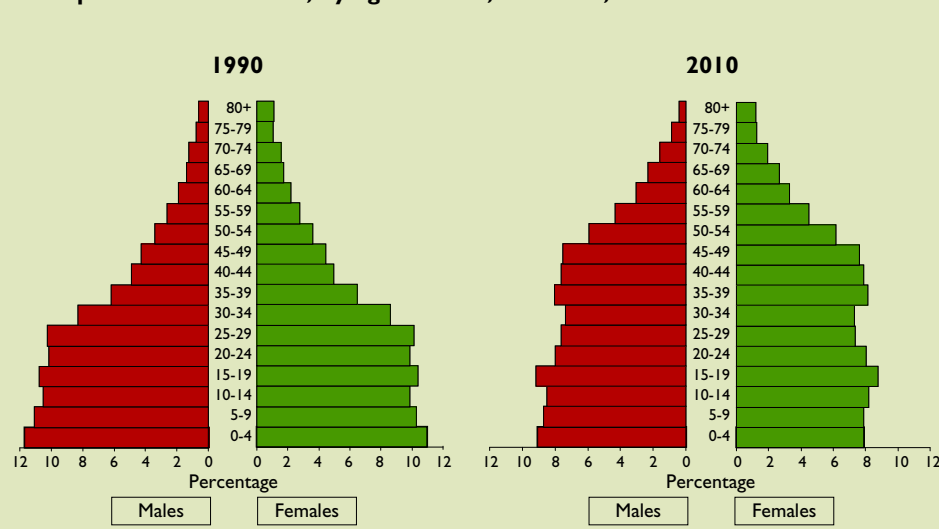
According to the Living Conditions Survey conducted in 2006, 36.2% of the population had private health insurance, costing a mean of US\$ 160 per person a month. In 2010, total public and private hospital capacity was 1,054 beds, or 3 beds per 1,000 population.

The main private hospital service provider is located in Nassau, and it offers primary, secondary, and tertiary care. Nassau also has a 12-bed establishment, with 3 of the beds for coronary care and 4 of them for telemetry patients. The country also has 291 private clinics or physician's offices that individuals can access directly.

The Ministry of Health is responsible for pharmaceutical regulation and oversight, and the National Drug Enforcement Authority is in charge of registering pharmaceutical distributors and the medicines that they provide. The national drug formulary lists approximately 1,051 products.

The purpose of the National Prescription Drug Plan has been to carry out strategies to combat chronic diseases, improve access to prescription drugs, and reduce the cost of those drugs. Coverage is provided to pensioners over 65 years of age, disabled persons, children and teens under 18, and full-time students under the age of 25. Eleven diseases are covered: arthritis, asthma, cancer (breast and prostate), diabetes, depression, glaucoma, hypercholesterolemia, ischemic heart disease, hypertension, and psychosis.

Population distribution, by age and sex, Bahamas, 1990 and 2010.



## KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Telephone subscriptions rose from 47.9 per 100 inhabitants in 2000 to 142.7 in 2009, presumably because of increased use of cell phones. Progress in access to the Internet, however, has been slow. In 2009, only 33.9% of the inhabitants reported that they used it.

## MAIN CHALLENGES AND PROSPECTS

Between 2006 and 2008, unemployment rose from 7.6% to 8.7%, and in 2009 the world economic crisis helped to boost the figure to 14.2% for the country overall. That same year, unemployment was highest among adults under the age of 25 (32%), but in rural communities it was lower (9%) than the national average.

According to the Household Expenditure Survey 2004, the poorest families reported less illness (7%) than the national average (12%), but this group was more affected by intentional and accidental injuries. Injuries from traffic accidents were two times greater in this group than in the general population. Cost and lack of time were mentioned as barriers preventing access to services in the poorest population (3% and 8%, respectively), more than in the general population (1% and 1.4%, respectively). Rural residents reported having less illness in the weeks prior to the survey.

Food-borne diseases and gastroenteritis continue to pose challenges. In 2007, the incidence was 464 per 100,000 population. In 2004, the Ministry of Health assumed responsibility for training and certifying food handlers, and 21,670 people were trained in 2009.

The Bahamas is vulnerable to climate change. In 2007, it was predicted that a one-meter rise in sea level would affect 11% of the country's territorial mass. Rising temperatures, in turn, will damage the coral reefs that harbor many species of fish and other organisms. In addition, it is expected that tropical cyclones will increase in number and intensity.

Mortality in children aged 5 to 14 years was 33.5 per 100,000. The main cause was injuries. A survey on the prevalence of recreational drug use found that some in this group began to drink alcoholic beverages and use marijuana when they were very young: at the age of 11, alcohol consumption prevalence was 28.9% and for marijuana, the prevalence was 4.7%.

In those 15 to 24 years old, injuries dominated the morbidity and mortality profile. In the group aged 25 to 44, a total of 330 deaths were reported; specific mortality in men was 414.1 per 100,000, and in women, 215.3 per 100,000.

The leading causes of death in men were HIV/AIDS, assaults, land motor vehicle accidents, cirrhosis and other chronic diseases of the liver, and accidental drowning. In women, the leading causes were HIV/AIDS, breast cancer, hypertensive disease, pulmonary heart disease, and diseases of the musculoskeletal system.

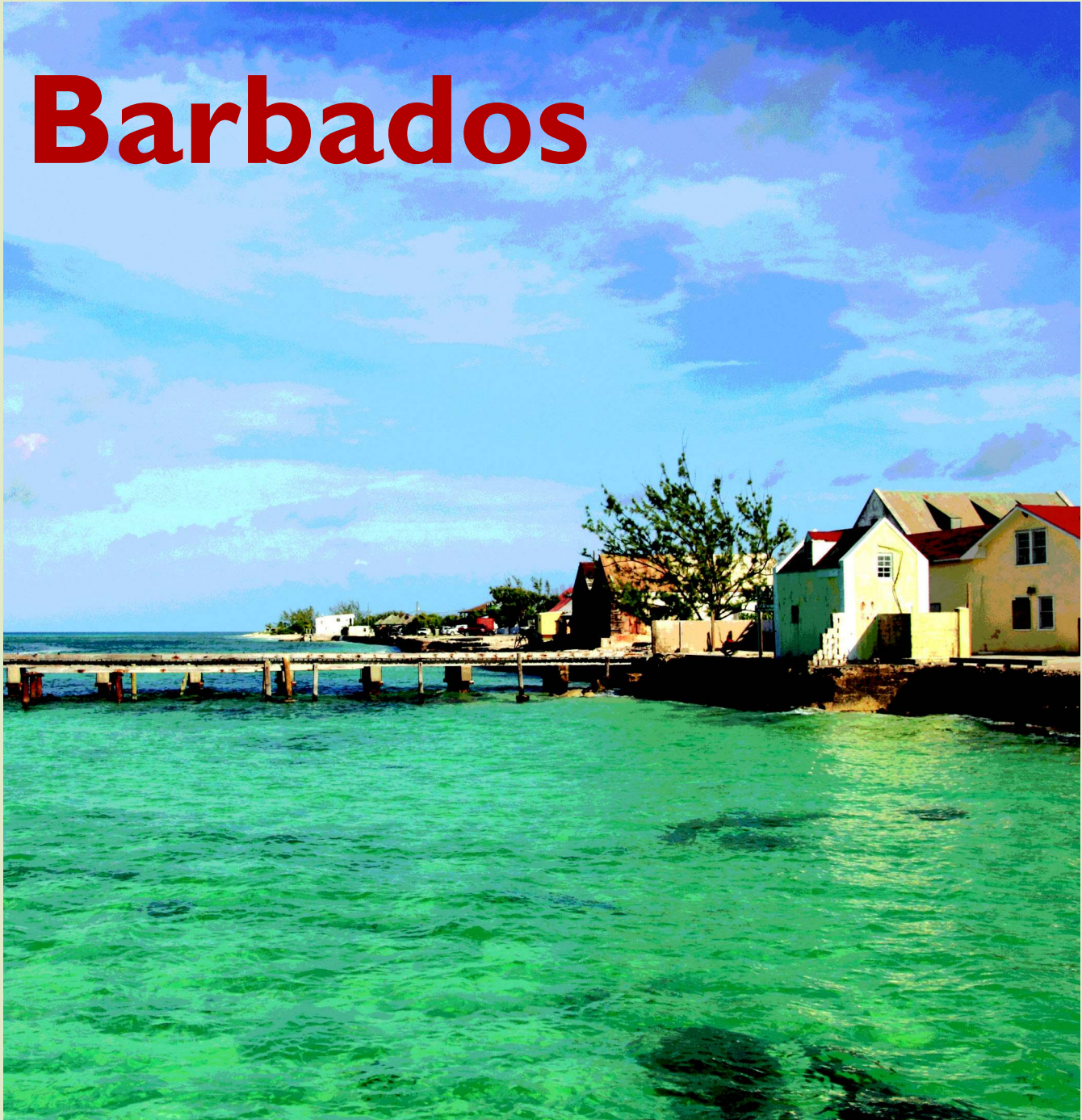
In the population aged 45 to 64, chronic diseases predominated, with 510 reported deaths (796.9 per 100,000) in 2007. Specific mortality in men (1,059 per 100,000) was almost double the rate for women (599.5 per 100,000). The leading causes in men were HIV/AIDS, hypertensive disease, ischemic heart disease, cerebrovascular disease, and diabetes. The primary causes in women were breast cancer, HIV/AIDS, hypertensive disease, cerebrovascular disease, and cirrhosis and other chronic diseases of the liver.

In the over-65 age group, the most frequent causes of mortality were hypertension, ischemic heart disease, cerebrovascular disease, diabetes, and prostate cancer.

In order to meet the Millennium Development Goal (MDG) targets for reducing infant and child mortality, it will be necessary to strengthen the referral system, improve the clinical and cultural competency of service providers, and promote education on health and well-being.

Along with holding on to progress already achieved, there are other challenges to address. Of particular importance are the increase in unintentional and intentional injuries (homicides) and chronic diseases influenced by lifestyle, the health sector's limited ability to protect the immigrant population, and the fragmentation of services. These problems pose challenges for the sustainability of the health system, which makes it all the more important to address them.

# Barbados



Barbados is the easternmost country in the Caribbean. It is a coral island that covers 430 km<sup>2</sup>, with a length of 34 km and width of 23 km. The topography is generally flat. It has a tropical climate and is vulnerable to natural hazards such as hurricanes and tropical storms, with associated storm surge and flooding. Bridgetown is the capital city, and the country is divided administratively into 11 parishes. Barbados gained its independence from the United Kingdom in 1966 and is a member of the Commonwealth of Nations. It has a democratically elected, parliamentary form of government.



During the period 2006–2010, Barbados continued to improve its health situation: life expectancy improved and the country managed to lower the infant mortality rate, thanks to improvements in the standard of living and in access to health care. At the same time, the Expanded Program on Immunization (EPI) continued to reduce the incidence of vaccine-preventable disease.

There is growing public awareness of the role environmental issues play in maintaining a healthy population and programs have been developed to address the country’s main public health issues.

Chronic, noncommunicable diseases constitute a formidable challenge, and the country has taken a number of different steps to address this problem.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

In 2010, the Barbadian government, in conjunction with the Caribbean Development Bank, conducted a survey on poverty and living conditions in the country. This survey represents the first research of its kind since the Inter-American Development Bank’s survey on poverty in Barbados in 1997. This new survey found that approximately 13.9% of the population was living in poverty. The results of the survey provided relevant information to be taken into account in poverty reduction policies and related social programs.

The UNDP’s *Human Development Report 2010* reaffirmed that Barbados is classified among the countries with a very high level of human development.

Barbados guarantees primary and secondary education to children and adolescents through 16 years of age, providing state-sponsored educational services. Due to advances in education quality, between 2005 and 2010, literacy was nearly universal (99.7%).

### THE ENVIRONMENT AND HUMAN SECURITY

With regard to sanitation, the country has achieved universal coverage of drinking water, sewerage, and excreta disposal systems.

The potential impacts of climate change on Barbados have been considered by the country’s health authority. Consequently, Barbados was the only country of the Americas selected to participate in the Global Environment Facility program, “Piloting Climate Change

#### Selected basic indicators, Barbados, 2009–2010.

Indicator	Value
Population 2010 (thousands)	276.0
Poverty rate (%) (2010)	13.9
Literacy rate (%) (2010)	99.7
Life expectancy at birth (years) (2010)	77.7
General mortality rate (per 1,000 population) (2010)	8.0
Infant mortality rate (per 1,000 live births) (2010)	10.9
Maternal mortality rate (per 100,000 live births) (2010)	58.4
Physicians per 1,000 population (2009)	1.3
Hospital beds per 1,000 population (2009)	6.8
DTP3 immunization coverage (%) (2009)	88.3
Births attended by trained personnel (%) (2009)	100.0

Adaptation to Protect Human Health” for 2010–2014, which led the country’s Ministry of Health to establish its Climate Change Unit.

### HEALTH CONDITIONS AND TRENDS

In recent years, Barbados achieved major progress with regard to health outcomes and has adopted policies in line with the country’s new epidemiological profile. During the reporting period, mortality declined from 8.5 per 1,000 population in 2006 to 8.0 in 2010. Cardiovascular diseases and neoplasms constituted the leading causes of death in Barbados.

With respect to the Millennium Development Goals (MDGs), Barbados has achieved MDG 5, which addresses improved maternal health. The maternal mortality rate has varied only slightly, with 56.7 per 100,000 population in 2006 and 58.4 in 2010 (two deaths). During the period 2006–2010, women received free prenatal care in polyclinics and all births were attended by health professionals. The infant mortality rate in 2010 was 10.9 per 1,000 live births. The country’s program for preventing mother-to-child transmission of HIV has been instrumental in reducing such transmission from 27.1% in 1995 to 1.5% in 2008.

In 2010, coverage with the pentavalent DTP vaccine was 88.3% and coverage with the measles, mumps, and rubella (MMR) vaccine was 87.2% (first dose). During the reporting period, there were no cases of any of the diseases included in the national immunization program. In 2009, the pneumococcal vaccine for infants was incorporated in the national immunization program.

### National Registry for Chronic Non-Communicable Disease

The Barbados National Registry for Chronic Non-Communicable Diseases (BNR) is the country's first disease surveillance system aimed at monitoring chronic diseases such as strokes, myocardial infarctions, and cancer.

The Registry initiated its activities with the BNR-Stroke registry in 2008, which was followed by the BNR-Heart registry in 2009 and the BNR-Cancer registry in 2010. This national demographic registry collects patient data from hospital and community registries and face-to-face interviews with patients.

This surveillance tool is now well established, providing precise and timely data on these pathologies. This information will make it possible for the health sector to assess the burden of noncommunicable diseases for the population, develop practices and policies to ensure the efficient use of limited resources, and facilitate the monitoring and evaluation of interventions. The BNR has already played a decisive role in identifying deficiencies in clinical practice, as a data source for public health policies, and in generating statistics related to incidence, mortality, and survival.

Dengue is endemic to Barbados. The number of dengue cases was variable and case fatality was low. Malaria is not endemic to the country but two imported cases were diagnosed in 2010. Between 2006 and 2010 there were 61 confirmed cases of human leptospirosis.

Between 2001 and 2008, the AIDS case-fatality rate declined from 10% to 2%, which was attributed to the impact of the Barbadian government's highly active

antiretroviral therapy (HAART) program, which has been operating since 2002.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Strategic Health Plan for 2002–2012 of the Ministry of Health has guided priority actions in the health sector. Financing from the budget of the Ministry of Health for 2009/2010 reached US\$ 134,284,639, accounting for 10.8% of total public spending in 2010. The country also received significant international assistance, primarily to finance programs to prevent HIV/AIDS.

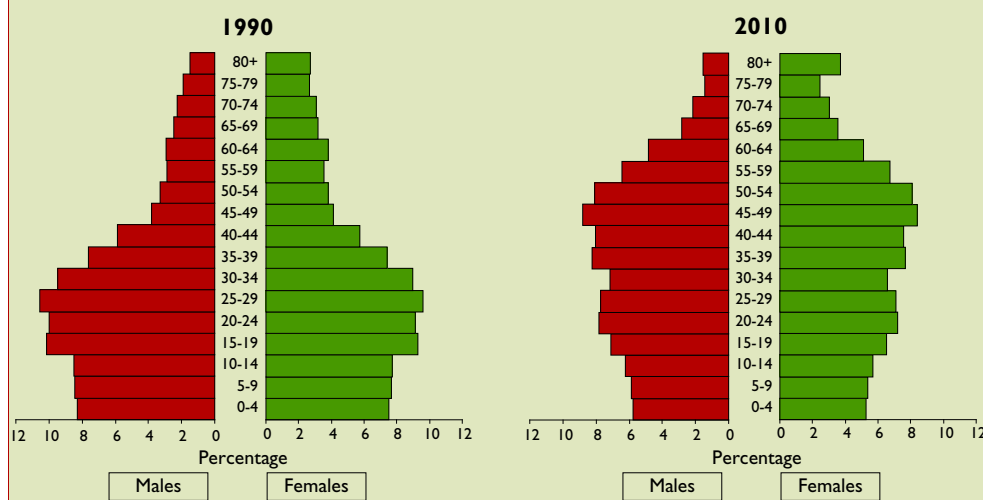
With a view to addressing the problem of chronic, noncommunicable diseases, in 2006 the country formed a study group on developing cardiovascular services. The following year the National Commission on Chronic Non-Communicable Diseases was established, which prepared a strategic plan for 2009–2012.

Following ratification of the Framework Convention on Tobacco Control in 2005, the country adopted a number of measures, including doubling cigarette taxes, prohibiting smoking in public places, and banning tobacco sales to minors.

Strategies have been adopted to address the problem of Barbados' aging population, including the establishment of community geriatric centers that provide primary care, the commissioning of four district hospitals to provide long-term care to older adults, and establishment of an alternative program to provide home care services.

A primary care study group was formed with a view to strengthening this strategy and searching for measures to promote equity and solidarity in health, with particular emphasis on the protection of vulnerable populations.

Population structure, by age and sex, Barbados, 1990 and 2010.



### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

In 2007, Barbados established a study group on information management and information technology, which oversees development of the country's health information system. In 2010, the Ministry of Health performed an evaluation of the country's health

information system using the Health Metrics Network tool created by WHO to help strengthen such systems. The recommendations from the evaluation served as a foundation for establishing a health information system.

As part of this initiative, the Barbados National Registry for Chronic Non-Communicable Disease (BNR) was established. The registry facilitates monitoring at numerous clinical and epidemiological facilities associated with three groups of important pathologies in the country: stroke, myocardial infarction, and cancer.

## MAIN CHALLENGES AND PROSPECTS

Like other Caribbean islands, Barbados grapples with water shortages. Due to scant surface water, the country depends almost entirely on groundwater.

Soil erosion continues to be a problem in many parts of the island, but is especially evident in the Scotland District, located in the northeast portion of the island. The geological and topographical features of this area predispose it to landslides.

The incidence of chronic, noncommunicable diseases has been rising, which in turn has placed a significant economic burden on the country over the last 30 years. The Ministry of Health estimates that in 2030, 86.3% of deaths in Barbados will be caused by this group of diseases. The country's Chronic Non-communicable Disease Risk Factor Survey conducted in 2007 showed

that 65.2% of the population age 25 years and older were either overweight or obese.

The shortage of human resources for health constitutes one of the most significant challenges for the country. Currently, health professionals, especially nurses, are recruited from other Caribbean countries, Africa, and Southeast Asia. The Ministry of Health has continued to formulate strategies to prevent the migration of health care professionals to higher income countries.

In recent years, public spending on pharmaceutical drugs has markedly increased, prompting the Ministry of Health to consider proposals for introducing a licensing fee for private-sector pharmacies and promoting the rational use of medicines. In September 2010, a comprehensive audit of the national drug formulary was carried out and steps were taken to strengthen the country's Drug Formulary Committee, resulting in recommendations that have already begun to be implemented.

In order to strengthen the organization, structure, and performance of the health system, a series of planning and evaluation exercises geared toward an eventual restructuring of the health system will be necessary. Accordingly, this restructuring will enable the system to provide more comprehensive solutions to health problems and to ensure the quality of care. The restructuring will include modifications to the structure of financing and to the design of incentives, as well as the adoption of management models that include a performance management system.

# Belize



Belize is located in Central America. It borders Mexico to its north, Guatemala to its south and west, and the Caribbean Sea to its east. Its territory spans 22,700 km<sup>2</sup> and its mainland is 274 km long and 109 km wide. The country gained independence from the United Kingdom in 1981 and is considered an independent nation within the Commonwealth of Nations. Queen Elizabeth II is the Head of State, represented in the country by the Governor-General. The government of Belize is based on the Westminster system. The capital is Belmopan, and the country is divided into six administrative districts.

Despite the climate of economic austerity that Belize has experienced in recent years, with a per capita gross domestic product (GDP) that held relatively steady in 2006–2010, the government has continued to increase its commitment to public health by allocating a higher percentage of GDP to the health sector and to strengthening technical cooperation partnerships with national and international organizations.

Life expectancy at birth increased from 69.3 years in 2006 to 76.9 in 2010. Reducing poverty and improving sanitation continue to pose major challenges for the country. Reducing the burden of communicable diseases remains as a priority for Belize, and the rise of chronic, noncommunicable diseases poses a new challenge for the country's health system.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

In 2003, the government introduced a noncontributory pension for women over the age of 65 as a tool for reducing poverty; in 2007, this benefit was extended to men over the age of 67.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2009, 73.5% of households had improved sanitation and 64.4% had flushing toilets.

Climate change threatened the most important sectors of Belize's economy, including agriculture, fishing, energy, and tourism. In 2008, a study was conducted to evaluate the impact of climate change on the incidence of dengue, which is endemic in Belize. It concluded that climate change could increase the potential for serious outbreaks and dengue hemorrhagic fever.

Belize has been hit by several natural disasters in recent years: Hurricane Dean in 2007, Tropical Storm Arthur in 2008, and Hurricane Richard in 2010. The latter affected two-thirds of the population, with estimated damages of US\$ 24.6 million.

### HEALTH CONDITIONS AND TRENDS

The maternal mortality rate has declined considerably, from 134 per 100,000 live births in 2005 to 53.9 in 2009,

#### Selected basic indicators, Belize, 2005–2010.

Indicator	Value
Population 2010 (thousands)	318.5
Poverty rate (%) (2006)	42.0
Literacy rate (%) (2005)	94.7
Life expectancy at birth (years) (2010)	76.9
General death rate (per 1,000 population) (2008)	5.5
Infant mortality rate (per 1,000 live births) (2009)	17.9
Maternal mortality rate (per 100,000 live births) (2009)	53.9
Physicians per 1,000 population (2009)	0.7
Hospital beds per 1,000 population (2010)	1.2
DPT3 immunization coverage (%) (2010)	96.0
Births attended by trained personnel (%) (2010)	94.0

due in part to improvements in medical care. Hospital delivery coverage increased from 76.9% in 2006 to 90.6% in 2009 and coverage of births attended by skilled health personnel reached 94% in 2010.

Belize has managed to reduce infant mortality from 19.7 per 1,000 live births in 2006 to 17.9 in 2009. Average vaccination coverage with BCG, DPT, and MMR vaccines in the period 2006–2010 was 96%. During that time, there were no cases of the diseases covered by the program.

From 2006 to 2008, the general death rate was 5.5 per 1,000. The main causes of death were diabetes, ischemic heart disease, homicide and intentional injuries, HIV/AIDS, and cardiovascular diseases.

The number of malaria cases fell substantially, from 844 in 2006 to 150 in 2010.

Cases of dengue, dengue hemorrhagic fever, and Chagas' disease rose slightly during the same period.

The tuberculosis cure rate has significantly improved, increasing from 52% in 1995 to 83% in 2008; thus, Belize has made progress toward the goal of halting the spread of tuberculosis by 2015.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Ministry of Health's budget as a percentage of GDP increased from 2.5% in 2006 to 3.3% in 2009. Private health expenditure as a percentage of total health expenditure declined from 33% in 2006 to 29% in 2010; however, patient out-of-pocket expenditures jumped from 32% to 42% during that same period.

### On the Road to Malaria Eradication

The main malaria vector in Belize is *Anopheles albimanus*.

The number of malaria cases has fallen substantially during the past decade. A total of 6,012 cases were reported in 1997, which fell to 1,441 in 1999 and 844 in 2006. By 2010, only 150 cases had been reported.

This marked reduction was due to the concerted efforts of the Ministry of Health through a proactive policy involving a multi-pronged strategy: greater epidemiological surveillance, elimination of malaria foci, and case detection in the main endemic areas with routine recording of cases in each locality.

These actions also are framed in PAHO's Regional Strategic Plan for Malaria in the Americas.

Belize is therefore well-positioned to halt the spread of malaria by 2015 and thus achieve Millennium Development Goal 6 (to combat HIV/AIDS, malaria, and other diseases).

From 2006 to 2010, the government drafted several short-term plans related to health, namely: the National Poverty Elimination Strategy and Action Plan 2007–2011, the Belize Health Agenda 2007–2011, the National Health Information System Strategic Plan 2010–2014, the Health Education and Health Promotion Strategy 2009–2010, and the Hospital-based Services Plan 2009–2011.

Great strides were made in expanding and maintaining a high and equitable level of vaccination coverage, moving toward the goal of eliminating malaria, providing micronutrients to all children under 5, and extending the baby-friendly hospital initiative to all hospitals.

In 2010, a PAHO-UNDP evaluation in Belize called “Aid Effectiveness” recommended improvements in surveillance, evaluation, and long-term health planning.

In 2009 Belize had 39.7 health care professionals per 10,000 population and, as a result, the targets set in the Toronto Call to Action had been met. An estimated 3.5% of these professionals are volunteer physicians from Cuba, placed mostly in rural areas.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Nongovernmental and international organizations generally tend to start and fund research projects in knowledge, technology, and information, although primarily with an emphasis on their own information needs. In 2008, a data collection system was launched on the Web, which helped increase the availability of data and information on the health sector.

### MAIN CHALLENGES AND PROSPECTS

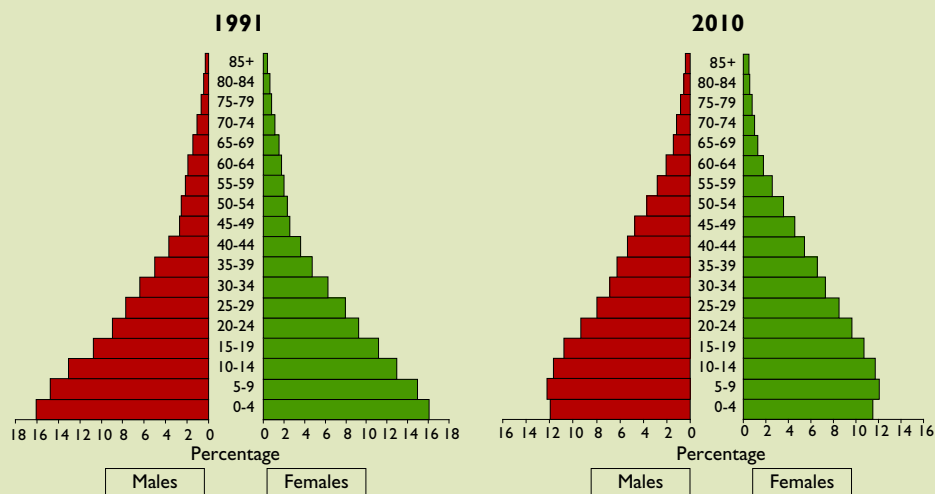
The national socioeconomic context, characterized by persistently high rates of poverty and significant challenges in the sanitation sector, constitutes a key obstacle to progress in areas such as reducing infant and child mortality.

In 2006 only 58.7% of school-age children attended high school. That same year, 42% of the population was living in poverty, which was a step backward compared to 2002, when the figure was 33.5%.

Although the average caloric intake was 2,846 calories (more than recommended), high levels of poverty and income inequality prevented the most vulnerable populations from reaching this goal. The country continues to lag behind in efforts to reduce the percentage of people who suffer from hunger by half.

Until 2010, over 25% of urban and rural Belizean households did not have sustainable access to safe drinking water. Furthermore, some 50% of households did not have

Population structure, by age and sex, Belize, 1991 and 2010.



municipal waste collection service, and almost 30% of trash was burned.

The number of homicides rose 29% from 2008 to 2010. Moreover, in 2009 there were 2,161 reported cases of domestic violence; 85.2% of the victims were women.

According to the 2006 Multiple Indicator Cluster Survey (MICS), 6.1% of children under 5 had moderately lower weight than normal and about 18% of children were suffering from growth retardation. Between 2006 and 2008, deaths from malnutrition and anemia increased from 2.1% to 4.7% in children under 1 year of age and from 5.4% to 11.4% in children age 1–4.

Adolescent pregnancy poses a challenge for Belize, with 24.3% of all live births in the period 2006–2009 to mothers age 15–19. Complications during pregnancy, childbirth, and the puerperium were the leading cause of hospitalization during this period for this age group.

In 2009 Belize had an estimated HIV prevalence of 2.3%, the highest in Central America and the third highest in the Caribbean.

Chronic diseases are another challenge that the country must address. In 2008, an estimated 71% of the population was overweight and, according to the survey conducted by the Central American Diabetes Initiative in 2009, the overall prevalence of diabetes mellitus in Belize was 13.1%.

Even though one of the objectives of the National Health Insurance program is to eliminate access barriers to a variety of health services, inequalities persist in rural communities, basically because of obstacles related to distance and transportation.

According to the 2006 MICS, 31.2% of the population had unmet family planning needs; the rate was highest among women age 15–19 (45.4%).

Another challenge that Belize faces is the lack of a national drug policy and its need for a pharmacovigilance system. Although there is no fee for essential medicines at points of service delivery, access is affected by the lack of the medicines themselves.

During the period analyzed, scientific research initiatives did not become an institutional endeavor. Research projects also need to put the information needs of the national health sector over the needs of the entities conducting the research.

The greatest need in the area of human resources for health was for nurses, public health inspectors, physicians, and pharmacists. Belize does not have a medical school, so students obtain their medical education and support outside the country. Training public health professionals is also a challenge; until 2010 the University of Belize was the only academic institution to offer training programs. These programs are not accredited and had a drop-out rate of 66%.

Public health issues such as the burden of non-communicable diseases and violence must be addressed broadly and through a multisectoral approach.

Belize needs to increase the capacity of its health system to monitor the inequities affecting groups that face barriers to health care access. This makes it necessary to expand and upgrade the country's health information system to ensure the integrity of statistical information in support of informed decision-making.

# Bermuda



Bermuda is an Overseas Territory of the United Kingdom. The territory consists of more than 100 small islands in the Atlantic Ocean, 943 km from North Carolina in the United States of America. The total land area is 53 km<sup>2</sup>, and the seven largest islands are connected by bridges. The government is a parliamentary system based on the Westminster model. The head of state is the monarch of the United Kingdom, who is represented by a governor. The capital is Hamilton, and the territory is divided into nine parishes plus two incorporated municipalities.



Bermuda is the oldest autonomous Overseas Territory of the United Kingdom. It is characterized by a high level of economic development, which was reflected in its per capita gross domestic product (GDP) of US\$ 86,875 in 2009. Between 2000 and 2008, real GDP increased 33%, but the worldwide recession caused per capita GDP to decline 6.3% between 2008 and 2009.

Tourism used to account for approximately 28% of GDP, but in the last decade there has been a shift toward international finance.

The population of Bermuda has a high level of health. During 2006–2010, the birth rate remained low and stable; there was only one maternal death; infant mortality declined steadily, reaching 1.2 deaths per 1,000 live births in 2009; and life expectancy at birth rose to 80.6 years in 2010.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Education is compulsory up to 17 years of age, and public schools are free. The literacy rate was 98.5% (98% for men and 99% for women) in 2006, and enrollment in primary school was 92% in 2010.

### THE ENVIRONMENT AND HUMAN SECURITY

Access to drinking water and sanitation in Bermuda is universal. Nevertheless, by law, all private dwelling units and apartment complexes are required to collect and store rainwater in water tanks.

Since Bermuda has a limestone base, drinking water cannot be distributed through piped networks, and there is no centralized system for collecting residential wastewater. Thus, all dwellings are required to have deep cesspits, which are cleaned periodically by private companies.

Even though Bermuda was in the path of several Category 1 hurricanes—Hurricane Florence in September 2006, Hurricane Bill in August 2009, and Hurricane Igor in September 2010, as well as Tropical Storm Bertha in July 2008—no injuries or damage to key infrastructure were reported as a result of these events.

### HEALTH CONDITIONS AND TRENDS

Between 2006 and 2010 there was only one maternal death. Coverage with prenatal care and births attended by

#### Selected basic indicators, Bermuda, 2006–2010.

Indicator	Value
Population 2010 (thousands)	64.3
Poverty rate (%)	...
Literacy rate (%) (2006)	98.5
Life expectancy at birth (years) (2010)	80.6
General mortality rate (per 1,000 population) (2009)	7.14
Infant mortality rate (per 1,000 live births) (2009)	1.2
Maternal mortality rate (per 100,000 live births) (2010)	0.0
Physicians per 1,000 population	...
Hospital beds per 1,000 population (2008)	6.7
DPT3 immunization coverage (%) (2009)	96.0
Births attended by trained personnel (%) (2008)	100.0

trained personnel are estimated at more than 99%. Between 2006 and 2009, the number of prenatal deaths remained steady, at an average of 2.5 per year.

The five leading causes of infant death over the 2006–2010 period were certain respiratory and cardiovascular conditions of the perinatal period (26%), disorders related to length of gestation and fetal growth (20%), sudden infant death syndrome (13%), congenital anomalies (13%), and maternal complications of pregnancy (7%).

The incidence of vaccine-preventable diseases is zero or very low. No confirmed cases of tetanus, neonatal tetanus, or diphtheria were reported during 2006–2010. Measles has not been reported since 1991, and there have been no cases of poliomyelitis for more than 25 years. However, during 2006–2010 there were two cases of mumps, two cases of rubella, and two cases of whooping cough; all were confirmed, and some involved travelers.

Between 2006 and 2010 there were five imported cases of malaria and four imported cases of dengue. Tuberculosis is not endemic in Bermuda. Also during the same period, there were eight imported smear-positive tuberculosis cases.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

During fiscal year 2009, public and private spending on health was US\$ 557.7 million, which was 9.2% of the 2008 gross domestic product, equivalent to US\$ 8,661 per person. In 2009, public-sector expenditure on health came to 27.9% (US\$ 155.8 million) of all health expenditure

### “Well Bermuda”: A Health Promotion Strategy

Launched in November 2006, the “Well Bermuda” health promotion strategy is conceived as a step toward increased intersectoral coordination. Its objective is to provide a unified vision and a set of targets for a healthier country. This national health promotion strategy focuses on both current problematic health issues and also areas in which public health is already producing positive results.

In this way, the strategy focuses on those areas in which the population’s good health must be ensured, both in areas where there has been progress and in those that still need work.

The strategy is organized into three main areas: healthy people, healthy families, and healthy communities. Targets, goals, and reference points have been identified for each of them. The intention is that, by building consensus around the priority areas and their corresponding objectives, detailed action plans can be developed for addressing each objective on a timely basis. To that end, the strategy does not include mechanisms for action; rather, it sets guidelines for the health promotion measures that are going to be taken.

and 14% (US\$ 1.1 billion) of total disbursements by the Government of Bermuda. Public funds were used to finance primary health care, health promotion, health administration, and operation of the Bermuda hospital system.

Private expenditure for health care rose to US\$ 401.9 million (72.1% of total spending in this area), of which 74% corresponded to health insurance expenditure. Household spending on health, such as health insurance premiums, copayments, fees paid to health care providers,

and other health expenditures in cash, came to US\$ 81.3 million (14.6% of all health expenditure).

In 2009, the Hospitals Board opened the Lamb-Foggo Urgent Care Center, with four rooms, for the treatment of diseases and mild injuries.

During 2006–2010, Bermuda had sufficient human resources to meet its health needs. The number of physicians increased during this period, as did the number of visiting specialized physicians.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The Ministry of Health maintains a website that includes a guide to the health services available in the territory and that provides public information on such subjects as health promotion activities.

During 2006–2010, the Bermuda Hospitals Board Diabetes Centre participated in several international research projects, including an epidemiological evaluation of the reduction of diabetes using ramipril and rosiglitazone; a study of insulin resistance with slow-release tranolapril and verapamil; tests to study outcomes from initial interventions using insulin glargine; and testing for the Global Registry of Acute Coronary Events (GRACE).

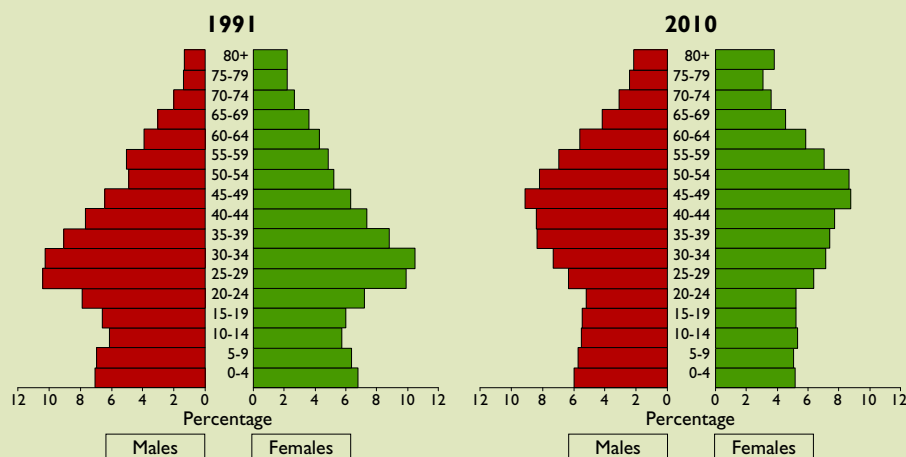
### MAIN CHALLENGES AND PROSPECTS

In 2007, approximately 11% of all households earned less than the low-income threshold, which was US\$ 36,605 per year.

In 2009, Bermuda produced 11 tons of carbon emissions per capita, which is higher than levels produced by some industrialized nations. Spending on electric power is also very high. The vehicle density is estimated at 2,300 per square mile, and there are few incentives to use fuel-efficient cars.

Between 1982 and the end of 2010, a cumulative total of 733 cases of HIV infection had been recorded. At the end of 2010, the prevalence of HIV/AIDS was calculated at 0.46%, and the number of persons living with HIV/AIDS was 295.

Population structure, by age and sex, Bermuda, 1991 and 2010.



Cardiovascular diseases are the leading cause of death for both women and men in Bermuda, and with persons over 65 years of age suffering much higher rates. Between 2006 and 2008, 39% of all male deaths and 38% of those in women were due to these diseases. The main specific causes were ischemic heart disease and cerebrovascular and cardiovascular disease.

Cardiovascular diseases are the cause of 10% of all hospitalizations (9% in women and 12% in men), and they account for a large number of hospital days (surpassed only by mental and behavioral disorders). Malignant neoplasms also pose an important health challenge. Between 2006 and 2008, malignant neoplasms represented 23.0% of all deaths. In men, the malignant neoplasms that caused the largest number of deaths were those of the respiratory tract and intrathoracic organs, digestive system, and genital organs. For women, the malignant neoplasms that were the main causes of death were those of the digestive system, breast, and respiratory tract and intrathoracic organs.

The leading causes of death in Bermuda are associated with lifestyle-related risk factors such as a sedentary lifestyle and poor diet. There is particular concern about increased cases of obesity, diabetes, hypertension, and other cardiovascular risk factors. In light of this trend, the national health promotion strategy known as “Well Bermuda” was launched in 2006.

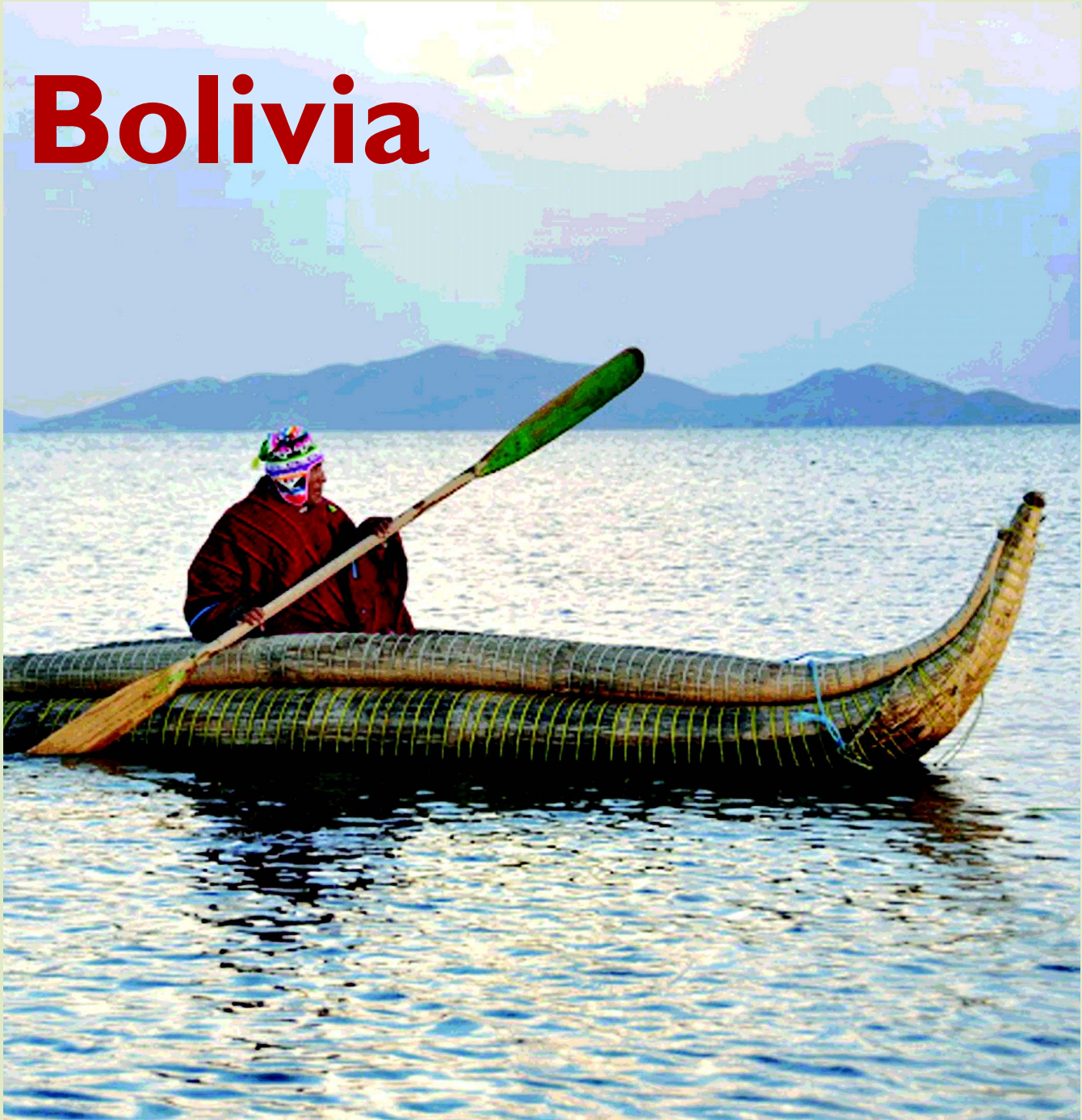
Since then, the Department of Health has collaborated with a broad range of government and community

entities to foster health promotion in Bermuda. The strategy addresses chronic, noncommunicable diseases and some other health problems, and it presents a vision for improving the health of the people of Bermuda, with clear targets and goals to be achieved as a community. In coordination with a group of public-health-related entities, measures are being adopted to successfully implement this concept through ongoing surveillance of the population’s health and the execution of coordinated interventions.

In 2009, there were 86.8 nurses available per 10,000 population. From a high of more than 800 registered nurses working in Bermuda in 1999, the number has declined significantly. It has been a challenge to retain nurses, which means that the number of countries from which nurses are hired has continued to expand, and the options for receiving nursing training in Bermuda have been increased.

Modernizing to be able to meet current needs is one of the health system’s challenges. Accordingly, in 2011 work began on the preparation of a background document for the long-awaited national health plan. Its objective is to take advantage of existing strengths, set new goals for the health system, lay the groundwork for the reforms needed in order to modernize the health sector, correct existing gaps, and develop a detailed plan for achieving a more equitable and sustainable health care system for Bermuda.

# Bolivia



Bolivia is located slightly west of South America's center and shares borders with Brazil, Chile, Paraguay, and Peru. The country extends over 1,098,581 km<sup>2</sup>: plains cover 65% of the territory; inter-Andean valleys, 19%; and the highland plateau (Altiplano), where 45% of the population lives, 16%. Bolivia is rich in biodiversity. The main Constitutional Capital is Sucre while La Paz is the seat of government. The country is divided into 9 departments and 337 municipalities and indigenous territories, including 36 nations that speak their own languages.

In Bolivia, which is a lower-middle-income country, a significant proportion of the population falls below the poverty line. In 2010, life expectancy at birth was 66.3 years.

Noncommunicable diseases and a variety of communicable diseases coexist in a complex scenario resulting from exposure to both natural disasters and social inequities, which makes for major differences in health between population groups.

In 2008, health sector expenditure represented 4.6% of the gross domestic product (GDP), of which 3.09% corresponded to public spending (1.78% from the public budget and 1.31% from social security) and 1.53% to private expenditure.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Between 2007 and 2009, extreme poverty declined from 37.7% in 2007 to 26.1% in 2009, which means that the country is likely close to achieving the target for Millennium Development Goal (MDG) 1. This progress is accounted for in part by monetary transfers (e.g., the Juancito Pinto benefit and the Juana Azurduy de Padilla benefit).

Open urban unemployment fell from 7% in 2009 to 5.7% in 2010. The Gini coefficient of income distribution declined from 0.59 in 2006 to 0.51 in 2009, which indicates that there is less inequality in general. However, urban/rural inequalities persist, reflecting the greater vulnerability of the indigenous population.

In 2008, infant mortality was 36 per 1,000 live births in urban areas and 67 per 1,000 in rural areas. Mortality in children under 5 fell from 75 per 1,000 live births in 2003 to 63 per 1,000 in 2008, but again, there continue to be inequalities between urban areas (43 per 1,000 live births) and rural areas (87 per 1,000 live births).

### THE ENVIRONMENT AND HUMAN SECURITY

In 2007 the proportion of population with access to improved drinking water was 74.5% (87.5% in urban areas and 50.3% in the countryside). Access to sanitation was 48% (54% in the urban population and 37% in the rural population). It is hoped that the country's overall coverage

#### Selected basic indicators, Bolivia, 2008–2010.

Indicator	Value
Population 2010 (millions)	10.4
Extreme poverty (%) (2009)	26.1
Literacy rate (%) (2008)	90.7
Life expectancy at birth (years) (2010)	66.3
General mortality (rate per 1,000 population) (2010)	7.29
Infant mortality rate (per 1,000 live births) (2008)	50.0
Maternal mortality rate (per 100,000 live births) (2008)	310
Physicians per 1,000 population (2009)	0.5
Hospital beds per 1,000 population (2009)	1.1
DPT3 immunization coverage (%) (2009)	80.0
Births attended by trained personnel (%) (2008)	71.0

will be 90% for drinking water and 80% for sanitation by 2015.

There was progress with regard to pesticide use and abuse, thanks to implementation of an epidemiological surveillance system.

### HEALTH CONDITIONS AND TRENDS

No confirmed cases of measles were reported between 2001 and 2010. The last mop-up campaign with measles/rubella vaccine was conducted in 2007, reaching 95% coverage. The last case of rubella was reported in 2006.

Tuberculosis has declined, although it continues to be a public health problem. The incidence of all forms of the disease was 76.1 per 100,000 population, while for pulmonary tuberculosis the rate was 59.9 per 100,000. The incidence of pulmonary cases with positive sputum-smear microscopy dropped from 80.1 per 100,000 population in 2001 to 53.8 per 100,000 in 2010.

The law on Chagas' disease, enacted in 2006, resulted in the implementation of vector control in 168 municipalities where the problem had been endemic. *Triatoma infestans* infestations were down to only 3.2% in 2007. In 2011, an international commission in charge of evaluating the status of Chagas' disease declared that vector-borne transmission of *Triatoma cruzi* and *T. infestans* had been interrupted in the department of La Paz. Cases of malaria were reduced by 56% between 2000 and 2010, which means that the target to at least halve the burden of this disease by 2010 has been met.

### Unified Intercultural Community and Family Health System (SAFCI)

The Unified Intercultural Community and Family Health System (SAFCI) currently serves as the backbone for health sector policies. Its goals are to eliminate social exclusion from health services; increase social participation; bring together services and individuals, families, and communities; and reassess traditional medicine. Together, these measures will help improve the living conditions for the population.

SAFCI incorporates traditional medicine and has identified five policy themes: (1) a unified intercultural community health system, (2) leadership, (3) social mobilization, (4) health promotion, and (5) solidarity.

At the end of 2009, the Health Sector Development Plan 2010–2020 “Toward Universal Health” established three strategic lines of action: (1) universal access to SAFCI, (2) health promotion within the SAFCI framework, and (3) governance and leadership within the framework of SAFCI.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The health system has six subsectors that provide protection to different populations: the public subsector, the armed forces, social security, nongovernmental organizations, churches, and private agencies. In 2008, social security covered 30.58% of the population, while 11.8% were covered by public subsector insurance.

Universal Maternal and Child Insurance (SUMI) was established in 2003, with the aim of reducing morbidity and mortality in mothers (from pregnancy through 6 months postpartum) and children (up to 5 years

of age). In 2005, SUMI expanded its coverage to include women from childbearing age up to 60 years. Health Insurance for Senior Citizens (SSPAM) was created in 2006. SUMI and SSPAM are financed with municipal funds, the former with 10% of the funds from Popular Participation (municipal tax coparticipation) and the latter from general municipal resources, including the tax on hydrocarbons (IDH), and together they allocate an annual premium of US\$ 56 per beneficiary.

The Unified Intercultural Community and Family Health System (SAFCI) is the central core for health sector policies. The goals of SAFCI are to eliminate social exclusion from public health services, increase social participation, integrate the services, and reassess traditional medicine.

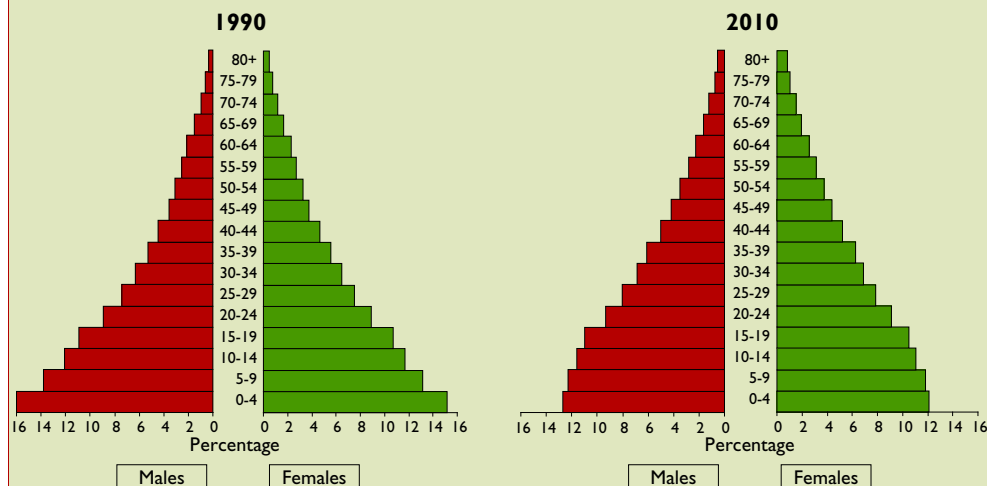
SAFCI also seeks to guarantee access to medicines that do not have patent restrictions. Priority will be given to generics, based on the National List of Essential Drugs, through a procurement mechanism.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Creation of the Vice-Ministry of Science and Technology was an important milestone. Its activities are outlined in the National Science and Technology Plan, which in turn is part of the National Development Plan. In addition, the Ministry of Health and Sports has embarked on a process to set up the Multinational Health Research System (SIPLIS).

The Information, Knowledge, and Communication Management project was created in order to bridge the gap between knowledge generation and access to information. Bolivia has joined the SciELO Network in order to gain better access to health literature. Admission to SciELO was made possible thanks to a joint effort by several Bolivian and international academic and health institutions, including the Vice-Ministry of Science and Technology, San Andrés University, the Bolivia Strategic Research Program, the Bolivian Catholic University, the Bolivian Association of Publishers of Biomedical Journals, PAHO/WHO, and the Latin American and Caribbean Center on Health Sciences Information (BIREME/PAHO/WHO).

Population structure, by age and sex, Bolivia, 1990 and 2010.



Bolivia's node in the SciELO Network is coordinated by the Vice-Ministry of Science and Technology, and its operations center is located at San Andrés University, in La Paz.

## MAIN CHALLENGES AND PROSPECTS

As of 2008, Bolivia still had one of the highest infant mortality rates in Latin America (50 per 1,000 live births). The neonatal mortality component represented more than 50% of infant mortality. The estimated maternal mortality ratio for the 2003–2008 period was 310 per 100,000 live births.

The prevalence of low height-for-age was 50.9% in children of mothers with limited schooling, while in children of mothers with more advanced schooling it was only 9.2%. Similarly, the prevalence of chronic malnutrition in children under 5 was 46% in the lowest income quintile, compared with 6.5% in the richest quintile.

The overall proportion of adolescent women who had had a pregnancy was 17.9%, with differences between educational levels (4.3% in women with advanced studies versus 32% in those with only primary schooling), between rural areas (25%) and urban areas (14%), and between the lowest and highest income quintiles (31% and 7.8%, respectively).

The allocation of resources from the tax on hydrocarbons has generated inequalities among departments and among levels of government. For example, per capita income from this tax was 23 times greater in the department of Pando than in the department of La Paz.

Between 2006 and 2011 there were natural disasters of several kinds. Floods and social conflicts accounted for the largest number of deaths (135) and affected 238,530 families.

Less than 30% of the wastewater is treated, and treatment is only done in major urban centers. The greatest source of contamination is mining operations. It may be possible to meet the MDG 7 target for access to drinking water, but not the target for sanitation.

Occupational health has been a neglected field, although the issue is critical in the mining, transportation, construction, and agriculture sectors. Occupational diseases tend to be incorrectly diagnosed, and neither work-related injuries nor occupational diseases are reported.

Maternal and child health is still a major challenge in Bolivia. In 2008, infant mortality and mortality in

children under 5 continued to be high in urban areas and even higher in rural areas.

Cases of HIV/AIDS have risen steadily up through 2010.

In 2009, the largest epidemic of dengue since the 1980s occurred, affecting 130 municipalities, with 84,000 suspected cases and 7,421 confirmed cases (including 25 deaths). Two-thirds of the cases and 69% of the deaths occurred in the department of Santa Cruz.

Almost half (49.2%) the population over 20 years of age has hypertension. The prevalence of fasting hyperglycemia was 7.3%. Mortality from neoplasms was 57.4 per 100,000 population for men and 89.7 per 100,000 for women. During the first six months of 2011, the National Health Information System (SNIS) recorded a total of 1,956 cases of cervical cancer and 6,125 cases of other types of cancer (2,302 in men and 3,823 in women).

The rate of injuries caused by traffic events was 117 per 100,000 population in 2005, and this figure was somewhat higher, 126 per 100,000, in 2009. In the context of a mixed epidemiological profile, violence is a serious public health problem. Between 2006 and 2010, mortality from this cause rose from 5.4 to 8.7 per 100,000 population. The most common forms of violence were child abuse and domestic violence. In 2008, almost half of all women who were married or in an established union were victims of domestic violence, and only 9% sought institutional assistance. The rate of violent sexual crimes in adolescents was 14.7 per 100,000.

Surveillance and control were strengthened within the framework of the Good Governance of Medicines program, but this is an area in which the sector still faces major challenges going forward.

The country has a national agenda of priorities in health research, and emphasis has been placed on the Technology and Research Management project. The challenges that need to be faced include training human resources in health research, promoting the production of health research, disseminating research results within the health system, and strengthening the entities engaged in analyzing research results.

In Bolivia, health sector development is occurring in a context of social inequality that is both determining and limiting the outcomes. It is hoped that progress in health will be closely allied with systematic efforts promoted by the sector and with advances in the country's overall socioeconomic development.

# Brazil



Brazil, one of the world's five largest countries, lies at South America's center-east; it has a land area of 8,514,877 km<sup>2</sup>. The country is divided into 26 states and a Federal District—where Brasília, the federal capital, is located—and 5,561 municipalities. The states are organized into five geographic regions that have significant economic, cultural, and demographic differences—North, Northeast, Southeast, South, and Center-West.



Brazil is one of the Region's middle-income countries. Life expectancy at birth is 73.2 years (77.0 years for women and 69.4 years for men). Twenty-one percent of the population lives below the poverty line.

Immunization and institutional delivery care coverage are good, as is Unified Health System (UHS) coverage, which can meet the needs of 75% of the population to a satisfactory standard. In 2010, public health expenditure as a percentage of gross domestic product (GDP) was 3.6%, and private expenditure was 3.7%.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Over the last decade, Brazil has experienced major economic growth. Ten million jobs were created in the formal sector, and an income transfer program geared to families (*Programa Bolsa Familia*, PBF) helped improve living conditions for the poorest sectors of society.

Between 2000 and 2010, illiteracy declined from 13.6% to 9.6%. The Gini coefficient of income distribution, which had remained stable around 0.60 (reflecting one of the greatest levels of inequality in the world), has systematically declined since 2001, reaching 0.54 in 2009.

Under-5 mortality decreased from 24.8 per 1,000 live births in 2006 to 20.4 in 2009. Therefore, Brazil is expected to reach the target for Millennium Development Goal (MDG) 4 before 2015. Infant mortality has followed a similar downward trend; it was 17.1 per 1,000 live births as of 2009. Control of vaccine-preventable diseases contributed substantially to this reduction.

In 2010, 57.4% of all deaths occurred in men. Male life expectancy increased from 63.2 years in 1991 to 69.7 years in 2010. However, that 2010 figure was still 7.6 years less than the one for women, which was 77.3 years.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2008, 92.8% of the urban population but only 31.5% of the rural population had access to adequate-quality drinking water sources. Furthermore, only 24.2% of the rural population had access to the sewerage system or septic tanks. The treated wastewater rate reached 32%. Waste collection services were available to 90% of urban households but just 30% of rural households. In 51% of municipalities, solid waste was discarded in irregular open-air dumps.

#### Selected basic indicators, Brazil, 2007–2010.

Indicator	Value
Population 2010 (millions)	190.7
Poverty rate (%) (2009)	21.4
Literacy rate (%) (2010)	90.0
Life expectancy at birth (years) (2010)	73.2
General mortality rate (per 1,000 population) (2009)	6.6
Infant mortality rate (per 1,000 live births) (2009)	17.1
Maternal mortality rate (per 100,000 live births) (2009)	72.3
Physicians per 1,000 population (2007)	1.6
Hospital beds per 1,000 population (2010)	2.4
DTP3 immunization coverage (%) (2010)	96.0
Births attended by trained personnel (%) (2009)	98.9

Between 2003 and 2009, 9,583 public emergency situations were recorded, of which 64.1% were due to drought and 30.2% to floods. Landslides were frequent and intense, and more than 90% of those occurring in highland regions were associated with some type of human activity, such as deforestation or road construction.

The area of Brazil recognized as free of foot-and-mouth disease has been gradually expanded. And although reintroduction of the virus led to suspension of the recognition of the disease-free area in 11 states and the Federal District in 2005, that disease-free recognition was restored in 2008.

### HEALTH CONDITIONS AND TRENDS

Brazil exhibits significant differences in infant mortality by region and by population group. While the indigenous population experienced a major decline in infant mortality between 2000 and 2009 (from 74.6 to 41.9 per 1,000 live births), their rate more than doubled the national average.

In 2006, Brazil was certified as having interrupted the transmission of Chagas disease by *Triatoma infestans*. Twenty-one states report cases of visceral leishmaniasis; in 2010, there were 22,397 cases of tegumentary leishmaniasis reported. Although the prevalence of leprosy has decreased, Brazil is the only country in the Americas that has yet to completely eliminate the disease.

Between 1980 and June 2011, 608,230 cases of AIDS were diagnosed. A total of 34,212 new cases and 11,965 deaths were recorded in 2010. Between 1996 and

### Unified Health System

The Unified Health System (UHS) recognizes health as a right and responsibility of the State and considers the universal and equitable access to health; the inseparability of promotion, protection, and recovery of health; and the establishment of a regionalized and hierarchical network for delivery of health care services as a shared responsibility of the three levels of government (federal, state, and municipal). Furthermore, the UHS recognizes the complementary role of the private sector in health care delivery. The UHS has as its guiding principles the decentralization of management, the comprehensive nature of health care, and community involvement.

Twenty years after its creation, the UHS is part of a social policy of the State that has transcended successive administrations. In 1988, the resources required for the political project of the system to achieve sustainability were estimated, and this objective has since been accomplished: the health of 75% of the Brazilian population relies on the UHS.

2010, mortality declined from 9.6 to 6.3 per 100,000 population.

Between 1996 and 2010, the proportion of deaths due to infectious and parasitic diseases declined from 5.8% to 4.3%.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The health sector includes care providers and financial entities from both the public sector and the private sector, and involving both for-profit and nonprofit institutions. The

public sector provides universal access through the UHS and covers 75% of the population. The private insurance sector covers the remaining 25% of the population.

The UHS recognizes health as a right and responsibility of the State. UHS planning takes into consideration four objectives: (1) to prevent and control disease, trauma, and health hazards; (2) to expand access to health services with high-quality, comprehensive, equitable, and person-centered care; (3) to promote activities directed to prevention and to the control of health determinants; and (4) to strengthen management of the UHS at the three levels of government (federal, state, and municipal). The UHS has a network of over 6,000 hospitals (400,000 beds) and more than 60,000 outpatient centers. In 2010, its primary care strategy reached 94% of Brazilian municipalities, with 30,996 family health teams, 19,609 oral health teams, and 238,304 community health agents.

The country has made great strides toward ensuring universal access to health services, including the provision of drugs. Despite its brief existence, the UHS has become a solid system that provides satisfactory outcomes.

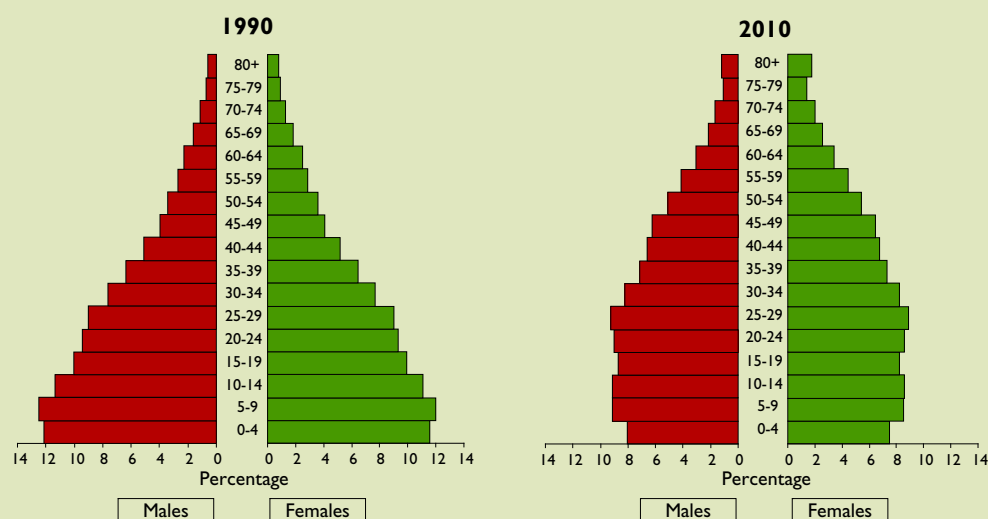
### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The UHS ensures free access to drugs and health technology to the vast majority of the population. The National Health Surveillance Agency is another key institution at the federal, state, and municipal levels, whose purpose is to ensure the performance of essential regulatory functions such as registration and marketing authorization, regulation of drug advertising, health technology assessment, and drug surveillance. In 2011, the Agency was prequalified by PAHO/WHO as a reference national authority for drug regulation.

### MAIN CHALLENGES AND PROSPECTS

Major inequalities in health indicators remain between rich and poor persons, black and white and indigenous populations, urban and rural areas, and men and women.

Population structure, by age and sex, Brazil, 1990 and 2010.



The Brazilian Amazon region has experienced significant changes in patterns of land use due to the process of human occupation. It is estimated that 17% of its native forests have been lost due to deforestation, slash-and-burn clearing, and expansion of livestock production.

In 2002, 22% of municipalities reported high rates of air pollution, the leading causes of which were forest fires, industrial activities, and heavy vehicular traffic.

Brazil is the world's leading consumer of pesticides. Acute pesticide poisoning is the second leading cause of exogenous toxicity; 137,089 cases were reported between 1999 and 2008.

These situations, as well as a delay in compliance with environmental agreements and with implementation of sanitation improvements, constitute the foremost challenges in environmental and human safety.

Although the rates for the leading causes of maternal death declined between 1990 and 2007, forecasts indicate that meeting the MDG 5 maternal mortality target will be difficult. The proportion of deaths from cancer has increased (from 11.4% in 1996 to 15.7% in 2010), as has mortality due to endocrine, nutritional, and metabolic diseases (from 0.4% to 6.2%) and diseases of the circulatory system (from 27.5% to 28.7%).

In 2010, 1,011,647 new cases of dengue were reported (17,489 serious and 656 leading to death), as well as 332,329 cases of malaria (8% more than in 2009). Urban yellow fever has not been recorded since 1942, but the yellow fever virus transmission cycle persists in the wild, leading to sporadic outbreaks.

Brazil is among the 22 countries with the highest burden of tuberculosis. In 2010, 71,000 new cases were reported, for a rate of 37.2 per 100,000 population—30% less than in 1990.

The leading external causes of death are homicide and motor vehicle accidents. In 2010, there were 51,880 deaths from homicide, the majority occurring among young black or brown men with limited schooling.

Between 2006 and 2009, the prevalence of hypertension, obesity, sedentary lifestyle, and alcohol abuse increased in the population aged 18 years or older in the Brazilian state capitals.

Chronic, noncommunicable diseases (CNCDs) pose a greater challenge. In 2009, CNCDs accounted for 72.4% of all deaths. Cardiovascular diseases, external causes, and neoplasms explained 59% of overall male mortality. In women, cardiovascular diseases, neoplasms,

and diseases of the respiratory system accounted for 61% of deaths.

Policies on worker health have encompassed the creation of centers of reference and a national network of care. Workers' health constitutes a leading challenge due to the impact of working conditions on the morbidity and mortality of reproductive-aged populations and differences in access to health services associated with the type and quality of employment.

In December 2010, the Ministry of Health established guidelines for the structuring of health care networks to overcome the fragmentation of care, improve the operation of the health system, and ensure access to it in an effective and efficient manner. To promote equity, networks would give priority to the most economically vulnerable populations. This is a challenge of inclusion that has recently begun to be addressed.

Brazil has made an effort to expand the volume of human resources with technical capability to meet demands. However, major challenges remain, including the need to train, attract, and retain health care providers; to correct their poor geographical distribution; to prevent overspecialization; and to upgrade management.

One of the challenges for the UHS is to continue to ensure, with public funds, access to health services and health technology for the entire population.

After a period of sustained decline, domestic manufacturing of pharmaceuticals increased 20.1% between 2002 and 2009. The Constitution of 1988 provides that all registered drugs must be available to Brazilian citizens, who can pursue legal action against public administrators if medicines are unavailable. This situation, known as the "judicialization" of health care, is increasingly common.

There is a growing demand for innovative drugs and technology and for medicines for the treatment of chronic diseases such as diabetes and hypertension. This has created new challenges for public administrators, including an expansion of the range of services provided by the Government's *Farmácia Popular* program.

In recent decades, Brazil has made important strides in living conditions and in the state of health of the population, related to political and socioeconomic changes. The positive impact of successful policies, such as with the UHS and the PBF, is noteworthy. This trend is expected to continue. The debate on how successful these policies have actually been in terms of improving living conditions and reducing social inequality should spur efforts to take on current and future challenges in the health sector.

# British Virgin Islands



The British Virgin Islands is a British Overseas Territory; it is located in the northeastern Caribbean to the east of Puerto Rico and the U.S. Virgin Islands. Part of the Virgin Islands archipelago, the territory covers a land area of 153.6 km<sup>2</sup>, which comprises some 50 islands (around 15 of them inhabited), cays, and islets. Queen Elizabeth II is the Head of State and is represented by the Governor, who appoints the Premier as the head of Government. The House of Assembly is the democratically elected legislative body. The capital is Road Town, located on Tortola, the largest island; 80% of the population lives in the capital.

The British Virgin Islands is relatively affluent, with annual per capita gross national income of US\$ 30,300 in 2009. In 2006 and 2007, the territory's economy grew at a steady pace thanks to rising tourism and the development of the financial services sector. However, the global economic crisis led to negative growth in 2008 and 2009. While the situation turned around in 2010, and positive growth was restored, the economy has yet to return to its 2006 level.

The main health achievements in the territory are lower mortality and longer life expectancy. The health status of the population has improved since primary health care was introduced as the model for the health system. Under this model, services are accessible, and a wide range of programs are offered.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

The workforce has grown in recent years. Unemployment remained low and relatively stable (approximately 3%) in the period 2006–2009.

In 2003 (the year with the latest available information), 22% of the population was living in poverty. The extreme poverty line for adults was US\$ 1,700 per year and the poverty line, US\$ 6,300.

Education is free, and the literacy rate in the population over the age of 15 was 97.7% in 2010. The territory boasts 100% enrollment at the primary level.

### THE ENVIRONMENT AND HUMAN SECURITY

Fresh water sources are scarce in the British Virgin Islands, except for a few seasonal streams and springs in Tortola. Most of the territory's water supply comes from wells and rain water catchments. Desalination plants supplement the water supply system.

Most refuse (90%) is incinerated, and the rest is buried or recycled. Refuse collection operations sort most heavy metals for recycling, while ash and construction debris are buried. Air pollution in the territory is considered minimal.

A major operation in the period 2006–2010 was the mangrove rehabilitation project of the Department of Conservation and Fisheries under the Ministry of Natural Resources and Labour. Notwithstanding, there has generally been little forestry management or reforestation activity in the territory.

### Selected basic indicators, British Virgin Islands, 2003–2010.

Indicator	Value
Population 2010 (thousands)	25.0
Poverty rate (%) (2003)	22.0
Literacy rate (%) (2010)	97.7
Life expectancy at birth (years) (2010)	77.5
General mortality rate (per 1,000 population) (2010)	3.5
Infant mortality rate (per 1,000 live births) (2010)	6.7
Maternal mortality rate (per 100,000 live births)	...
Physicians per 1,000 population (2010)	1.9
Hospital beds per 1,000 population (2010)	2.1
DPT3 immunization coverage (%) (2009)	91.0
Births attended by trained personnel (%) (2010)	100.0

In 2009, the Cabinet approved the creation of the National Climate Change Committee (NCCC) as the coordinating body for handling problems related to this issue. In 2010, it issued a national report on climate change that identified the main risks and the adaptation strategies to address them.

### HEALTH CONDITIONS AND TRENDS

Maternal and child health improved in the British Virgin Islands. Between 2006 and 2010, infant mortality fell from 26.7 to 6.7 deaths per 1,000 live births, and no maternal deaths were reported. The territory has a program in place for the prevention of mother-to-child transmission of HIV. Low birthweight was reduced, and the immunization program was effective.

DPT-HepB-Hib coverage also improved (91% in 2009). Measles, mumps, and rubella vaccination coverage increased to 92.5%. In 2009, the chickenpox vaccine was added to the schedule. No cases of any of the diseases covered by the vaccination schedule were reported.

A national survey in 2009 showed that only a small percentage of the population smoked on a daily basis (3.1%) and that 28% of the population had never consumed alcohol in their life.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Ministry of Health and Social Development adopted a strategic plan for the period 2008–2011 with the following priorities: strengthening leadership, governance,

### Management of Chronic, Noncommunicable Diseases and Nutritional Disorders

*In May 2010, the first Territorial Summit on Chronic Noncommunicable Diseases was held in the British Virgin Islands, highlighting the importance of developing policies and programs for the prevention and control of these diseases and their risk factors.*

*Chronic, noncommunicable diseases are a major cause of morbidity and mortality in the British Virgin Islands. In 2010, they represented four of the five leading causes of death. That year, the leading cause of death was coronary heart disease. In 2006, malignant neoplasms were the leading cause of death. The most common cancers in 2009 were colon, prostate, and breast cancer. Diabetes was the fourth leading cause of death, with hypertension also a frequent cause in both 2006 and 2010.*

*The nutrition and eating habits of children are another cause for concern in the territory. Some 2.8% of students are underweight, while 36% are overweight and 17.7% are obese.*

and management of the health sector; improving the quality of services and increasing access; and ensuring the hygiene, security, and health of communities. Quality improvement activities were begun and audits and user satisfaction surveys conducted.

The Mental Health Ordinance (1986) was reviewed, and a community approach to mental health service delivery was adopted. In 2006, a tobacco control law was enacted.

The public health system is financed primarily through government allocations, fees for services, and the social security system. Primary health care is the strategy for service delivery; care is provided at 10 health centers and 2 health posts that offer a wide range of services. The territory has a single hospital, and there is a growing private sector that provides outpatient and inpatient services.

One hundred percent of deliveries were attended by trained health personnel—that is, universal coverage. Cesarean deliveries accounted for 34.5% of births.

### MAJOR CHALLENGES AND PROSPECTS

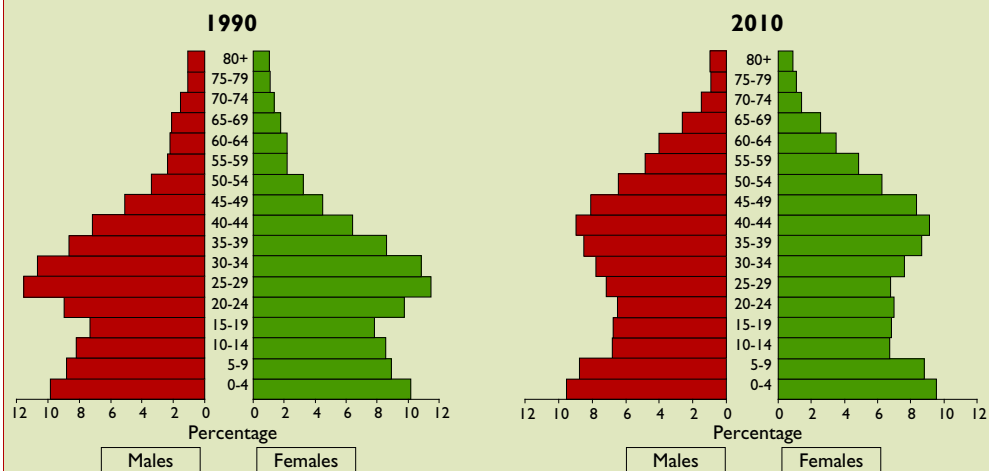
The British Virgin Islands' location puts it in the path of hurricanes and tropical storms, making them vulnerable to damage from winds, floods, and mudslides. The territory is also at risk of earthquakes. In the period 2006–2010, there were 47 events involving hazardous substances and oil spills. Hurricane Omar devastated the islands in 2008, seriously eroding slopes and causing potential harm to coral reefs. In 2010, the territory received some of the heaviest rains ever recorded, resulting in over US\$ 10 million in infrastructure damage. That same year, Hurricane Otto brought heavy rainfall to the islands.

Climate change is a serious environmental concern, since its main effects will most likely include rising sea levels, changes in precipitation profiles, and ever-stronger hurricanes.

Dengue is endemic in the territory; 106 cases were reported between 2007 and 2010. There were 46 cases of chickenpox in 2010. That same year, the tuberculosis incidence rate was 3.4 per 100,000 population; all the cases were imported. In December 2009, there was an outbreak of influenza A(H1N1). Of the 59 suspected cases, 25 were laboratory-confirmed, but there were no deaths.

As of December 2010, 97 HIV/AIDS cases had been reported and 36 AIDS-related deaths (19 women and 17 men). The primary mode of transmission was heterosexual sex (approximately 75%), the incidence rate was 23.7 per 100,000 population, and the male to female ratio was 1.3:1. Of the 61 persons living with

Population structure, by age and sex, British Virgin Islands, 1990 and 2010.



AIDS, 28 were receiving care and treatment in the territory in 2010. Antiretroviral treatment was available through the public health system for a fee.

Chronic diseases pose a major challenge, since they constitute a major morbidity and mortality burden. In 2010, these diseases represented four out of the five leading causes of death, which were, in rank order, coronary heart disease, drowning, malignant neoplasms, diabetes mellitus, and hypertension.

Diabetes and hypertension are the most common causes of morbidity in the adult population. Only 7.6% of the population eats at least five servings of fruit or vegetables on average per day. Almost one-third of the population is sedentary, and three-quarters (74.7%) is overweight; 35.5% of the population is obese.

According to a 2009 school-based survey, at least one-third of adolescents reported having consumed alcoholic beverages in the 30 days prior to the survey. A worrisome fact is that in 2009, 15.7% of adolescents had considered suicide. Furthermore, 35.7% of this group had had sex, 76% before their 14th birthday. The adolescent pregnancy rate increased to 11.15%.

The number of crimes committed annually increased from 1,501 in 2006 to 1,796 in 2010. Illegal drugs were involved in some of the crimes during that period (392 cases).

The British Virgin Islands does not have national health insurance, but the government is exploring the potential introduction of such a system. In December

2010, the Cabinet approved the establishment of a new division of the Social Security Board to administer the proposed health insurance system.

Since the territory is an archipelago, delivering primary care to the different islands has met with some transportation problems.

Modern equipment is available for the diagnosis and treatment of common illnesses. However, it is imported, and maintenance and repairs must be done outside the territory. Patients whose conditions require more sophisticated equipment must be referred to facilities abroad. The territory has no health technology assessment program.

In 2010, the territory had 19.0 physicians, 52.1 nurses, and 1.8 dentists per 10,000 population. Health worker retention is a continuing challenge, since staff turnover is high.

An important item on the unfinished health agenda is the need to address the high prevalence of chronic, noncommunicable diseases, as well as overweight and obesity. New challenges, such as emerging diseases, must also be dealt with.

Reform of the health system must continue, strengthening the role of the Ministry of Health, reinforcing the legal framework for health care delivery, modernizing infrastructure, improving environmental health and solid waste management, promoting human resources development, and reducing the potential impact of natural hazards and risks.



Canada lies at the northern extreme of North America. Its territory measures 9,984,670 km<sup>2</sup>. It stretches from the Atlantic Ocean in the east, to the Pacific Ocean to the west, and to the Arctic Ocean to the north; it shares a border to its south and northwest with the United States. The country has a federal parliamentary government and is member state of the Commonwealth of Nations. The British monarch is the head of state and is represented by the Governor General; Canada's Prime Minister is the country's head of government. Canada is made up of 3 northern territories and 10 provinces in its western, central, eastern, and Atlantic regions. The capital is Ottawa.



During 2006–2010, the health conditions of Canada’s population continued to improve. For example, the country’s survival rates for breast and colorectal cancer are among the highest among Organization for Economic Co-operation and Development (OECD) countries. Canada also has made good progress in reducing high-cost hospital admissions for chronic conditions such as asthma and uncontrolled diabetes. This improvement is an indicator that adequate health care and treatment are being provided at the primary health care level.

Canada also has been successful in enacting important legislation to promote healthy lifestyles, including nutrition and anti-tobacco policies.

Canada is fully committed to closing its persistent equity gaps, and continues to work relentlessly to overcome these challenges.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Canada has persistently established policies aimed at reducing health inequalities among the indigenous population. Although the health status of First Nations and Inuit populations has improved steadily, health inequalities affecting these groups persist when compared to the overall population. Life expectancy among First Nations peoples is 72.9 years and 66.9 years for the Inuit (compared to 80.7 for the overall Canadian population). The Aboriginal Health Human Resources Initiative (AHHRI) was introduced in 2004 to provide training to First Nations health managers and other health professionals. In 2011, some 2,200 indigenous students received financial support to pursue health careers, resulting in a 246% increase in the number of indigenous health professionals between 1996 and 2006.

The Canadian Reference Group on the Social Determinants of Health (CSDH), an intersectoral body established to help reduce health inequalities in Canada, has directly contributed to global knowledge and action on many areas, including the need to develop a distinct approach to health determinants for indigenous populations.

### THE ENVIRONMENT AND HUMAN SECURITY

Climate change and its potential effect on health has led Canada to attempt, among other issues, to mitigate risks

#### Selected basic indicators, Canada, 2007–2010.

Indicator	Value
Population 2010 (millions)	31.6
Poverty rate (%)	...
Literacy rate (%)	...
Life expectancy at birth (years) (2009)	80.7
General mortality rate (per 1,000 population) (2007)	6.9
Infant mortality rate (per 1,000 live births) (2007)	5.1
Maternal mortality rate (per 100,000 live births) (2007)	6.5
Physicians per 1,000 population (2009)	2.0
Hospital beds per 1,000 population (2009)	3.2
DPT3 immunization coverage (%) (2010)	92.0
Births attended by trained personnel (%) (2009)	100.0

associated with extreme heat conditions and the climate-related spread of infectious diseases. These efforts have led to the adoption of guidelines and the development of specific programs to address these threats.

Between 2006 and 2010, Canada enacted legislation to protect human safety, including the Canadian Consumer Product Safety Act (CCPSA), which regulates and bans consumer products that threaten human health and safety; Canada’s Chemicals Management Plan, which conducts tests on nearly 4,300 substances classified as potentially harmful to the environment or human health; and the country’s Human Pathogens and Toxins Act, which works to safeguard public health and address the risks associated with human pathogens and toxins.

### HEALTH SITUATION AND TRENDS

In 2006, life expectancy for men was 78.3 years and 83 years for women. Self-perception of health status was “excellent” or “very good” among 62.2% of the population age 12 years and older, representing a 59.7% increase with respect to 2003.

In 2007, infant mortality was 5.1 deaths per 1,000 live births; the most frequent causes of death for this group were birth defects.

Early in 2010, all Canadian jurisdictions successfully introduced the vaccine for human papillomavirus vaccine (HPV) into their vaccination schedules for the female population in the 9–26-year age group.

The country has made good progress in curbing tobacco use, even among the key demographic of young people between 15 and 17 years of age. Accordingly,

### Pan-Canadian Public Health Network: A Forum for Strategic Coordination

Canada's provincial and territorial governments are largely responsible for the administration and delivery of their populations' health care services. The various jurisdictions must work closely with one another to address health issues in a coordinated manner.

To that end, the Pan-Canadian Public Health Network (PCPHN) was established in 2005. The PCPHN is a key intergovernmental mechanism designed to strengthen the country's public health capacity to anticipate, prepare for, and respond to Canadian public health emergencies and to deal with chronic health issues.

Through its work, the PCPHN has helped to overcome inequities in health, to promote health policies to curb childhood obesity, and to respond to emergencies.

In December 2010, the Government of Canada approved a reorganization of the PCPHN to ensure better operation of the network.

Canada has one of the world's lowest tobacco use rates. While it was estimated that 25% of the population smoked in 1999, this figure dropped to 17% by 2010.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The country's total health expenditure accounted for 10.8% of the gross domestic product (GDP) in 2008 and 11.9% in 2009.

Adopted in 2004, Canada's 10-year Plan to Strengthen Health Care set a number of different public health priorities. It included a commitment to provide

public coverage for short-term acute home care, acute community mental health home care, and end-of-life care, which has improved home care for older adults and also provided alternatives to extended hospital stays. In addition, the Plan also contemplated reducing wait times for non-urgent procedures and making access to health care more timely in five treatment areas.

During the period, Canada has worked to formulate regulations governing food policy. In 2005, nutrition labeling was made mandatory for most packaged food products and public awareness campaigns were launched to help the general public use this labeling to make informed choices about food.

Thanks to the country's policies aimed at discouraging tobacco use, practically all Canadians are protected from the risks of second-hand smoke in public indoor spaces. In addition, sales of tobacco products to minors have been significantly limited, and the sale of flavored cigarettes—which are especially attractive to young people—has been banned.

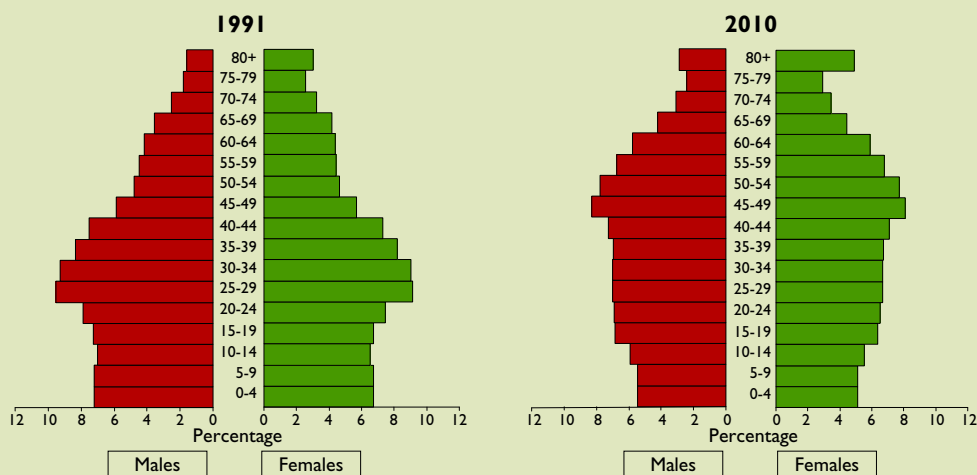
During the period, improving access to health services was a priority, which has helped reduce wait times for priority health services across Canada. The level of health enjoyed by Canadians continued to improve over the period at the federal, provincial, territorial, and grassroots levels.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The federal government supports a comprehensive health research agenda. In 2009, the Canadian Institutes of Health Research (CIHR) prepared its five-year plan, known as the Health Research Roadmap, whose main objective is to promote innovative research to improve public health and health care services.

New technologies have been adopted to improve coordination among the different levels of territorial management with regard to disease outbreaks. As part of this strategy, the country established the Canadian Integrated Program for Antimicrobial Resistance Surveillance (CIPARS) and the Public Health Map Generator (PHMG), a system of

Population structure, by age and sex, Canada, 1991 and 2010.



geographic information to help health professionals monitor disease outbreaks.

## MAIN CHALLENGES AND PROSPECTS

Despite the fact that Canada has one of the world's best food security systems, the country suffered a listeriosis outbreak in 2008 linked to packaged cold cuts, resulting in 57 confirmed cases and 23 deaths. Following the outbreak and the public angst it generated, the country has redoubled efforts to increase its capacity to evaluate health risks and conduct laboratory tests.

In 2008, the three leading causes of death were cancer (30%), heart disease (21%), and cerebrovascular accidents (6%). Chronic, noncommunicable diseases are the most significant challenge for the health of Canadians. At present, two out of five Canadians over the age of 12 years live with one or more chronic diseases.

According to data obtained from 2007 to 2009, approximately one out of four adults is obese. Between 2002 and 2007, there was a 21% increase in the prevalence of diabetes (standardized by age), affecting 6.2% of the population.

Mental illness and addictions are the first and second leading causes of disability, respectively. It is estimated that one out of every five Canadians will suffer some form of mental illness during their lifetimes. Various types of dementia (including Alzheimer's disease), depression, and delirium affect approximately 400,000 older adults, and this number is expected to double in 30 years' time.

The traditional model of primary care has been very effective to date. However, the emergence of health care inequalities among Canada's increasingly aging population and the rising incidence and prevalence of chronic diseases pose significant challenges. To address these, it will be necessary to increase access to primary care services that place a greater emphasis on health promotion, disease and injury prevention, and treatment of chronic diseases, as well as to expand around-the-clock access to essential services.

Despite the fact that the number of health professionals has increased in recent years, the distribution of human resources continues to be limited in some jurisdictions, especially in rural and remote communities. With the support of the federal government, the territories and provinces are increasing their human resources dedicated to training residents in family medicine in underserved communities and to providing better education to physicians in rural communities so that they may, in turn, better meet local health care needs.

Between 2006 and 2010, the Canadian economy was grappling with recession, in addition to the high cost of new technologies and the aging of the "baby boom" generation—a situation that has given rise to a new set of challenges.

Reducing inequalities in health continues to be a major concern for Canada. Accordingly, the different levels of government actively collaborate to better understand how social and economic structures, as well as policy systems and approaches, affect health, and how to improve social and health areas.

# Cayman Islands



The Cayman Islands, a British Overseas Territory, comprises the islands of Grand Cayman, Cayman Brac, and Little Cayman. The territory is located in the western Caribbean Sea, about 240 km south of Cuba and 290 km west of Jamaica. The total land area is 250 km<sup>2</sup>. Grand Cayman is the largest and most populous island, with an area of 197 km<sup>2</sup>. The country has a parliamentary democratic form of government. The Governor, who represents the Queen of the United Kingdom, heads the territorial government and presides over the Cabinet. The capital is George Town (located on Grand Cayman), and the country is divided into nine administrative districts.

The Cayman Islands enjoys a relatively high standard of living, as reflected in an annual per capita gross national income of US\$ 45,100 in 2009.

The high standard of living, together with the high level of general and specialized medical care universally available in the Cayman Islands, or overseas if necessary, have contributed to the relatively good health of the population.

Between 2006 and 2010, the general mortality rate fell from 3.5 deaths per 1,000 population to 2.8. The infant mortality rate in 2007 was 5.1 deaths per 1,000 live births. Only one maternal death was reported in the past decade.

No vector-borne diseases are endemic to the Cayman Islands, and the incidence of vaccine-preventable diseases has been low.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Poverty is low in the Cayman Islands (1.9%), but 3.7% of the population is considered to live in vulnerable conditions. The cost of food is high, since little of it is produced locally.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2007, the country had 100% coverage of improved drinking water through a variety of sources: piped household connections (84.2%); cisterns, rainwater, or trucks (7.2%); wells (7.6%); and other sources (1.1%).

Three landfills were in operation as of 2011. Total waste handled during the period was at its highest levels in 2007–2008 (151,601 tons) and 2008–2009 (126,177 tons). The figure fell to 69,304 in 2010–2011, nearly the same as in 2006–2007 (71,834 tons).

The country is vulnerable to natural disasters, especially hurricanes. In 2008, Hurricane Paloma caused considerable economic and infrastructure damage in Cayman Brac, although no deaths were reported.

### HEALTH CONDITIONS AND TRENDS

There were 19 cases of dengue between 2006 and 2010, 4 of them imported; dengue is not endemic on the islands. During this same time, there were five cases of malaria

#### Selected basic indicators, Cayman Islands, 2007–2010.

Indicator	Value
Population 2010 (thousands)	54.4
Poverty rate (%) (2009)	1.9
Literacy rate (%) (2007)	98.9
Life expectancy at birth (years) (2010)	80.6
General mortality rate (per 1,000 population) (2010)	2.8
Infant mortality rate (per 1,000 live births) (2007)	5.1
Maternal mortality rate (per 100,000 live births) (2009)	0.0
Physicians per 1,000 population (2008)	2.7
Hospital beds per 1,000 population (2009)	2.8
DPT3 immunization coverage (%) (2008)	89
Births attended by trained personnel (%) (2010)	100

and nine confirmed cases of tuberculosis (five men and four women). In 2009, there were 129 cases of influenza A(H1N1), with one death. Only one case of influenza A(H1N1) was reported in 2010.

On average, 10% of all births were premature. A total of 19 infant deaths (12 boys and 7 girls) were reported during 2006–2010.

In 2009, the pentavalent conjugate pneumococcal vaccine was routinely administered to infants for the first time. That same year, rotavirus vaccine also began to be administered in the Cayman Islands.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

In 2009, the Ministry of Health and Human Services was expanded to become the Ministry of Health, Environment, Youth, Sports, and Culture, which continues its leadership and regulatory role in the Cayman Islands health services.

The Ministry of Health convened the “Health Care 20/20” Conference, held in 2010 and 2011, to identify ways to keep health care affordable and maintain high quality. An initiative was also under way to develop a comprehensive health plan for the islands.

Patient insurance covers medical expenditures, depending on the insurer and the type of plan the patient has. Health care services are available to citizens and non-citizens on an equal basis.

The operational budget of the Health Services Authority increased from US\$ 77.8 million in 2006–2007 to US\$ 100.2 million in 2008–2009.

Health care services are performed by the Health Services Authority, a corporation of the British Crown,

### CayHealth Program Provides Access to Health Care

Launched in 2010, the CayHealth Program is a joint initiative of the Ministry of Health and Ministry of Community Affairs of the Cayman Islands.

CayHealth will enable patients to schedule all their appointments with a preferred general practitioner, who will also coordinate their access to specialists and overseas care, if required.

CayHealth brings health care to the people in their districts so they do not have to travel to the Cayman Islands Hospital. This will save time and improve access to quality health care. In addition, residents will be able to fill their prescriptions at the district health centers, thereby avoiding unnecessary wait times. Finally, CayHealth will increase access to health education and healthy lifestyle programs.

The program also proposes to follow the progress of patients who suffer from chronic, noncommunicable diseases. This should reduce the number of medical consultations and emergency room visits, as well as the number of self-referrals to specialists.

and the private sector. The Health Services Authority provides care for patients through the 124-bed Cayman Islands Hospital, the territory's main health care facility. Faith Hospital has 18 beds and serves residents of Cayman Brac and Little Cayman. There are five district clinics: four on Grand Cayman and one on Little Cayman. There is also a private hospital, the Chrissie Tomlinson Memorial Hospital, as well as about 40 private medical offices with general practice and specialized physicians.

There is universal coverage of delivery with skilled personnel. Almost all births (97%) occur in public hospitals, with only 3% in private facilities.

In 2010, the "Be Fit Cayman!" public wellness campaign was conducted to encourage the adoption of healthy lifestyles based on healthful eating habits and physical exercise.

As a response to the lack of policy on human resources development, in 2009–2010 the government launched a comprehensive organizational plan to increase the hiring and retention of citizens of the Cayman Islands.

The Cayman Islands Medical and Dental Society conducts regular continuing medical education activities. Similarly, the Cayman Islands Nurses Association offers continuing education to both members and nonmembers.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The country has modern technological equipment and staff trained to operate it, so it is possible to offer blood and urine analyses, computed tomography (CT scans), magnetic resonance imaging (MRI), x-rays, bone density exams, digital mammography, echocardiograms, and treadmill and thallium stress tests.

### MAIN CHALLENGES AND PROSPECTS

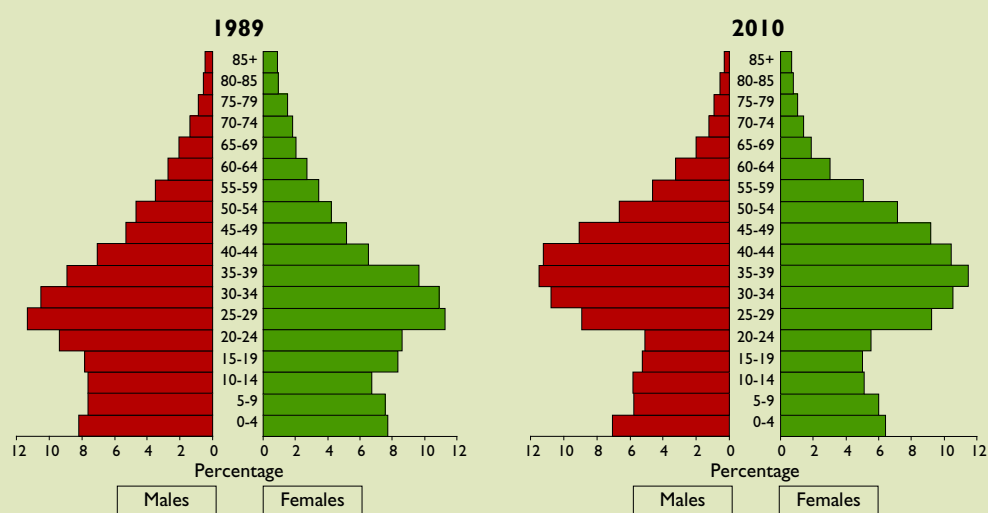
Although the country enjoys a high gross national income, the income is unevenly distributed (Gini coefficient 0.4).

The main health problems facing the country are noncommunicable diseases, including cardiovascular diseases, malignant neoplasms, hypertension, diabetes, and obesity. Patients with high blood pressure increased from 2,581 in 2006 to 3,273 in 2010, while the number of diabetics increased from 1,450 to 1,691 in the same period.

The number of deaths from cardiovascular diseases remained relatively stable during 2006–2010, with 30 deaths in 2006 and 31 in 2010.

There were 199 deaths from malignant neoplasms between 2006 and 2010: malignant neoplasms of the lung accounted for 22.6% of deaths (75.5% men and 24.5%

Population structure, by age and sex, Cayman Islands, 1989 and 2010.



women) and prostate cancer for 15.1%, followed by cancers of the breast (10.1%) and uterine cervix (2.0%).

External causes (traffic accidents and homicide) were the leading cause of mortality (33.3%) among people aged 20–64. Other causes of death in that age group were malignant neoplasms and diseases of the circulatory system.

In the population over 65 years of age, who made up 9% of the population in 2010, the leading causes of death in both sexes were cardiovascular disease, malignant neoplasms, diseases of the respiratory system, and accidental falls. No morbidity data are available for this age group.

Between 1985 and 2010, there were 96 cases of HIV infection (53 men and 43 women). Of these, 50 progressed to AIDS (26 men and 24 women), and there were 35 deaths (21 men and 14 women). The main modes of transmission were heterosexual, homosexual, and bisexual, at 64%, 19%, and 8%, respectively. During 2006–2010, there were 26 new HIV infections (0.9 per 10,000 population), 12 new cases of AIDS (0.4 per 10,000 population), and 10 AIDS-related deaths.

In 2010, 17% of the children of the Cayman Islands were overweight or obese and 25% were found at risk of being overweight. Among children aged 11 to 13, 20.6% were obese, 15.6% were overweight, and 6.2% had less than normal weight. Among those aged 15 to 19, the leading causes of death were traffic accidents, homicide, and suicide. In 2011, there were 304 live births to mothers under the age of 18.

Outpatient visits for mental disorders increased from 1,640 in 2006 to 1,705 in 2010. The most frequent diagnoses were depression, anxiety disorders, and schizophrenia.

Although surveys of schoolchildren show that consumption of alcoholic beverages declined from 45.5% in 2006 to 39.2% in 2010, they also show that tobacco consumption increased from 6.8% to 14.4% in the same period. With regard to use of illegal drugs, the percentage increased from 9.7% in 2006 to 12.8% in 2010.

Given the lack of certain secondary and tertiary services in the country, the Health Services Authority needs to adopt mechanisms to facilitate specialized treatment abroad. All essential health care products are imported.

The number of traffic accidents increased from 1,186 in 2006 to 1,430 in 2010, for a total of 6,851 during the period. In 2006, 7.4% of all arrests were related to the trafficking or use of illegal drugs and by 2010 that figure had risen to 10.7%.

The number of physicians at George Town Hospital decreased during the 2006–2010 period, but the number in the private sector increased. Similarly, the number of nurses decreased in the main hospital and increased in the private sector.

The government intends to establish a tertiary care hospital (center of excellence) in the Cayman Islands to provide cardiology and oncology care services which, as of 2010, had to be sought abroad. Such a facility would reduce the cost of specialized care for the Caymanian population.

# Chile



Chile is located in the extreme southwest portion of South America and borders Argentina, Bolivia, and Peru. It is a long (4,329 km) and narrow (average width, 177 km) country: its continental and insular territory stretches for 756,626 km<sup>2</sup> and its antarctic territory, for 1,250,000 km<sup>2</sup>. The country has a rugged terrain, and is vulnerable to disasters such as earthquakes and tidal waves. Chile functions as a unitary republic with a stable, democratic political system. The State encompasses three independent powers: the executive, the legislative, and the judicial. The capital is Santiago, and the country is divided into 15 regions, 53 provinces, and 346 communes.



Chile is a middle-income country whose economic development progressed over the 2006–2010 period. The population's state of health is consistent with this gradual improvement in the social and economic situation, the country's social safety net, and social and health policies that favor promotion, access, and coverage. The public health system has encouraged equity through measures to prevent maternal and child mortality, premature mortality, communicable diseases, and malnutrition, as well as by improving sanitation conditions.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

In 2009, average autonomous monthly household income was close to US\$ 1,500. Redistributive social policies and monetary subsidies targeting the vulnerable population have reduced the income gap between the highest and lowest quintile income groups. Unemployment has declined progressively in the last decade, and it was 8.1% in 2010. The poor constituted 15.1% of the population in 2009, with 3.4% of the population living in extreme poverty. Literacy in the over-15 population is 98.6%, and average schooling is 10.4 years. Those defining themselves as indigenous or of indigenous descent are 6.9% of the population. In 2006, the communes in the lowest decile of household income experienced 51.2% more years of potential life lost (YPLL) per 1,000 population than did the communes in the highest household income decile.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2009, access to potable water was universal in urban areas, and coverage was over 95% in rural areas. In addition, 82% of households had a sewerage connection, and 83% had wastewater treatment.

### HEALTH CONDITIONS AND TRENDS

Health conditions continued to improve in the 2006–2010 period. There was a reduction in infectious diseases, maternal and child health problems, and preventable and premature mortality. Life expectancy rose, and infant mortality declined (to 7.9 per 1,000 live births in 2008).

No cases of yellow fever, schistosomiasis, diphtheria, or indigenous cases of malaria were reported. In 2010, the

#### Selected basic indicators, Chile, 2008–2010.

Indicator	Value
Population 2010 (millions)	17.1
Poverty rate (%) (2009)	15.1
Literacy rate (%) (2010)	98.6
Schooling (years) (2009)	10.4
Life expectancy at birth (years) (2010)	79.0
General mortality rate (per 1,000 population) (2008)	5.4
Infant mortality rate (per 1,000 live births) (2008)	7.9
Maternal mortality rate (per 100,000 live births) (2008)	16.9
Physicians per 1,000 population (2010)	1.6
Beds per 1,000 population (2009)	2.1
DPT3 immunization coverage (%) (2009)	92.0
Births attended by trained personnel (%) (2008)	99.9

incidence of hantavirus was 0.35 cases per 100,000 population (with a case-fatality rate of 18%). The incidence of hepatitis B and C, respectively, was 3.3 and 3.5 cases per 100,000. The incidence of tuberculosis was 13.8 per 100,000 population in 2008.

The prevalence of HIV carriers is estimated at 0.4% (12 carriers per 100,000 population), with a male/female ratio of 3.6 for HIV and 5.6 for AIDS. The case-fatality rate has fallen as the survival rate has improved with guaranteed access to antiretroviral therapy.

Between 1999 and 2008, age-adjusted total mortality from cervical cancer dropped 37%.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Chile's Health Objectives for the Decade 2001–2010 and a series of specific reforms shaped the sector's development. The focus was on social protection, as reflected in the health element of the *Chile Crece Contigo* ("Chile Grows with You") program. Although the health system has achieved a high degree of coverage and access, improvements are still needed in management, efficiency, and equity.

The 2006–2010 governmental term featured the creation of the General System of Health Guarantees (Law 19,966) as well as the strengthening of the health authority and creation of conditions of greater flexibility for autonomous hospital management (Law 19,937). In 2009, total health spending represented 8.3% of the gross domestic product (GDP) (47.4% of this being public expenditure) and consumed 16% of the government budget. Of the private spending, 64.6% was direct or

### Explicit Health Guarantees and Strengthening Chile's Health Authority

Policies and planning during the 2006–2010 term of government promoted health sector reform, with legislation passed by the parliament putting key components into place that: (1) established a plan of universal access with explicit health guarantees, and (2) strengthened the health authority at the national and regional levels. That legislation also created administrative conditions that facilitate more flexible hospital management within a context that separates the functions of regulatory entities and those of health service providers.

Law 19,966 created the General System of Health Guarantees (known as GES or AUGE). This component of the reform emphasizes the citizen as a holder of rights who can demand them from the State. For a defined set of health problems, GES establishes four basic guarantees: access, timeliness, quality, and financial protection. The implementation of GES began gradually in 2004 by addressing some problems through pilot plans. As of 2010, the health problems covered by GES numbered 69.

Also, Law 19,937, pertaining to the health authority and the Network of Autonomous Hospitals, strengthened the health authority and created more flexible conditions for hospital management.

out-of-pocket. Per capita health spending increased from US\$ 841 to US\$ 1,185 during the period, with private expenditure remaining dominant.

Chile's drug policy attempts to ensure the availability of, and universal access to, indispensable drugs included in the National Formulary. The country's extensive domestic production of generic drugs leads to drug prices 5.8 times less expensive than their proprietary equivalents. Three pharmaceutical chains control 90% of sales.

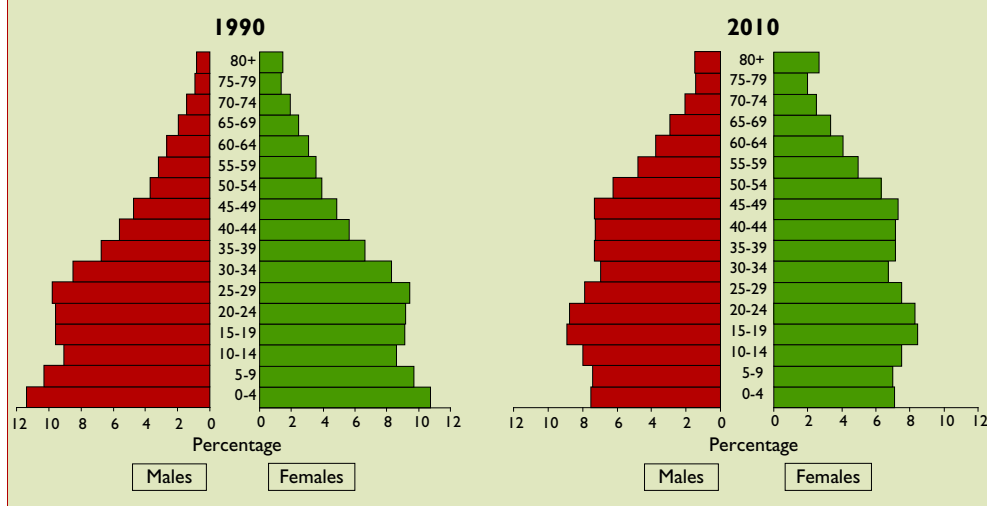
A National Health Strategy (ENS) 2011–2020 has been created. It is designed to maintain the health progress already achieved, address the challenges of aging and changing lifestyles, reduce health inequities, and improve the quality of services. In 2010, a presidential health commission proposed adjusting the country's health funding, insurance, and delivery of services in order to increase equity in access, as well as to respond more satisfactorily to the population's priority health needs. Necessary steps include improving the management, quality, and safety of care; strengthening integrated health networks; enhancing communications technologies; and improving drug access. To help achieve the National Health Strategy objectives, intersectoral policy is in place to promote the *Elige Vivir Sano* ("Choose to Live Healthy") program.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

In 2008, science and technology spending was estimated at US\$ 673.58 million. In 2010, 41% of the population actively used the Internet, at an average of 3.6 hours per day. The health sector has modern systems of electronic records for both health and administrative purposes. The Ministry of Health coordinates an interinstitutional group that participates in the international Evidence-Informed Policy Network (EVIPNet). Chile has consolidated its national Virtual Health Library network, as well as the Chilean node of the Virtual Public Health Campus.

The National Board of Science and Technology (CONYCIT) encourages research in the basic and clinical sciences. The National Health Research and Development Fund (FONIS) finances projects designed to improve decision-making in health, from the health policy design stage to the clinical decision-making level.

Population structure, by age and sex, Chile, 1990 and 2010.



### MAIN CHALLENGES AND PROSPECTS

The health determinants in Chile reveal inequality. Family income varies by a factor of 15.7 between the highest and lowest income quintiles. The average level of schooling in urban areas is 10.8 years, but 7.8 years in rural areas. The proportion of the population living in poverty was 15.1% in 2009. Poverty was more prevalent in family

groups headed by women, in rural areas, and among indigenous populations.

The labor participation rate is 40.3% for women and 71.4% for men, so that patterns of division of labor in the traditional home persist, even though many women are the head of the household, which makes women's workload excessive. Only 11.9% of the indigenous population has studied at the tertiary level, and income levels among the indigenous are 48% lower than they are in the non-indigenous population.

Urban and industrial development has produced a set of side effects, such as a worsening of some environmental conditions (most notably in the capital, Santiago), including pollution of air, water, and soil, as well as solid waste disposal problems. Chile's mountainous, volcanic geography produces frequent seismic activity. The country should prepare to address some anthropogenic problems, particularly ones involving water pollution, chemical pollution, and environmental contamination.

In 2010, Chile experienced a severe earthquake and tsunami. There were 800,000 people affected, with 512 deaths and 16 other persons missing. Eighteen hospitals and hundreds of ambulatory health centers were unusable following the disaster. Nevertheless, the country's development characteristics and the antiseismic infrastructure of its buildings, as well as its degree of national disaster preparedness, prevented even more serious consequences. The country is gradually rebuilding its infrastructure.

According to 2009 figures, mortality from accidents was 48.2 per 100,000 population. However, the rate was 3.5 times higher among men than in women. Similarly, while overall traffic accident mortality was 12.8 per 100,000, the rate was five times higher among men. The prevalence of depression is 17.2% and the annual incidence of schizophrenia in adults is 12.0 per 100,000 population.

The principal morbidity and mortality burdens come from chronic, noncommunicable diseases. Diseases of the circulatory system are responsible for 27.5% of deaths, tumors for 25.0%, and external causes for 9.2%. In indigenous populations, overall mortality is higher (by amounts ranging from 30% to 80%), as is child mortality (between 90% and 250% higher). These patterns clearly show that there are inequalities between the indigenous and non-indigenous populations.

Over 30,000 new cases of cancer are diagnosed annually. Men are the primary victims of stomach cancer (24.4 per 100,000), prostate cancer (20.2 per 100,000), and lung cancer (18.3 per 100,000), while the principal cancers

among women are of the gallbladder (15.6 per 100,000), breast (14.5 per 100,000), and stomach (12.9 per 100,000).

In 2010, mortality due to ischemic heart disease was 48.9 per 100,000 population, and mortality from cerebrovascular diseases 49.0 per 100,000.

Also in 2010, the prevalence of diabetes mellitus was estimated at 9.4%. The estimated prevalence of hypertension in adults was 26.9%, and 38.5% had high total cholesterol. More than half of adults had at least two of the principal risk factors for cardiovascular disease (smoking, family history, high cholesterol, and hypertension).

The prevalence of risk factors is also high among children under 6 served by the public health system according to 2009 figures, when 21.6% were overweight and nearly 10% obese. Among adults, 64.5% were overweight (body mass index  $\geq 25$ ) and 25.1% were obese.

Among adults, 17.7% are at risk of becoming problem drinkers. The average number of permanent teeth damaged by caries is 2.60 at 12 years of age. Among the over-17 population, 13.3% of those persons are missing some teeth, and 5.5% have lost all their teeth.

Many health care staff have moved from the public sector to the private sector, and they have also been congregating more in urban areas. Of the country's physicians, 44% work in the public sector. Although the number of physicians working in primary care almost doubled between 2004 and 2008, there still is a shortage of doctors, and in particular a shortage of specialists trained to work at the primary care level.

There are good health information and administration systems. However, improvements are needed if information is to be sufficiently systematized and coordinated for policy-making and decision-making at various levels, as well as for monitoring and evaluating performance and equity in the health sector.

The achievements made by Chile and its health system pose the challenge of continuing to improve the population's state of health, while further reducing inequity and strengthening the structure and functioning of the health system.

For the next 5 to 10 years, the public health problems that will most stand out include environmental contamination, obesity, chronic disease, and occupational and traffic accidents. The health system boasts solid policies on health, coverage, and social protection. Geographical, economic, ethnic, and educational differences that lead to health inequalities persist. Thus, there must be progress toward greater equity in the allocation of human and financial resources, so as to promote access to quality care and to respond appropriately to the needs of the various population groups. The National Health Strategy 2011–2020 has taken these issues into consideration.



Colombia lies in the far northwest of South America and extends for 1,141,748 km<sup>2</sup>. The country has plentiful water resources, with the Pacific Ocean hydrographic region and the Amazon and Orinoco river basins that empty into the Caribbean Sea being among the most important. The country is organized as a unitary republic; its administrative divisions include the Capital District—where the capital, Bogotá, is located—32 departments, 1,121 municipios, and indigenous territories, which are recognized as territorial entities whenever they fulfill the legal requirements to qualify as such.

Colombia experienced sustained economic growth between 2000 and 2010. Poverty reduction efforts have contributed modestly in the progress toward the Millennium Development Goal (MDG) targets. Involuntary displacement because of violence is the most important internal migration factor. In addition, the country is experiencing a demographic transition, including a declining birth rate and increased life expectancy, which affects the epidemiological profile. The health system has achieved broad coverage and important infectious diseases, as well as maternal and infant morbidity and mortality, have been brought under considerable control.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

In the last decade, basic education—preschool, primary, and secondary—has become available to all. Women have increased their level of schooling and participation in work and politics. Between 2005 and 2009, the percentage of people who were poor declined from 50.3% to 45.5%, although extreme poverty rose from 15.7% to 16.4% in that period. In 2009, the gap between men and women in the workforce narrowed (to a 23.5% difference), as did the gap in monthly income (to 20%).

### THE ENVIRONMENT AND HUMAN SECURITY

As of 2010, reforestation had been achieved on 88% of the acreage set as an MDG target for 2015. Colombia has adhered to the Montreal Protocol and substantially reduced the importation and use of substances that harm the ozone layer. In 2008, 15.2% of dwellings were located in at-risk areas.

### HEALTH CONDITIONS AND TRENDS

Between 2006 and 2010, there were important achievements in maternal and infant health and in infectious disease control. The use of modern family planning methods rose, and the adolescent pregnancy rate and the infant mortality rate dropped (the latter to 20.6 per 1,000 live births in 2008).

The decade's most serious dengue fever epidemic occurred in 2010, with 157,152 cases (2.3% of them fatal). There were 110,000 reported malaria cases, but the death rate declined. Onchocerciasis transmission has been interrupted

#### Selected basic indicators, Colombia, 2008–2010.

Indicator	Value
Population 2010 (millions)	45.5
Poverty rate (%) (2009)	45.5
Literacy rate (%) (2009)	93.2
Life expectancy at birth (years) (2010)	73.4
General mortality rate (per 1,000 population) (2008)	5.6
Infant mortality rate (per 1,000 live births) (2008)	20.6
Maternal mortality rate (per 100,000 live births) (2009)	72.9
Doctors per 1,000 population (2008)	1.5
Beds per 1,000 population (2009)	1.6
DPT3 immunization coverage (%) (2010)	88.0
Births attended by trained personnel (%) (2008)	98.2

throughout Colombia. The effort against Chagas' disease progressed in terms of controlling vertical transmission and vectors. There were 11,433 tuberculosis cases and 283 new leprosy cases, representing a decline in the incidence of the latter. In 2009, 6,924 cases of HIV/AIDS were reported, but the proportion of HIV-positive blood donors dropped. There were no recorded cholera cases.

Deaths due to homicide have declined, especially among young men. However, deaths and disability from traffic accidents have risen, requiring redoubled efforts in traffic safety education and effective traffic law enforcement.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The General Health and Social Security System (SGSSS) has two plans, one contributory and the other subsidized. Together, the two SGSSS plans cover 91.1% of the population. There are special plans for the 4.6% of the population who belong to the military, the police, the teaching profession, oil companies, and public universities. The remaining 4.3% of the population is not covered by the SGSSS. Enrolling in the system is mandatory and is done through 72 health promotion agencies (EPS), which have offered similar mandatory coverage under both plans since 2008.

Total health expenditure was stable in 2009, at 6.4% of gross domestic product (GDP). Out-of-pocket expenditure as a proportion of private health expenditure has stayed at 50%.

Between 2002 and 2010, 243 public hospitals were modernized and their management was improved, which resulted in greater user satisfaction. In addition, the number of general and ICU beds increased, as did the number of outpatient, dental, and emergency clinics.

### Colombia's General Health and Social Security System

The heart of the health system is the General Health and Social Security System (SGSSS). The SGSSS has two plans: (1) a contributory one, for salaried workers, pensioners, and self-employed workers who earn more than the minimum wage, and (2) a subsidized one, for people unable to pay. The contributory plan requires a contribution of 12.5% of income: the employer puts in 8.5% and the employee 4%; self-employed workers contribute the entire 12.5%. The subsidized plan is financed with subsidies from the contributory plan and funds from the country's general tax revenues.

Belonging to the SGSSS is mandatory. Enrollment is through the health promotion agencies (EPS), which, at a minimum, offer both plans. That has been the case since 2008, when the Constitutional Court ordered the consolidation of the plans in the two regimes.

The SGSSS faces various problems. The base of contributors is low because more than 50% of the population is subsidized. Although the level of insurance is high, practical access to services is very limited in some departments, particularly on the Pacific coast. Each health promotion agency designs its provider network according to market conditions, which may require patients to travel long distances for care or to undergo diagnostic procedures in sites that are far from each other. The law allows for vertical health promotion agency integration, in which the agency has its own providers. However, this contributes to the system's fragmentation.

A Unified Qualification System was established that compels staff and institutions to meet minimum quality standards. The Ministry of Social Protection issued standards to guide the rational use of medicines and medicinal access, quality, safety, and timeliness. In 2010 the National Food and Drug Monitoring Institute was

classified as a Level IV national regulatory authority, giving it the status of a reference institution for the Region of the Americas. The year 2006 saw the greatest number yet of newly graduated doctors and nurses.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Except for telephone landlines, public utilities services increased between 2008 and 2010.

Law No. 1,122 of 2007 set out conditions for consolidating the Integrated Societal Protection Information System, which makes it possible to capture, systematize, and deliver information from the epidemiological surveillance system. In addition, that information system collects and systematizes administrative information so as to monitor health outcomes and buttress the health sector's system of oversight and administration.

### MAIN CHALLENGES AND PROSPECTS

Between 2000 and 2010, the economy showed sustained growth, but inequalities persist, as shown by a Gini coefficient of 0.578 in 2009. Unemployment remained stable at 11% between 2006 and 2010. However, women's unemployment rate remains stuck at 6.4% higher than men's.

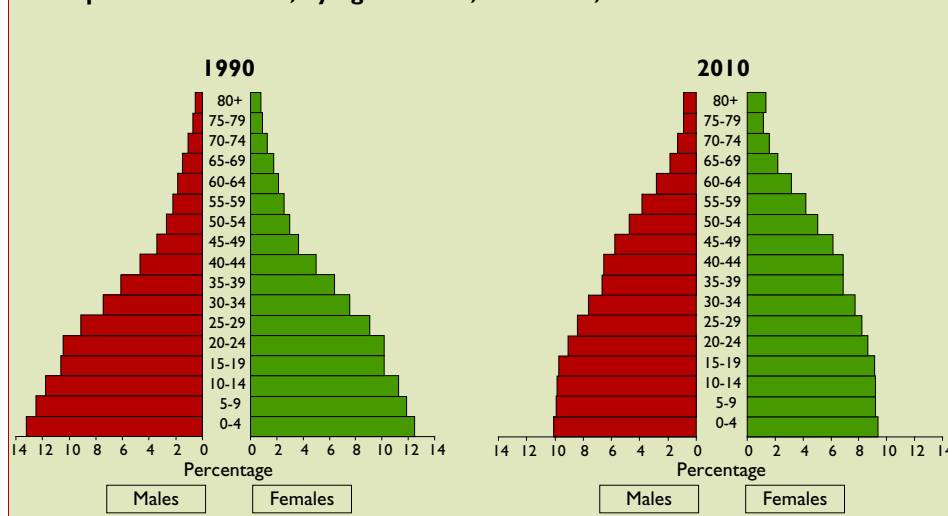
Educational progress has been notable, but the challenge remains of addressing the low level of literacy and years of schooling among both young people (15 to 24 years old) and women.

Five million people remain involuntarily displaced because of continuing violence. This raises the challenge of meeting their special needs and adapting the health services to give them the greatest possible access to health care.

The displaced population is at risk for vector-, food-, and water-borne disease and for chronic malnutrition. Also among the displaced, pregnant women are at greater risk of becoming sick and of dying. With regard to mental health, displaced persons are more likely to experience depressive disorders, adaptive disorders, and stress.

Colombia is the third most susceptible country in the world for natural

Population structure, by age and sex, Colombia, 1990 and 2010.



disasters, because most of its population lives in high-risk areas. In 2008, 1.4 million households were sited in at-risk areas.

Unregulated urbanization has increased risks to the poor, with changes in the landscape, biodiversity, air and water quality, waste generation, and the supply of suitable land. Every year large areas are degraded, since 85% of arable land is susceptible to desertification, which affects the agricultural sector's competitiveness and the availability of food and water.

Various ethnic groups comprise 13.8% of the population. Those groups' health situation has not been adequately assessed because it has been difficult to access those communities as well as to harmonize traditional and western medicine.

Vector-, food-, and water-borne diseases, along with respiratory infections and tuberculosis, are important factors in illness and in needed service delivery. However, noncommunicable diseases (including ischemic heart disease, cerebrovascular disease, cancer, homicides, suicides, and motor vehicle accidents) impose the greatest morbidity, mortality, and disability burdens among adolescents and adults. Infectious disease outbreaks will continue as long as unhealthy conditions exist in the homes of the poor and of rural and isolated people.

There has been an increase in morbidity and mortality attributable to noncommunicable diseases, especially cancer, cardiovascular and respiratory illness, and diabetes. Accordingly, health officials have strengthened the programmatic structure and taken steps to promote healthy lifestyles and improve quality of care.

The rate of hypertension in adults was 8.8%; for diabetes, it was 3.5%. Cardiovascular diseases were the leading cause of death in the general population (ischemic disease accounting for 83.7 deaths per 100,000 population, and cerebrovascular disease for 42.6 per 100,000). The second leading cause of death was cancer (stomach, lung, cervix, and breast). Third were injuries (homicides among men, suicides, and traffic accidents). Infectious diseases occupied fourth place.

Of the children under age 5 who die, most succumb to infection. Among adolescents and young adults, homicide, suicide, and traffic accidents predominate. HIV is an important cause of death for men between 20

and 64 years old. In adults (30 to 64 years old) overall, traumatic conditions and cardiovascular diseases share first place. In older adults, chronic, noncommunicable diseases predominate.

The prevalence of overweight in adolescents and young adults increased between 2005 and 2010. A low percentage of hypertensives and diabetics take medicines or receive nutrition or exercise advice.

Although the level of SGSSS insurance coverage is high, practical access to services is very limited in some departments, particularly on the Pacific coast. Each health promotion agency designs its provider network according to market conditions, which may require patients to travel long distances for care. Even though public service coverage increased between 2008 and 2010, in some isolated areas access is still deficient.

Since the year 2000, health care has been monitored through the Registry of Service Delivery to Individuals. Although the registry's quality has improved, information coverage is still limited, since it is basically used to charge for benefits. There is no central entity to coordinate the health information system. This means that the various administrative registries have generated parallel subsystems and incompatible databases, with indicators that are both little standardized and incomplete. Significant underreporting of vital statistics occurs, and deficiencies exist in the registries' quality, processing, analysis, and use of data. Census data are underutilized, as are surveys and other planning and decision-making studies.

Making the health system fairer and strengthening its organization and operation is still a challenge. Personnel, especially medical staff, are concentrated in urban areas, to the detriment of remoter areas or those where armed conflict occurs. Despite the high SGSSS enrollment rate, barriers persist that prevent adequate health care access for rural people, the less educated, indigenous people, and people forcibly displaced.

One of the priority health challenges is the health situation of women, which is characterized by high levels of geographical inequality, adolescent pregnancy, and violence against women. In light of this situation, steps have been taken to strengthen monitoring systems, adopt plans to more quickly reduce maternal morbidity and mortality, and augment the regulatory framework for reducing violence against women.



Costa Rica is located in Central America and its territory stretches for 51,100 km<sup>2</sup>. The country borders with Nicaragua to its north, Panama to its southeast, the Caribbean Sea to its east, and the Pacific Ocean to its west. It has a varied topography, encompassing three mountain systems with elevations between 900 and 1,800 m above sea level; the Great Central Valley, where 60% of the population lives; and the coastal plain, partially blanketed by tropical forest. The capital is San José, and the country is divided into 7 provinces and 81 cantons, or municipios.



**Selected basic indicators, Costa Rica, 2009–2010.**

Indicator	Value
Population 2010 (millions)	4.6
Poverty rate (%) (2009)	21.7
Literacy rate (%) (2009)	96.9
Life expectancy at birth (years) (2010)	79.2
General mortality rate (per 1,000 population) (2009)	3.5
Infant mortality rate (per 1,000 live births) (2010)	9.5
Maternal mortality rate (per 100,000 live births) (2010)	21.1
Doctors per 1,000 population (2009)	1.9
Hospital beds per 1,000 population (2010)	1.2
DPT3 immunization coverage (%) (2010)	88.0
Births attended by trained personnel (%) (2010)	100.0

Costa Rica has 4.56 million inhabitants and a per capita income of US\$ 10,200. Among health achievements, these 2010 statistics stand out: an infant mortality rate of 9.5 per 1,000 live births, maternal mortality of 21.1 per 100,000 live births, and life expectancy at birth of 79.2 years.

The proportion of households living in extreme poverty rose from 3.3% to 3.5% between 2007 and 2008, a level that exceeds the Millennium Development Goal (MDG) target.

The health sector is made up of several public entities: the Ministry of Health, the Costa Rica Social Security Fund (CCSS), the National Insurance Institute, the Costa Rica Water and Sewer Institute, the Institute on Alcoholism and Drug Dependency, and the Costa Rican Institute for Research and Education on Nutrition and Health. In 2010, health expenditure as a percentage of gross domestic product (GDP) came to 10.9% (67% public and 33% private), with the highest share (86%) coming from CCSS funds.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

The achievements in health are due to, among others, improvements in societal determinants such as the literacy rate (97%) and net rate of schooling (almost 100%).

There are gaps between the needs of people living in slums and the institutional capacity to meet those

needs. Funds to improve dwellings are a low proportion of the total housing budget, but in 2007 the number of makeshift residences was reduced and access to basic services was improved.

## THE ENVIRONMENT AND HUMAN SECURITY

Between 2006 and 2010, various laws and standards were promulgated to regulate health-related public and private services and to protect people's health. Among these new laws were the Comprehensive Waste Management Law and the National Vaccination Law. In addition, the International Health Regulations were ratified by executive decree, and the National Liaison Center, a Ministry of Health department that watches for domestic and international alerts, was established.

Between 2006 and 2010, the population with access to drinkable water increased from 81.2% to 89.5%. Although investments have been made in sewerage and wastewater treatment, most people use septic tanks, which provided a 72.3% level of coverage in 2010.

Efforts to improve solid waste collection, treatment, and disposal have been put in place. A manual was written in 2007 to help municipalities prepare solid waste management plans, and in 2008 a solid waste plan was set up for the country as a whole.

Costa Rica currently imports 12,000 tons of pesticides annually. Of this amount, 25% is used on rice and banana crops. Many pesticide products are low-risk, but some are highly toxic. In line with the Montreal Protocol, the country reduced methyl bromide use by 60%, but the remaining usage will be difficult to eliminate, given the existence of crops with severe pest problems.

### The Ministry of Health and the Social Security Fund: Two Key Actors in Costa Rica's Health Sector

*The Ministry of Health was reorganized between 2006 and 2011. The stated strategic objective of the current health policy is "to move forward from disease management toward health promotion, position health as a social value, and guide social actors toward monitoring and controlling health determinants in a fair, evidence-based manner."*

*The Costa Rica Social Security Fund continues to be the main public entity that provides health services to the population. It is organized functionally according to levels of care and territorially into seven regions.*

*Costa Rica has universal and collective medical social security. It covered 91.9% of the population in 2010. In coming years the health system's main challenge will be to financially sustain the Fund's coverage, given that users' main problem is the waiting lists for services.*

## HEALTH CONDITIONS AND TRENDS

Between 2006 and 2010, 102 maternal deaths were recorded. In 2010, the maternal mortality rate was 21.1 per 100,000 live births. Between 2006 and 2010, the infant mortality rate remained stable at some 9.4 per 1,000 live births.

Between 2006 and 2010, 84,443 dengue cases were reported, of which 471 were serious. Malaria cases dropped from 2,903 in 2006 to 114 in 2010, which means that the country has reached the MDG targets of reducing cases by at least 10% and of having no deaths.

The official vaccination series includes tuberculosis, hepatitis B, rotavirus, diphtheria, tetanus, whooping cough, *Haemophilus influenzae* type b, poliomyelitis, 13-valent and 23-valent pneumococcus, influenza, measles, rubella, mumps, and chickenpox. Between 2006 and 2010, there were no cases of vaccine-preventable disease, and levels of coverage were kept between 81% and 93% for tracer diseases.

Between 2002 and 2010, 2,278 HIV cases were recorded, for an annual incidence of 52.6 per 100,000 population. Men outnumbered women by a 3:1 ratio. Of these cases, 77.9% were concentrated in those 20 to 49 years old. There were 1,805 AIDS cases during the period. The incidence of AIDS rose from 3.6 to 4.3 per 100,000 population between 2006 and 2008, but fell back to 3.6 in 2009.

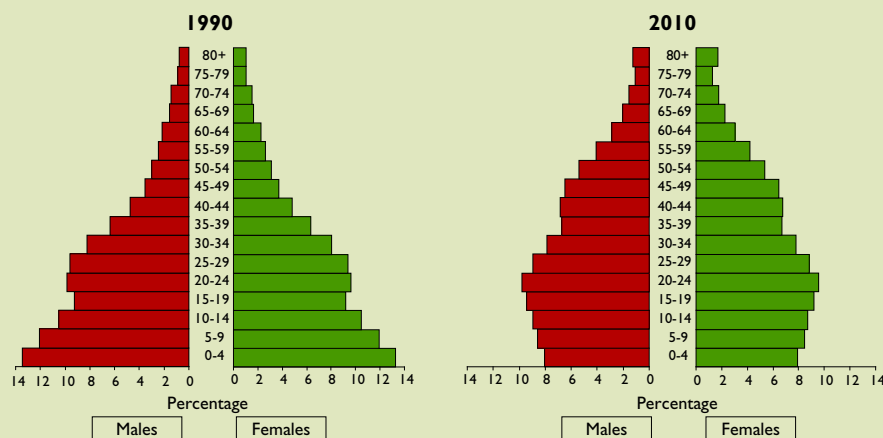
Between 2006 and 2010, the annual average incidence of tuberculosis was 11.4 cases per 100,000 population. Mortality was low and stable during the period, with an average of one death per 100,000 population.

Traffic accident deaths declined from 14.7 per 100,000 population in 2006 to 12.15 in 2010. Homicides rose from 6.8 per 100,000 in 2006 to 9.33 in 2010. These two causes of death occur primarily among young adult men.

Suicides diminished from 7.2 per 100,000 population in 2006 to 5.8 in 2010. Also in 2010, there were 158,476 psychiatric consultations (41% were new) and 329,349 hospital discharges, of which 1.7% were psychiatric. Psychiatric beds account for 16.76% of the 5,613 hospital beds, and 58.2% of them are in two specialized centers.

The proportion of persons who had ever smoked declined from 31.5% to 28.6% between 2006 and 2009.

Population structure, by age and sex, Costa Rica, 1990 and 2010.



Over that same period, the incidence of smoking among secondary school students remained stable, at 6.4%.

## HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Costa Rica Social Security Fund (CCSS) is the only public entity that provides health services. Functionally, it is organized into three levels of care, and, territorially, into seven regions. Primary care is provided by Basic Comprehensive Health Care Teams, located in all the 103 local health areas. Secondary care includes specialized services, hospitalization, and basic surgery in 10 large clinics and 13 peripheral and seven regional hospitals. Tertiary care consists of specialized treatment in 3 general hospitals and 5 specialized ones (gerontology, gynecology, pediatrics, psychiatry, and rehabilitation). Primary and emergency care is provided for all, but at the other levels, insurance is required. The CCSS, which is a collective universal medical social security system, covered 91.9% of the population in 2010.

The Advisory Commission on Drug Quality reviews and proposes standards for medicines and also monitors the implementation of the Central American Technical Regulation on Pharmaceutical Products. An Official List of Medicines has been maintained since 1982, in accordance with the National Drug Formulary.

## KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The Ministry of Health is developing a project that, at the CCSS level, would connect various central offices,

hospitals, and local health areas, in order to exchange consultations, carry out teleconferences, and develop electronic file systems.

Between 2006 and 2009, public spending on research and development increased from US\$ 97.2 million to US\$ 159 million (0.53% of GDP). Academia put in 48% of the total and the government 25%.

## MAIN CHALLENGES AND PROSPECTS

Due to the international economic crisis that began in 2008, per capita income was lower in 2010 than it had been in 2006. In 2008, one of every three workers (the majority of whom had no secondary education) earned less than the minimum wage.

Between 2007 and 2010, 12 climate-change-related natural events were recorded. The emergency of May 2008 was especially striking, with a prolonged dry season in the north and the effects of Hurricane Alma in the south and in the central Pacific area.

Between 2006 and 2010, diseases of the circulatory system caused 25,592 deaths, with an annual average rate of 99.5 per 100,000 population. Cancer is the second leading cause of death, with a rate of 91.3 per 100,000 population, and accounted for the greatest number of years of potential life lost between 2006 and 2009. In men, the leading causes of cancer deaths are prostate cancer (17.6 per 100,000), stomach cancer (16.62), lung cancer (8.15), colon cancer (5.71), and liver cancer (4.83). In women, those leading causes are breast cancer (12.2 per 100,000), stomach cancer (8.68), colon cancer (5.87), cervical cancer (5.78), leukemias (3.80), and lung cancer (3.35).

The National Survey of Nutrition 2008–2009 found that 23.8% of children from 1 to 4 years old were at risk for malnutrition and 5.6% were malnourished. In addition, more than 20% of schoolchildren and adolescents were found to be overweight or obese.

According to surveys conducted in 2004 and 2010, diabetes among women was 50% higher at the end of that

period. The age cohort between 40 and 64 years old showed a rise from 11% to 16.2%. Hypertension rose 6%.

The prevalence of alcohol consumption among the young increased from 38.1% in 2006 to 53.5% in 2009; the incidence in 2009 was 18.7 per 1,000 students.

According to the judicial branch, the rate of domestic violence in 2004 was 114.5 cases per 100,000 population and 102.3 in 2007. In 2008, 11,028 cases of family violence were reported, with women making up 80% of the victims (402 per 100,000). The number of women murdered by a current or former partner increased from 16 in 2007 to 38 in 2008.

Sustaining the CCSS financially is a challenge for the health system, with users' main problem being the waiting lists for services. The CCSS is experiencing cash-flow problems, which affects efforts to close coverage gaps and simultaneously expand access to quality services.

The Ministry of Health has made efforts to more clearly define its leadership role, but the Ministry needs to develop strategies to strengthen that role. This would include building the skills of personnel and reinforcing the means of governance.

There is still a need to carry out changes and adjustments to the reforms developed in the 1990s. The goal is to maintain the universal social security system and strengthen leadership in making progress in health, based on the requirements of a globalized world and the postulates, values, and principles of Costa Rican society.

The digital divide among households is being bridged very slowly. The National Program for Educational Information Technology has little presence in schools with low-income students.

Produced in 2010, the country's second report on fulfilling the Millennium Development Goals indicated that progress had been made with regard to societal and health determinants, but challenges remained. Costa Rica's indicators show that the country is currently a contributor to technical cooperation rather than a recipient of it. This increases the challenge of mobilizing funds to overcome societal debts, maintain achievements, and respond to the commitments in the health agenda.

# Cuba



Cuba is an archipelago that encompasses the island of Cuba, Isla de la Juventud, and some 1,600 small islands and keys, for a total territory of 110,860 km<sup>2</sup>. It is located in the Caribbean Sea at the entrance to the Gulf of Mexico. Cuba has a tropical climate and is vulnerable to natural disasters, particularly hurricanes and tropical storms. It is a socialist state that is governed as a united, democratic republic. The capital is Havana, and the country is divided into 14 administrative provinces and the special municipality of Isla de la Juventud.

The Republic of Cuba is a socialist state where all citizens have free, universal access to health and education. The national health system has a network of comprehensive and integrated services based on primary care and on the family doctor and nurse model. The work of the health system is directed toward health promotion, prevention, and treatment of disease, as well as the recovery of health.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

The State directs its efforts toward reducing inequalities and ensuring full and universal access to health programs. Vulnerable groups such as the disabled or those who are socioeconomically disadvantaged are protected and provided benefits. Education is guaranteed up to the ninth grade, as is access to advanced studies.

### THE ENVIRONMENT AND HUMAN SECURITY

Cuba has promoted and signed agreements resulting from summits and meetings on the environment. It manages the protection of water, air, the soil, flora, fauna, and all other elements of the natural environment. The country is addressing the effects of climate change with comprehensive research and technological programs and projects in which 17 institutions participate.

Human security in the country is ensured through equal opportunity for each of its citizens. Improved water sources are available to 92% of the population. The supply of treated water increased from 96.8% in 2006 to 98.8% in 2010. The population living in households with access to adequate sanitation facilities is 96%.

### HEALTH CONDITIONS AND TRENDS

Mortality among children is low and life expectancy is high. Infant mortality declined 18% during the 2006–2010 period. Mortality of children under 5 declined from 7.1 to 5.7 per 1,000 live births, with a survival rate of 99.4%. Mortality among adolescents (10–19 years old), whose care is a priority, declined from 0.4 to 0.2 deaths per 1,000 population during the period.

By and large, communicable diseases have been controlled. The National Strategy for Integrated Dengue Management has undertaken multisectoral activities, has strengthened monitoring and vector control, and has

#### Selected basic indicators, Cuba, 2008–2010.

Indicator	Value
Population 2010 (millions)	11.2
Literacy rate (%) (2009)	99.8
Schooling rate (%) (2009)	98.2
Life expectancy at birth (years) (2010)	78.8
General mortality rate (per 1,000 population) (2009)	7.7
Infant mortality rate (per 1,000 live births) (2010)	4.5
Maternal mortality rate (per 100,000 live births) (2009)	46.9
Physicians per 1,000 population (2008)	6.6
Hospital beds per 1,000 population (2010)	5.9
DPT3 immunization coverage (%) (2010)	96.0
Births attended by trained personnel (%) (2009)	99.9

increased the capacity and diagnostic quality of laboratories, all of which contributed significantly to reducing levels of *Aedes aegypti* infestation. In 2010, 116 imported cases of dengue were reported; 86% of municipalities are classified as negative- or low-risk for dengue.

The immunization program protects against 13 preventable diseases, and 5 of them have been eradicated (poliomyelitis, diphtheria, measles, whooping cough, and rubella). In addition, neonatal tetanus, tubercular meningitis in children under 1 year old, congenital rubella syndrome, and post-mumps meningoencephalitis were eradicated. Hepatitis B and meningococcal meningoencephalitis have been reduced. There have been no cases of human rabies reported since 2010. The number of cases of human leptospirosis has declined.

In 2010, the total number of cases of HIV infection was 12,217, and 83.2% of the infected individuals were living. The highest-risk group is men who have sex with men. From 2006 to 2010, the estimated incidence of HIV in the 15–49-year age group was 0.1%. The number of HIV tests administered increased over the period, and the lives of people who received antiretroviral therapy were prolonged. Syphilis and gonorrhea incidence rates declined in the 2006–2010 period.

There is a program to prevent oral diseases; 91.2% of people kept all of their teeth up to age 18.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Social policy aims to increase the level of development and social welfare, eliminate inequities, and enforce the rights

### Challenges for the Health System

Population aging, stagnant growth, and increased life expectancy present major challenges for the Cuban health system.

Health programs and the services network deliver what is needed to support good health indicators for the Cuban population. Sufficient and specialized human resources, continuous research, and access to medical, diagnostic, and therapeutic equipment and supplies that are produced nationally together contribute to a solid national health system. The sector's main challenges are the sustainability and efficiency of the system, which can be achieved through health promotion, disease prevention and surveillance, strengthening of the decentralized, streamlined, and regionalized services network, and improving economic efficiency.

Cuba has used various strategies to protect and benefit the elderly population, setting up community centers known as Grandparent Circles, as well as expanding the medical geriatric specialty and other professions. Under this system, family doctors provide comprehensive home and institutional care with the support of multidisciplinary geriatric care teams.

of all citizens to basic nutrition, health, education, and income. Free and universal access to health services is guaranteed, including the most complex and expensive medical treatments. The Ministry of Public Health is the regulatory entity for health policies, regulation, and management of health programs and services.

The health system is structured at three territorial levels (national, provincial, and municipal) and three levels of care in a network of specialized, decentralized, and regionalized services, starting with primary health care,

which covers the entire population. The Regulatory Bureau for the Protection of Public Health establishes and guarantees compliance with regulations in terms of medical supplies and equipment, monitors practices, and accredits and certifies the health units.

Total health expenditure as a percentage of the gross domestic product (GDP) increased from 7.7% to 11.9% in the period from 2006 to 2010. Annual per capita health expenditure increased from 321.79 pesos to 439.47 pesos over the same period.

The country contributes to the training of human resources and the organization of programs and health services in several regions, especially the Region of the Americas.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

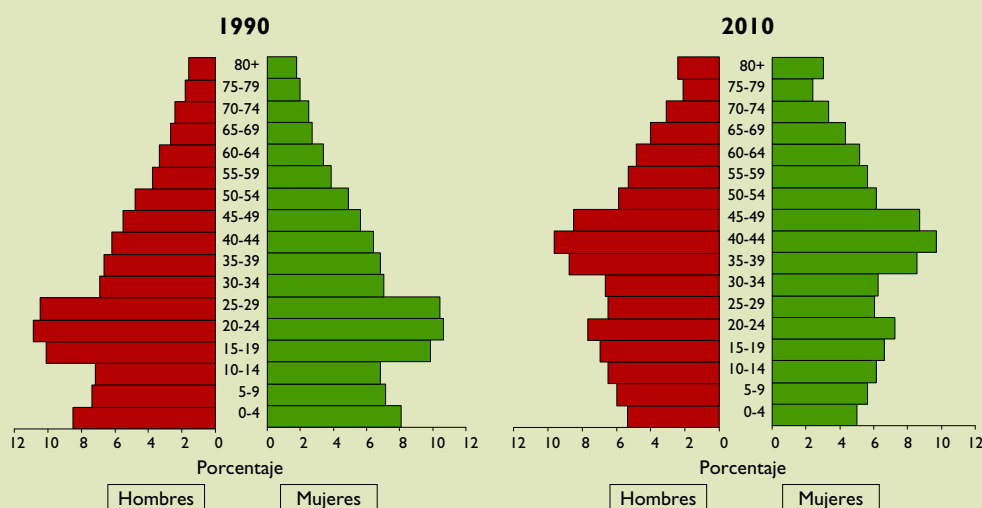
Cuba has science, technology, and innovation agencies, as well as research institutes and centers. There are programs for international collaboration and assistance with regard to health under normal conditions and for disasters. The national health system continues to move forward with information technology and with strengthening the connectivity between institutions, with a patient-based emphasis.

### MAIN CHALLENGES AND PROSPECTS

The State directs its efforts toward reducing inequalities and ensuring full and universal access to health programs and actions in order to improve the quality of life and well-being of the Cuban people. In provinces, municipalities, people's councils, and districts, inequalities are identified and strategies are applied to address them at the community, family, and individual levels. Addressing excess male mortality is a priority.

Mitigation of and adaptation to climate change is addressed from the perspective of an island nation, and although the environmental situation is favorable, problems have been identified such as soil degradation,

Population structure, by age and sex, Cuba, 1990 and 2010.



reduction of forest coverage, pollution, loss of biodiversity, and water scarcity.

The country has a road safety code and a program for accident prevention. Road accidents increased from 9,710 in 2006 to 10,371 in 2009. The number of related injuries did not change, but deaths declined. Between 2006 and 2010, mortality from self-inflicted injuries rose from 12.2 to 13.7 per 100,000 population, while mortality due to assault declined from 5.1 to 4.5 per 100,000 population.

The population 60 years old and older represents 17.6% of the total population. As a result of the demographic shift toward more advanced ages, 80% of mortality is concentrated in the population group older than 60.

Chronic, noncommunicable diseases are responsible for 84% of deaths. Accidents, self-inflicted injuries, and assaults represent 8% of deaths, while the remainder (8%) are due to communicable diseases, maternal causes, conditions stemming from the perinatal period, and nutritional diseases.

Cardiovascular diseases, which are the leading cause of death, increased 10% between 2006 and 2010, with a mortality rate of 211.8 per 100,000 population in 2010. Malignant neoplasms, the second leading cause of death, increased 11% in the period from 2006 to 2010 and are the leading cause of years of potential life lost. Cerebrovascular diseases are the third leading cause of death, accounting for 11% of total deaths; the rate of these diseases increased from 74.2 per 100,000 population in 2006 to 86.9 in 2010. Mortality from dementia and Alzheimer's disease increased during the same period, from 22.3 to 33.0 per 100,000. Problems that generate the most demand for mental health care are depression, anxiety, sleep disorders, delusional disorders, and behavioral problems.

The three leading locations for cancer are the trachea, bronchia, and lung for both sexes. Mortality from lower respiratory disease increased by 13% in the 2006–2010 period, with a greater share among older adults.

Mortality from accidents increased by 12% in the same period (although it declined at the end of the period).

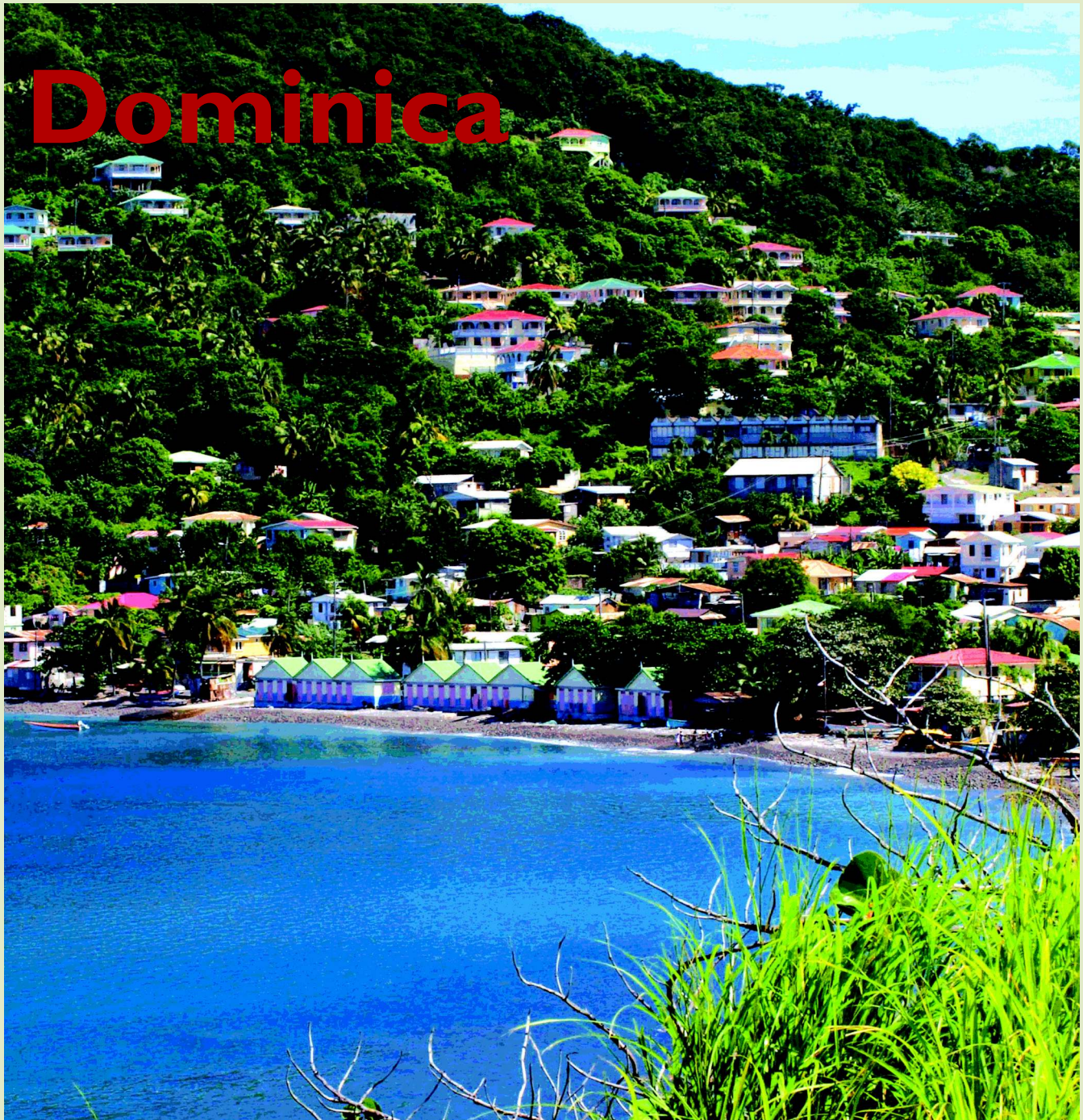
The incidence of hypertension is 30.9% in the population over 15 years of age. The proportion of the population that is overweight is 30% for both sexes; 14% of the population is classified as obese. The incidence of diabetes was estimated at 40.4 per 1,000 population in 2010, an increase of 18% compared to 2006. Mortality from this disease also increased.

With respect to communicable diseases, the incidence of leprosy continues to be stable, with an average of 240 cases annually, for a rate of 2.2 new cases per 100,000 population. There has been intensified surveillance and monitoring of contacts of leprosy patients. Surveillance of acute respiratory infections intensified as a result of the influenza A(H1N1) pandemic. The influenza vaccine is administered to vulnerable groups (14% of the population).

Communicable diseases have been controlled, although environmental conditions and the risk behaviors that contribute to them persist. Chronic, noncommunicable diseases and other health disorders are the principal causes of morbidity, disability, and death; they are associated with the population structure as well as with lifestyles and living conditions (tobacco consumption, alcohol, diet, accidents, and sexual relations without protection).

Among the most important challenges facing the health sector are teenage and unwanted pregnancies, maternal mortality, morbidity and mortality due to cancer, and the need for sustainability and efficiency of the health system.

In 2010, a process of reform and reorganization of services began in order to increase their effectiveness, efficiency, sustainability, and quality. The process is directed toward improving the health status of the population and satisfaction with services, supporting strategies for education and training of professionals and technical personnel, and meeting commitments for international collaboration, among others.



Dominica is the northernmost and largest of the Windward Islands of the Lesser Antilles. It covers an area of 790 km<sup>2</sup> and lies between the French territories of Guadeloupe and Martinique. The island is volcanic in origin, and has a rugged terrain made up of mountains, valleys, and hills; its climate is tropical. The country achieved its independence from the United Kingdom in 1978 and is a member of the Commonwealth of Nations. It is a multi-party democracy, with a president as head of state and executive authority vested in a cabinet headed by a prime minister. The capital is Rousseau, and the country is politically and administratively divided into 10 parishes.



Despite the effects of the global economic crisis, Dominica has adopted measures to mitigate poverty and improve the quality and accessibility of both primary and secondary education.

The health status of the population has continued to improve: the fertility rate has declined, life expectancy has increased, and access to the drinking water supply and sanitation continues to expand.

Efforts to improve the health infrastructure and the health information system are being made and several initiatives on patient care have been introduced to promote the health action program.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

The government carried out poverty reduction measures through targeted public spending, especially among the Kalinago, or Carib, indigenous population, who reside in the eastern part of the island and make up 5% of the population. Between 2003 and 2009, the poverty level of this specific group was reduced from 70% to 49.8% (although their poverty level remains higher than the rest of the population). Overall, their health status is similar to that of the general population.

Poverty for the country as a whole declined from 39% in 2003 to 28.8% (22.8% of households) in 2008–2009. Extreme poverty was 3.1%.

In 2009, 86% of the 32,093 people in the job market were employed and 14% unemployed. In 2008, the general literacy rate in Dominica was 86%; the highest level of illiteracy was among people age 60 and older.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2009, 95.8% of the population had access to drinking water. In 2008, 14.6% of homes had toilets connected to sewage systems and 50.6% used septic tanks. The entire population uses the services of the Fond Cole sanitary landfill, which opened in 2007.

### HEALTH CONDITIONS AND TRENDS

Universal coverage of delivery care by trained health workers has been in place since 2000. In 2009, almost all

#### Selected basic indicators, Dominica, 2008–2010.

Indicator	Value
Population 2010 (thousands)	72.9
Poverty rate (%) (2009)	28.8
Literacy rate (%) (2008)	86.0
Life expectancy at birth (years) (2010)	76.0
General mortality rate (per 1,000 population) (2010)	8.1
Infant mortality rate (per 1,000 live births) (2010)	13.9
Maternal mortality rate (per 100,000 live births)	...
Physicians per 1,000 population (2009)	1.7
Hospital beds per 1,000 population (2009)	3.8
DPT3 immunization coverage (%) (2009)	100.0
Births attended by trained personnel (%) (2009)	100.0

births (99%) took place in a hospital. In 2010, two maternal deaths occurred due to pregnancy-related complications.

Universal coverage has been achieved in the immunization program. There were no cases of vaccine-preventable diseases in children between 2006 and 2010.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

In November 2010, the Ministry of Health launched the 2010–2019 National Strategic Health Plan, which defined the priority health areas. The objectives of the plan are to: train and develop staff in clinical and administrative areas; reorient service delivery models to achieve greater efficiency and effectiveness; improve planning, surveillance, and evaluation capacity; and prepare an effective, automated health information system.

In 2008, the annual total health expenditure was US\$ 22.5 million, representing 8.2% of the total budget and 6.3% of the gross domestic product (GDP). Total health expenditures per year per capita were US\$ 333.91. Private health expenditures represented 37.5% of all health expenditures in 2008.

In the period 2005–2009, nurses represented the highest proportion of public-sector health personnel (45%) and nursing assistants, 8.3%. Physicians represented 15%.

Dominica's health services are operated and financed primarily by the Ministry of Health.

The percentage of older adults grew in 2010 to 13.4% of the total population. In 2009, the government launched a program called "Yes, we care," aimed at

### “Yes, We Care” Program—A Contribution to the Health of Older Adults

*This program, launched in June 2009, is an initiative designed to help families provide home care to Dominica’s neediest elderly. Each year, nearly 300 elderly people who are confined to their homes receive food and direct home care within the framework of this program. It is carried out through the Ministry of Community Development, Culture, Gender Issues and Information and the Ministry of Health and Environment, and is supervised by the National Advisory Committee, which was appointed by the island’s Council of Ministers.*

*The initiative was designed through a participatory process. In August 2008, the government convened a one-day forum attended by staff members of the Ministry of Health, the Division of Social Welfare, the Dominica Council on Aging, the Ministry of Finance, nongovernmental organizations (NGOs), and civic organizations, along with caregivers and local authorities.*

*The program is in keeping with the national policy on the elderly, which “seeks to provide greater protection and care to people, both physically and mentally, through adequate support services that strive to preserve human dignity.”*

providing relief to the most vulnerable of the older adult population.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Several technological initiatives were implemented in the 2006–2010 period, mainly in the health services area. In 2009, the Princess Margaret Hospital radiology service

began to operate a semi-digital system. A new hyperbaric chamber was installed for the treatment of victims of diving accidents and other medical disorders, and a plant to produce oxygen was established. In addition, the number of machines available for kidney dialysis increased.

### MAIN CHALLENGES AND PROSPECTS

To continue to reduce poverty and health problems, the efforts focused on reducing the high poverty rate of the Kalinago ethnic group must be maintained and strengthened. Among the problems affecting this group, in addition to poverty, are unemployment, adolescent pregnancy, consumption of psychoactive substances, and the prevalence of chronic, noncommunicable diseases.

Employment conditions are unequal, with an unemployment rate of 11.1% for men and 17.6% for women. Unemployment among the poor was 25.9%; female unemployment among the poor (33.9%) was higher than for men (20%).

The country is prone to hurricanes and landslides. Hurricane Dean, a category 2 storm, caused damages of more than US\$ 59.6 million in 2007, which amounted to 24% of the GDP.

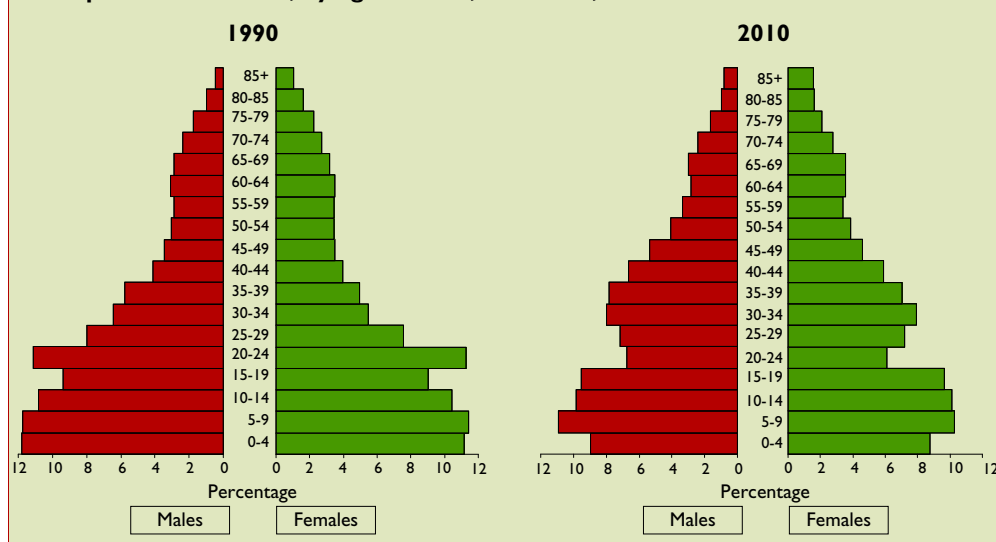
The main institutional responsibilities with respect to climate change in Dominica rest with the Ministry of Agriculture and the Environmental Coordination Unit. However, during the period 2006–2010, there was no data collection or monitoring of basic variables such as sea level, beach erosion, and greenhouse gas emissions.

Erosion along the 148 km of coasts is a continuous hazard, especially considering the expected rise in sea levels. Since most of Dominica’s communities are located along the coast, this poses a risk for human settlements and land transportation.

There were 99 deaths of infants and children under age 5 between 2006 and 2010. The three leading causes of death were respiratory disorders specific to the neonatal period, congenital malformations, and bacterial septicemia of newborns.

In 2007 and 2008, dengue outbreaks occurred, with 122

Population structure, by age and sex, Dominica, 1990 and 2010.



reported cases; another outbreak occurred in 2010 with 75 confirmed cases. In 2010, the number of people living with HIV/AIDS reached 34. The tuberculosis incidence rate in 2010 was 11 per 100,000 population.

There were 382 admissions to the psychiatric unit in 2010: 268 men (70%) and 114 women (30%). Upon being discharged, approximately 61% of these patients had a diagnosis of schizophrenia or related disorders and 26% had disorders related to the use of psychoactive substances.

Diseases of the circulatory system and malignant neoplasms were the leading causes of death in the period 2001 to 2010. The 10 leading causes of death between 2006 and 2010 were from noncommunicable diseases and represented 56% of total deaths recorded for those years. Cerebrovascular disease was the leading cause of death in that period, accounting for 317 deaths (11.3%). In 2009, 55% of deaths were due to noncommunicable diseases; malignant neoplasms caused 21% of deaths and cerebrovascular disease, 19.7%. The three leading causes of death in 2010 were cerebrovascular disease (49 deaths), diabetes (39 deaths), and ischemic heart disease (37 deaths). These diseases are related to behavior and unhealthy lifestyles such as diets harmful to health, physical inactivity, a high rate of tobacco consumption, and alcohol abuse.

The Ministry of Health has undertaken some research projects; however, the volume of work and financial constraints have prevented it from publishing the results of these studies.

The Health Information System, although it continuously compiles epidemiological data, faces some problems with data collection on morbidity. Since most data collection is done manually, accuracy and timeliness are causes for concern.

Among the many health challenges the country still faces, the following stand out: communicable diseases, adolescent pregnancies, and the growing consumption of psychoactive substances, particularly among the young. Another priority issue is the high level of chronic, noncommunicable diseases, which affect the population from an early age and represent a considerable financial burden for families and the State.

Health promotion and education about healthy practices and lifestyles and the risk of developing chronic, noncommunicable diseases is vital, especially in the younger population. School-based health promotion should be more effectively incorporated into all health programs to improve attitudes and promote positive behavior. Prevention activities that concentrate on populations at risk are fundamental to reverse the growing burden of noncommunicable diseases, and multisectoral participation in this effort is critical.



# Dominican Republic

The Dominican Republic occupies two-thirds of the island of Hispaniola, which it shares with Haiti and which lies between the Caribbean Sea and the Atlantic Ocean. The Dominican Republic covers an area of 48,442 km<sup>2</sup>. It has a tropical climate, with high temperatures and humidity and average annual precipitation of 2,098 ml. The country is vulnerable to natural disasters, especially hurricanes and tropical storms. Its capital is Santo Domingo, and its administrative/political divisions include the National District, where the capital is located, and 31 provinces, with 154 municipalities and 204 municipal districts.

The Dominican Republic's population density is 203 inhabitants per km<sup>2</sup>. It enjoys a stable democracy; the Partido de Liberación Dominicana (Dominican Liberation Party) has been in office for the last two terms (2004–2008 and 2008–2012).

In terms of social protection, the country has recently undertaken reforms to the social security system in order to improve access to health services and pensions for 40% of the population.

Lower birth and fertility rates in recent years have reduced the dependency ratio, thus launching the country's "demographic bonus," a period that will create opportunities for development if economic and social policies succeed in reducing social inequalities.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

In 2004, poverty indicators reached their peak level for the two decades up to that time, with general poverty at an estimated 43% of the population and 15.9% estimated to be living in extreme poverty. Since 2004, there has been a gradual decline in those rates, with poverty falling to 33.8% in 2010.

One of the principal poverty reduction strategies is based on the Solidarity Program, which involves monetary transfers subject to conditions that encourage school attendance and improved nutrition in the home.

Illiteracy in the population 10 years old and above fell from 15% in 1996 to 10.7% in 2007. Meanwhile, there was a major increase in the coverage of primary education, with the percentage of boys and girls finishing primary school rising from 23.2% in 1990 to 75.8% in 2009.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2007, drinking water coverage through the public network was 75.6% overall, though it was only 52.2% in the rural sector while urban areas had coverage of 81.3%. The final disposal of municipal solid waste took the form of open-air dumps in 57% of the country's municipalities.

The earthquake that hit Haiti in January of 2010 caused minor damage in 20 educational facilities and 2 hospitals in the Dominican Republic. The response of solidarity with Haitians on the part of the Dominican

#### Selected basic indicators, Dominican Republic, 2004–2010.

Indicator	Value
Population 2010 (millions)	9.9
Poverty rate (%) (2010)	33.8
Literacy rate (%) (2007)	89.3
Life expectancy at birth (years) (2010)	72.8
General mortality rate (per 1,000 population) (2004)	6.3
Infant mortality rate (per 1,000 live births) (2010)	27.8
Maternal mortality rate (per 100,000 live births) (2009)	133.4
Physicians per 1,000 population (2008)	1.3
Hospital beds per 1,000 population (2009)	1.0
DPT3 immunization coverage (%) (2010)	88.0
Births attended by trained birth personnel (%) (2007)	97.8

people led to immediate care in border hospitals for half a million injured persons, as well as assistance for thousands of displaced persons. The cost of the care provided to Haitian citizens was estimated at US\$ 27.7 million.

### HEALTH CONDITIONS AND TRENDS

In 2007, reported deaths from communicable diseases were 50% below their 2000 level. No cases of polio, measles, or rubella were reported. Malaria is endemic in the country, but the number of cases fell from 3,525 in 2006 to 1,643 in 2010, with the large majority (75%) of cases occurring among the rural and marginalized urban populations.

The annual incidence of tuberculosis declined from 88.8 per 100,000 population in 2006 to 40.9 per 100,000 in 2010. The prevalence of HIV has remained stable. In 2009, the estimated prevalence was 0.85% in the population between 15 and 49 years of age. Since antiretroviral therapy started in 2004, mortality from AIDS has fallen, from 3.2 deaths per 100,000 population in 2005 to 2.1 per 100,000 in 2009.

Between 2006 and 2010, the prevalence of low birthweight fell from 10.8% to 7.0%.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The present challenges and principal strategies for changing the health situation in the Dominican

### Vice-Ministry Establishes Quality Assurance

As part of the process of health sector reform, Provision 0010 of August 2008 created the Vice-Ministry of Quality Assurance in order to facilitate, regulate, and establish standards for operations involving health services, laboratories, blood banks, and drugs, as well as provide for audits of these services. The initiative was designed with the goal of strengthening the leadership role of the Ministry of Public Health.

A national quality policy is currently being developed based on four guidelines. The first is to strengthen the national system that certifies and accredits providers of health services. The second is to consolidate the system so as to ensure access to and the quality of drugs, food, water, and health technology. This is connected with the third point, which is to preserve the quality of the environment, with an emphasis on the quality of water and food and on the proper disposal of household and institutional wastes. The fourth element calls for citizens' participation in claiming and exercising oversight of the quality of the health-related services and products that they receive. It is this last goal, of active participation by the citizenry, that is the basis for the new paradigm of patient care that the country's health authority is promoting.

Republic are addressed in the country's 10-Year Health Plan 2006–2015, which was developed between 2003 and 2006 through the National Health Council, with wide-ranging national participation.

Since 2009, leadership functions have been strengthened with the creation of the Vice-Ministry of Quality Assurance and the establishment of a leadership roundtable that includes all the vice-ministers and

directors of programs, who discuss and recommend proposals addressing various issues.

In 2009, the Ministry of Public Health created a national program to address chronic, noncommunicable diseases. Its principal objectives are to promote health, prevent and control these diseases and their risk factors, and establish a reliable surveillance system.

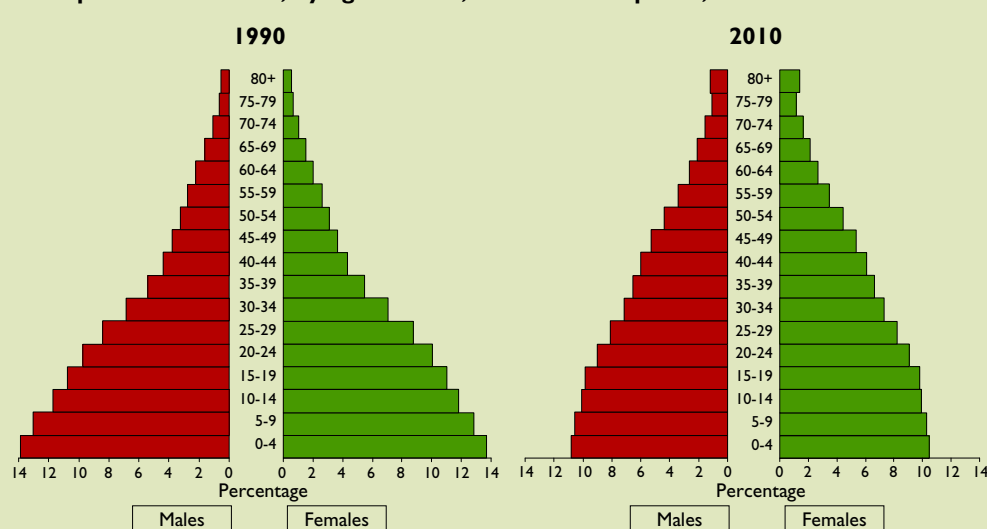
In 2008, national health spending was approximately US\$ 560 million, or 5.5% of the gross domestic product (GDP). Public spending accounted for 33.9% of this, as compared with 28.7% in 2004. Of total drug expenditure, approximately US\$ 400 million (67%) was out-of-pocket spending by households. As a percentage of GDP, public spending on health rose from 2.1% in 2006 to 2.4% in 2008.

In November of 2010, the Ministry of Public Health had 56,000 employees, of whom 71.5% were women. The geographical distribution of physicians and nurses is quite uneven, with them being concentrated in the more economically developed cities. Between 2006 and 2010, the number of physicians increased by 19.2%, reaching 16,000 in 2010.

The public-sector drug procurement system is centralized and is handled by the Essential Medicines Program and the Logistical Support Center. Under the agreement that the government signed with the PAHO Strategic Fund in 2005, the country participates in the joint purchasing of drugs (including antiretrovirals) and other strategic health inputs.

The care network has continued to improve, and generally provides access at a short distance, reachable by travel measured on the order of minutes, for the majority of the population.

Population structure, by age and sex, Dominican Republic, 1990 and 2010.



### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The Dominican Republic's PAHO/WHO Center for Information and Knowledge Management contains the country's most complete collection of public health materials. It functions as the public health field's technical memory, often providing information that facilitates continuity in the sector's processes and initiatives.

Various initiatives are in place to facilitate access to national and international biomedical information for health workers. There are Internet rooms in hospitals, provincial health offices, offices covering specific health areas, and other institutions in the sector. This program is facilitated by the Dominican Institute of Telecommunications through an agreement with the Ministry of Public Health. There are video conferencing rooms in a hospital network in the northern part of the country, as well as at universities and in other public and private health institutions.

## MAIN CHALLENGES AND PROSPECTS

There are inequalities in conditions that constitute health determinants for the population. In general, the share of the national income that the poorest segments of the population receive is very low, and improvements in the distribution are not in evidence. Over the 2000–2009 period, the poorest quintile of the population received only between 3.2% and 4.3% of the national income.

Over the last two decades, unemployment has averaged 16.4%, but it has been much higher among women (28%) than among men (10%). In the second half of 2009, unemployment was 14.4% overall (23.0% for women and 9.8% for men).

Gaps in the drinking water supply persist. For the poorest quintile of the population, coverage was 55% in 2007, while coverage for the highest-income quintile was 87%. Only 11% of the urban population has continuous drinking water service. In 2009, the index of water potability at the national level was 28.3%, the average percentage of chlorination 26.5%, and the average percentage of fecal coliforms 48.1%.

There are health problems in specific groups that, despite control efforts, still resist improvement, especially in the area of maternal and child health. Major reduction of infant mortality has not been achieved in the last decade. The rate was 30.0 per 1,000 live births in 2000, and it was 27.8 per 1,000 in 2010. Maternal mortality continues to be high, at 133 deaths per 100,000 live births, which is far from the goal of 46.9 maternal deaths per 100,000 live births called for as a Millennium Development Goal target.

Chronic diseases were on the rise during the 2006–2010 period. Diseases of the circulatory system were the main cause of mortality in large segments of the

population, accounting for 36.5% of all reported deaths in 2007, with external causes following (at 15.4%), and neoplasms in third place (15.3%). The total cases of neoplasms reported in 2006, 2007, and 2008 were 1,927, 1,801, and 2,017, respectively.

In 2007, the estimated prevalence of hypertension in adults was 16.8%. And, according to a study of cardiovascular risk factors, 75% of the persons with hypertension were not following any treatment. The prevalence of diabetes increased from 5.5% in 2007 to 15.5% in 2011. Also notable is the considerable increase in homicide as an external cause of death, given that it increased from 8.1 per 100,000 population during the 2000–2004 period to 22.6 per 100,000 in 2009.

To address the need for consolidating the quality assurance functions for which the Vice-Ministry of Quality Assurance and the leadership roundtable were created, the hope is to strengthen leadership, a goal that is particularly relevant in the context of decentralization.

The quality of care is affected by problems with clinical and administrative management on the part of providers, by lack of personnel controls and oversight, and by a limited level of empowerment for institutions. As of 2010, transformation of the national health system's services and institutions was still under way in order to bring them in line with their new functions under the General Health Act and the Dominican Social Security System Act, which date from 2001.

Health-related scientific output is quite limited. Little research is done, what is done is of poor quality, and only limited funds are allocated to support this work. Moreover, the information available is generally not drawn on for decision-making—a situation that hardly encourages scientific output.

The major challenges addressed in the Ten-Year Health Plan 2006–2015 are to overcome the accumulated social debt and social and gender inequities evident in the country's health situation, to ensure the prevention and control of priority health problems and risks, and to expand the various functions and components of the national health system on the basis of rights and social and gender equity, with citizen participation.

Moreover, everything possible should be done to improve the quality of health services, since despite the existence of a service network that allows geographical access in minutes, problems of various kinds compromise the quality of care.



Ecuador is located on the northwest coast of South America and has a land area of 256,370 km<sup>2</sup>. It borders Colombia to its north, Peru to its south and east, and the Pacific Ocean to its west. The Andes mountains define the country's coastal, mountain, and Amazon regions, and the island region consists of the Galápagos archipelago. Quito is the capital city and there are 24 provinces, 226 cantons, and some 1,500 urban and rural parishes. In May 2010 the country underwent a political and administrative reorganization that created seven administrative regions, the Quito and Guayaquil metropolitan districts, and the Special Galápagos Reserve.



In Ecuador, a middle-income country, the urban population accounts for 60.43% of the total population. Racial and ethnic composition of the population is 71.9% mestizo, 6.1% white, 6.8% indigenous, 7.2% afro-Ecuadorian, and 7.4% Montubia.

Life expectancy is 75.4 years (72.5 for men and 78.5 for women). The fertility rate is 2.6 children per woman.

In 2010, unemployment was 5%, with 56.8% under-employment. The basic wage rose from US\$ 170 per month in 2007 to US\$ 264 in 2011. The emigration phenomenon that began during the last decade has had a significant social and economic impact in terms of remittances, which occupy second place in the balance of payments.

Public health expenditure in 2009 was 2.9% of the gross domestic product (GDP), while national health expenditure was 7%.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Between 2008 and 2010, poverty declined from 41.7% to 37.13%. Nationally, the proportion of households in extreme poverty declined to 13.4% in 2010, dropping from 10.3% to 7.4% in urban areas and from 42.9% to 34.9% in rural areas.

According to the 2010 census, 79% of the urban population was connected to the public water system, but only 46% of the rural population was. The proportion of households with access to garbage collection services was 77% nationwide and 45% in rural areas.

### THE ENVIRONMENT AND HUMAN SECURITY

Risk management is addressed in the constitution as the right of citizens to be protected from the effects of disasters of natural or human origin. The National Secretariat for Risk Management was created as a platform for inter-sectoral risk management and coordination.

### HEALTH CONDITIONS AND TRENDS

Malaria began to decline in 2003 with the strengthening of the control program and the modernization of patient management. Between 2006 and 2010, the number of malaria cases declined from 8,957 to 1,888, with an incidence

#### Selected basic indicators, Ecuador, 2008–2010.

Indicator	Value
Population 2010 (millions)	14.5
Poverty rate (%) (2009)	36.0
Literacy rate (%) (2009)	84.2
Life expectancy at birth (years) (2010)	75.4
General mortality rate (per 1,000 population) (2009)	5.2
Infant mortality rate (per 1,000 live births) (2010)	14.6
Maternal mortality rate (per 100,000 live births) (2009)	69.7
Physicians per 1,000 population (2008)	1.7
Hospital beds per 1,000 population (2009)	1.5
DPT3 immunization coverage (%) (2010)	100.0
Births attended by trained personnel (%) (2008)	71.4

of 14 per 100,000 population, which was the lowest rate among the countries of the Amazon basin. If this trend were to continue, Ecuador would eradicate malaria nationwide.

Dengue is endemic in Ecuador. It is seasonal in nature and is most common in coastal provinces, during the rainy season, and where temperatures exceed 28 °C. Cutaneous leishmaniasis occurs in rural areas in 23 of the country's 24 provinces; some 1,500 annual cases are reported (with underreporting in remote areas). Chagas' disease declined from 0.15 per 100,000 population in 2006 to 0.03 in 2010. No cases of yellow fever have been reported since 2002.

There was an increase from 1,070 cases of HIV and 474 of AIDS in 2005 to 3,966 and 1,301 cases in 2010, respectively. However, mortality associated with AIDS has stabilized since 2005 at approximately 700 deaths annually.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Ministry of Public Health has initiated the "Sectoral Transformation of Health in Ecuador." Its purpose is to build an integrated, coordinated, and collective system that does not require direct payments from users. The system would guarantee equity and universal access, progressively and free, to quality services through a public provider network using a care model that prioritizes health promotion, disease prevention, and primary care.

The Ministry of Health is the main public-sector provider. Other public providers include the Ecuadorian Social Security Institute, Rural Social Security, the Armed

### Sectoral Transformation of Health in Ecuador

The National Constitutional Assembly wrote a new constitution that was approved by referendum on 30 September 2008. A development plan titled the 2009–2013 Plan for Healthy Living was drafted, which links policies, management, and public investment as a way to strengthen the plurinational and intercultural nature of the State.

The Ministry of Health has promoted what is called the “Sectoral Transformation of Health in Ecuador” in order to reorganize the sector and build an integrated and universal health system that does not require direct payment by users.

Among the most important achievements in health are (1) the incorporation into the constitution of the right to health, guaranteed by the State within a framework of social inclusion and equity, (2) the increase in the Ministry of Health’s budget, and (3) the gradual move toward free health care services, including medicines.

Forces, and the National Police. In 2010, social security benefited some 3.8 million Ecuadorians. Private entities that act as public-sector service providers include the Guayaquil Welfare Council, Guayaquil Child Protection Council, Cancer Prevention Society, and Ecuadorian Red Cross.

The comprehensive health care model carries out its operations using basic health care teams; more than 4,600 personnel were contracted between 2007 and 2010.

The Expanded Program on Immunization (EPI) has a legal framework that guarantees immunization as a public asset. Progress is reflected in 95% coverage for all vaccines.

Efforts are under way to provide free medicines through the development of the Unified System of Drug Management. Regulations on pharmaceuticals have been strengthened by updating procedures for registration and through good manufacturing practices, pharmacovigilance, and control of promotion and publicity. The Commission on Drugs of the National Health Council updated the National List of Essential Medicines and the Therapeutic Registry.

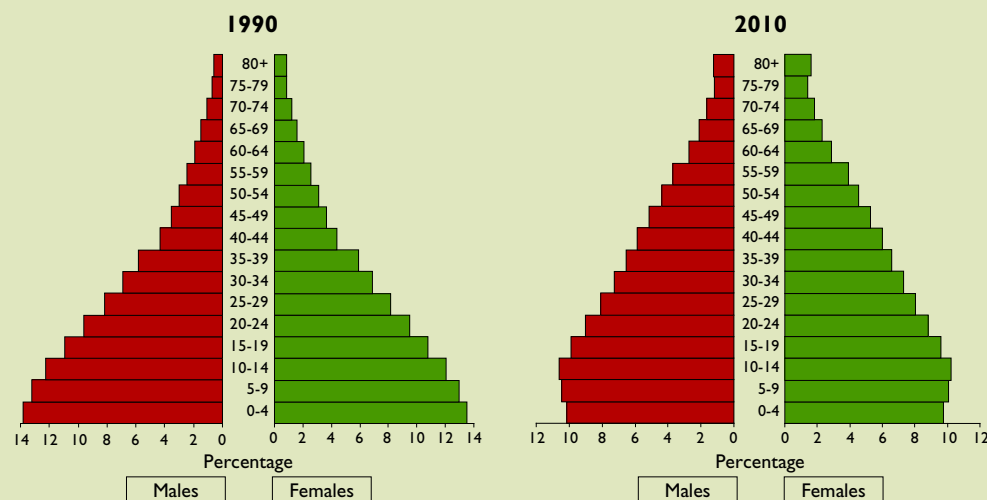
### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The Ministry of Health has redefined health research priorities. The National Secretariat of Higher Education, Science, Technology, and Innovation was established in 2010. Universities have modified the health career curriculum, establishing primary care as a main subject and making scientific research a priority.

In 2007, the Ministry spearheaded a process that set health research priorities. There is now a National Directory of Health Researchers. In 2010 universities in Loja initiated a proposal to build a National Health Research System. The proportion of spending on science and technology in 2008 was 0.62% of GDP (0.37% for the activities and sciences component and 0.25% for research and experimental development).

In 2008, a project was launched to strengthen the health information system and improve vital statistics. Work is under way to implement a plan to strengthen the health information system, which includes the goals, tasks, and targets based on the results of an evaluation carried out in 2009.

Population structure, by age and sex, Ecuador, 1990 and 2010.



### MAIN CHALLENGES AND PROSPECTS

Despite the country’s progress, significant inequalities persist in Ecuador. In 2010, the provinces of Los Ríos and Manabí had the highest proportion of poor households (59% and 55%, respectively), while Pichincha had the

lowest proportion (13%). The 2010 census revealed that the vast majority of the illiterate population (59%) lives in rural areas.

According to ethnic self-identification, in 2010, white and mestizo populations had greater access to the public water system (81% and 75%, respectively) than indigenous and Montubia populations (49% and 41%, respectively).

Ecuador is vulnerable to volcanic eruptions, floods, earthquakes, droughts, and tsunamis. In 2008, floods affected 275,000 people and 15,822 took refuge in shelters. Losses were close to US\$ 1.2 billion. The volcanic events of 2009 and 2010 directly affected 3,792 people and indirectly affected another 1.5 million. The 2009 drought had an impact on 32,000 families of farmers and livestock producers.

The quality of water from the public supply system is not reliable. The National Statistics and Census Institute (INEC) indicates that 33% of the population consumes untreated water.

The principal sources of river pollution are effluent from industrial waste (unquantified), domestic solid waste (uncollected in 23% of households), and wastewater. Ten percent of households do not have toilet facilities. Of the wastewater collected through the sewage system (66.6%), only 5% is treated.

Ecuador ranks fourteenth in Latin America and the Caribbean in per capita emissions of CO<sub>2</sub> and eighth for total emissions. Monitoring of air quality is carried out in Quito, Guayaquil, and Cuenca.

The rate of poisonings per 100,000 population increased from 14.4 in 2010 to 17.4 in 2011. In 2011, 49% of poisonings were from pesticides, but the number of chronic poisonings from these substances is unknown.

The rates of maternal and infant mortality are difficult to establish in Ecuador due to the diversity of sources and underreporting of live births. Ecuador's National Statistics and Census Institute estimated a rate

of 69.7 maternal deaths per 100,000 live births and an infant mortality rate of 14.6 deaths per 1,000 live births.

In 2010, the mortality rate for children under age 5 was estimated at 14.9 per 1,000 live births. Almost half of the 24 provinces had under-5 mortality rates higher than 15 per 1,000 live births, with the highest rates recorded in Los Ríos (17.5) and Santo Domingo de los Tsáchilas (17.7).

The incidence of tuberculosis in 2010 was estimated at 8.24 per 100,000 population. The disease is concentrated in the province of Guayas (more than 70% of cases), specifically in Guayaquil.

The leading causes of death in 2010 were hypertensive disease (30.3 per 100,000 population), followed by diabetes (28.3) and influenza and pneumonia (23.7).

In 2006, chronic malnutrition affected 25.8% of children under age 5, with greater proportions in provinces with high indigenous populations.

The delivery of health services is characterized by fragmentation and segmentation. There is a large supply of public and private services that function through various entities, but without much coordination.

The challenge for the Expanded Program on Immunization (EPI) is to reach populations in locations that have poor access to services, where susceptible persons are concentrated. Another challenge for EPI is to strengthen surveillance systems.

Chronic diseases pose an increasingly serious challenge. The country faces a significant disease burden in neoplasms and cardiovascular diseases, which have been on the rise and will likely continue to increase.

Political and economic stability, the promotion and consolidation of a health system that increases the coverage of care, increasing insurance coverage for the children and spouses of social security beneficiaries, guaranteed availability of medicines, and the implementation of a disease prevention and health promotion policy bode well for improving the health and living conditions of the nation's most vulnerable populations.

# El Salvador



El Salvador is located in Central America and shares borders with Honduras, Nicaragua, and Guatemala, and with the Pacific Ocean to the south. The country's territory covers 21,040.79 km<sup>2</sup>; its topography is irregular, with six distinct regions characterized by mountains, plateaus, and coastal plains. A chain of volcanoes and geologic faults makes it particularly vulnerable to earthquakes. El Salvador is a representative and decentralized republic, with a democratically elected government and executive, legislative, and judicial branches. The country is divided into 14 departments and 262 municipalities; the capital is San Salvador.

The population of El Salvador as of 2011 was 6.2 million. The country has undergone political transition since the 1992 peace accords.

From 1960 to 2009, annual average growth of the per capita gross domestic product (GDP) was 1.1%, while unemployment and underemployment remained at around 50%. Between 2004 and 2010, public health expenditure as a percentage of GDP grew from 3.6% to 4.3%.

Between 1997 and 2008, exports were diversified: conventional products (coffee, cotton, and tobacco) declined from 25% to 7% and nontraditional products (vegetables, fruits, beans, and milk) grew from 32% to 50%. Before the 2008 economic crisis, remittances increased steadily for some 30 years, representing 18% of GDP in 2008; in 2009 they declined to 9.9%, a reduction of US\$ 323 million.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

In general, progress in socioeconomic development in El Salvador has been limited and slow, given the challenges related to poverty, unemployment, and other living conditions. There are major disparities between various population groups, with the poor, the indigenous population, and those who live in rural and marginal urban areas suffering the greatest disadvantages. The highest income quintile receives 52% of total national revenue.

The 2009–2014 Social Education Plan was implemented in 2009, giving priority to children who are not enrolled in school due to their socioeconomic situation.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2010, 92% of households had electricity (97% in urban areas and 82% in rural areas) and 83% had access to piped water (93% in urban areas and 64% in rural areas). In urban areas, 75% of households had waste collection services (7% in rural areas).

### HEALTH CONDITIONS AND TRENDS

There have been notable advances in the control of communicable diseases. Important unmet challenges are

#### Selected basic indicators, El Salvador, 2008–2011.

Indicator	Value
Population 2011 (millions)	6.2
Poverty rate (%) (2009)	37.8
Literacy rate (%) (2009)	84.1
Life expectancy at birth (years) (2010)	72.0
General mortality rate (per 1,000 population) (2008)	5.2
Infant mortality rate (per 1,000 live births) (2008)	16.0
Maternal mortality rate (per 100,000 live births) (2010)	55.8
Physicians per 1,000 population (2009)	2.0
Hospital beds per 1,000 population (2010)	1.0
DPT3 immunization coverage (%) (2010)	91.0
Births attended by trained personnel (%) (2010)	90.0

the control of neglected infectious diseases and the availability of the budget resources needed to reach 95% vaccination coverage.

The maternal mortality rate was 55.8 maternal deaths per 100,000 live births in 2010. In 2008, the infant mortality rate was 16 per 1,000 live births.

The number of annual cases of malaria dropped from 49 in 2006 to 24 in 2010 (33% imported cases), and the pre-elimination phase of this disease was declared in 2011. Seropositivity for Chagas' disease in blood donors declined from 2.9% in 2004 to 1.9% in 2009. From 2006 to 2010, there were 33,084 confirmed cases of dengue, with an endemic pattern associated with epidemic outbreaks, the last of which occurred in 2010.

Since 1987, there have been no autochthonous cases of poliomyelitis, and no autochthonous cases of measles have been reported since 1996. In 2006, four cases of rubella were reported and in 2010 there were two neonatal tetanus cases.

In 2009, the incidence of HIV infection was 0.8%, with 10.8% of cases in men who have sex with men and 5.7% in sex workers. The cases are concentrated in the 25–29-year age group with a male/female ratio of 1.7:1. As of August 2010, antiretroviral therapy had been prescribed for 7,000 people, although universal access has not been achieved.

Mortality from tuberculosis declined from 2.35 deaths per 100,000 population in 1997 to 0.76 in 2009, while morbidity in all forms of the disease declined from 45.7 cases per 100,000 population in 1990 to 27.6 cases in 2010.

### Comprehensive and Integrated Health Services Networks (RIISS)

The Ministry of Public Health has reactivated the National Health Council in order to promote health policies and programs. The Interinstitutional Health Commission, another strategic platform for developing intersectoral activities, is led by the Ministry of Public Health. It brings together 38 governmental and nongovernmental agencies, unions, private associations, and civil society groups.

The Comprehensive and Integrated Health Services Networks (RIISS), which are based on primary care, establish community health teams that are progressively integrated into other institutions of the health system. This strategy was chosen as a way to reverse the effects of the fragmentation of health care and improve its efficiency and quality.

The Ministry of Public Health is transitioning toward management models as part of the reform of the sector. Within this framework, a results-based budget process has been initiated. Procedures are in place to improve the competence and capacity of managers of services and to update RIISS clinical guidelines, regulations, and treatment protocols.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Major health sector reform was initiated by the government that took office in 2009. Beginning in 2010, reform was directed to strengthening Ministry of Public Health leadership; developing human resources and capacity for data analysis and research; building comprehensive and integrated health services networks; and developing mechanisms for intersectoral action and citizen participation.

National health expenditure increased from US\$ 990 million in 1998 to US\$ 1.4 billion in 2009. Public expenditure increased from US\$ 490.9 million in 2001 to US\$ 912.8 million in 2010, with annual average growth of 7.3%. The combined share of the Ministry of Public Health and the Salvadoran Social Security Institute represented 91% of public expenditure in 2010.

The delivery of services through the Comprehensive and Integrated Health Services Networks (RIISS) has been formulated with three levels of complexity. Based on primary care, the RIISS include community health teams that are progressively integrated with other institutions into the system. From 2010 to 2011, 380 community health teams and 28 specialized teams were established, with coverage of 1,234,000 people in 141 low-income municipalities (20% of the population). In 2010, 94% of pregnant women received at least one prenatal check-up and 78% were seen four times. Twenty-four percent of all pregnancies were among women from 15 to 19 years old.

The Interinstitutional Health Commission was established to more effectively address the social determinants of health through intersectoral action and social participation. The Commission provides the opportunity for dialogue and consensus-building on intersectoral health strategies. Forums were established for citizen participation at the national, regional, and local levels.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

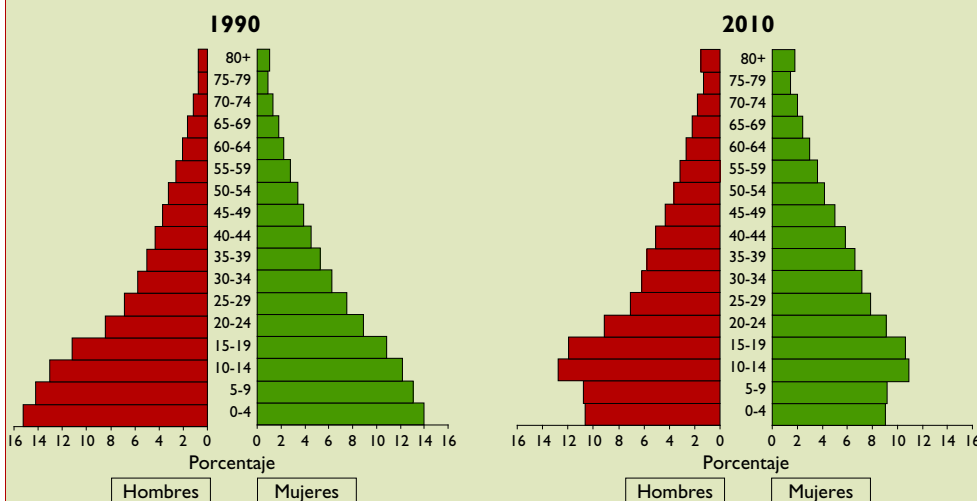
The health authorities created the National Institute of Health in order to promote research on health policies, systems, and services. El Salvador allocates 8% of its education budget to research, although only 35% of the researchers have master's or doctoral degrees.

The Ministry of Public Health, in collaboration with the National University and PAHO/WHO, has a health knowledge management unit with a complete research and information database.

### MAIN CHALLENGES AND PROSPECTS

The country has been undergoing a process of political transition to

Population structure, by age and sex, El Salvador, 1990 and 2010.



democratization since 1992, and continues to face challenges related to significant social and economic inequality, political polarization, high levels of violence, and a lack of security, aggravated by the current economic crisis.

In 2009, the average number of years of schooling was 7.2 years in urban areas and 4.1 years in rural areas; the illiteracy rate was 9.2% in urban areas and 22.7% in rural areas, and was 16% for women and 11.6% for men. Young people in the lowest income quintiles do not have access to postsecondary education, and consequently face lower incomes in the future. Salvadorans with less than four years of schooling have an average monthly income of US\$ 184, in comparison with US\$ 631 for people with 12 or more years of schooling.

Indigenous populations generally reside in rural areas, living from subsistence farming and consuming corn and vegetables they cultivate on leased lands. Women share their food with their partners and children. These groups do not have access to adequate education and lack basic water and sanitation services; 38% of them live in extreme poverty.

There are inequalities in access to safe water. It is necessary to strengthen the institutional capacity for monitoring and surveillance of wastewater and recreational water sources, as well as chemical and biohazardous waste. Only 81 of the 262 municipalities have sewage systems; 43% of urban dwellings and 98% of rural ones are not connected to a sewage network. In rural areas, 14% of the population does not have any sanitation services.

Strategies formulated for violence prevention include monitoring all forms of violence; implementing a management strategy to better understand violence and its determinants; strengthening the capacity to prevent gender violence and provide health care services to victims; and developing partnerships and collaborating with other sectors for prevention.

Between 1980 and 2008, an average of 1.5 disasters were recorded per year. During that period, the economic losses were estimated at US\$ 16 billion (US\$ 470 million per year, equivalent to 4.2% of GDP). These disasters took some 7,000 lives and affected 3 million people, especially in vulnerable populations.

There were 31,594 deaths recorded in 2008, for a crude mortality rate of 5.16 per 1,000 population. Due to

problems of underreporting, the rate estimated for 2005–2010 is higher (689 per 100,000). There were 9,018 deaths from chronic, noncommunicable diseases reported in 2008. In 2010, chronic renal disease was the leading cause of death for the 25–59-year age group, with a rate of 6.3 per 100,000 (2.7 in women and 11.1 in men). Cerebrovascular disease was the second leading cause of death with a mortality rate of 9.3 per 100,000 population. Diabetes ranked fourth (7.1 per 100,000 population), ischemic heart disease ranked sixth (6.76), heart failure was tenth (5.76), and hypertensive disease ranked nineteenth (2.38).

The homicide rate in 2008 was 54 per 100,000 population. The average daily number of homicides in 2009 was 12. Among women, homicides increased from 6.5 per 100,000 population in 2001 to 17.5 in 2009, while among men they increased from 68.9 to 130.8 over the same period. Men from 15 to 38 years old had a rate of 224 homicides per 100,000 in 2008.

There were 5,275 traffic accident deaths recorded between January 2006 and July 2010 (men accounted for 79.7% of these deaths and women for 20.3%). The estimated mortality rate related to road accidents in 2010 was 16.9 per 100,000 population.

In 2008, 19% of 3–5-year-olds experienced growth deficiencies (13.5% in urban areas and 24.2% in rural areas). Almost one-third (31.4%) of children in the lowest income quintile had chronic malnutrition, compared with 5% in the highest quintile. Among children of women with no education, 37% had chronic malnutrition; that figure was 27% for children of mothers with less than three years of schooling.

In the area of maternal and child health, it is necessary to expand sex education and pregnancy prevention programs for adolescents, ensure that gender issues are addressed in health policies, and strengthen health promotion and universal access to quality services. With regard to chronic diseases, a national policy and program should be developed that uses an integrated approach to disease prevention and control.

Major challenges include strengthening the managerial capacity of the Ministry of Public Health, expanding coverage nationwide through development of the RISS, and identifying financing mechanisms and sources that will ensure that program's sustainability.

# French Guiana, Guadeloupe and Martinique



Guadeloupe and Martinique, which form part of the Lesser Antilles, and French Guiana, located in northeastern South America, between Suriname and Brazil, constitute the French Overseas Departments in the Americas. In 2007, Saint-Barthélemy and the French part of Saint-Martin became two new overseas entities (*Collectivités d'outre-mer*) and ceased to be part of Guadeloupe. Guadeloupe has a surface area of 1,628 km<sup>2</sup>—this includes Basse-Terre, Grande-Terre, and other islands. Martinique covers 1,128 km<sup>2</sup> and French Guiana, 83,534 km<sup>2</sup>. The political and administrative organization of these territories reflects that of mainland France.



The economies of the French Departments in the Americas share the problems common to microeconomies: low export competitiveness and a reliance on natural resources and tourism, among others. They also depend greatly on mainland France. Their environmental fragility and vulnerability to natural disasters also are important factors.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Although the international crisis affected all three Departments and social programs shrank, the fact that France kept the active solidarity income program in place softened the effect somewhat. This program gives people over age 25 basic financial resources, access to certain social services, and help integrating into society or finding work. In 2009, there were 71,000 recorded beneficiaries (146 per 1,000 population 20 to 59 years old in Guadeloupe, 103 in French Guiana, and 141 in Martinique).

### THE ENVIRONMENT AND HUMAN SECURITY

Guadeloupe and Martinique have good access to potable water and sanitation. Given their heightened susceptibility to natural disasters, these two territories have risk-prevention plans in place to cope with earthquakes, hurricanes, and volcanic eruptions.

### HEALTH CONDITIONS AND TRENDS

Some 10 imported cases of malaria were reported annually in Martinique and Guadeloupe. In 2006–2008, the incidence of tuberculosis was roughly 4 cases per 100,000 population in Martinique, 6 in Guadeloupe, and 22 in French Guiana.

Leprosy continues to decline in the Departments, thanks to widespread access to medicines. Between 2006 and

2010 there were no reported cases of acute flaccid paralysis, poliomyelitis, diphtheria, or neonatal tetanus, but there were whooping cough cases documented. Between 2005 and 2010, there were eight measles cases.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

In 2010 the Regional Health Agencies (ARSs, from their name in French) were created. Guadeloupe’s ARS has established three territorial subdivisions, including one for the newly constituted Overseas Collectivities of Saint-Martin and Saint-Barthélemy. Martinique’s and French Guiana’s ARSs have opted to handle their two territories in a single ARS.

Hospital care is provided in public hospitals and private clinics. In 2010, excluding surgical beds in Guadeloupe and French Guiana, two-thirds of beds for short-term hospital stays in these two territories were covered by the public sector. There are 62 private medical laboratories in the Departments and a government or public blood bank in each Department. There are 349 drug dispensaries (160 in Guadeloupe, 38 in French Guiana, and 151 in Martinique).

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Telemedicine has begun to be implemented in French Guiana, and it could begin to make up for a shortage of health workers. The Pasteur Institute of French Guiana is part of the National Reference Laboratories for Dengue in the Americas, and is also connected to the Amazon

**Selected basic indicators, Guadeloupe, French Guiana, and Martinique, 2006–2010.**

Indicator	Value		
	Guadeloupe	French Guiana	Martinique
Population 2010 (thousands)	404.4	232.2	399.6
Poverty rate (%) (2006)	17.8	26.5	19.8
Literacy rate (%)	...	...	...
Life expectancy at birth (years) (2010)	79.7	76.4	80.4
General mortality rate (per 1,000 population) (2008)	6.9	3.4	7.0
Infant mortality rate (per 1,000 live births) (2005–2007)	7.5	11.8	8.8
Maternal mortality rate (per 100,000 live births) (2008)	14.3	28.2	13.3
Physicians per 1,000 population (2010)	2.7	1.8	2.6
Hospital beds per 1,000 population (2008)	5.5	2.7	4.1
DPT3 immunization coverage (%)	...	...	...
Births attended by trained personnel (%) (2008)	99.3	...	99.9

### The New Regional Health Agencies

Between 2006 and 2010, under the Regional Public Health Plan (PSAP) system, each region of France could set its own health priorities. With the creation of the Regional Health Agencies (ARSs, from their name in French) in the latter year, however, significant health system reforms were ushered in. The ARSs administer government funding and health insurance at the regional level, including in the Departments, with a view to making public health services more effective and sustainable. Each ARS brings together all agencies in charge of health policy in a region or department (offices and regional health and social welfare bureaus, hospitals, public health groups, health insurance unions and health missions, as well as inpatient health insurance).

The ARSs are able to pursue a comprehensive approach to health, guaranteeing simpler procedures for health professionals and equal access to care for patients. These agencies have been granted a broad mandate that includes public health (disease prevention, health promotion, health and safety monitoring, and watching for and monitoring epidemics), health care organization, and delivery of certain medical and social services (housing for the elderly and facilities for the disabled).

Network for the Surveillance of Antimalarial Drug Resistance (RAVREDA).

### MAIN CHALLENGES AND PROSPECTS

In 2010 21.0% of the economically active population of French Guiana was unemployed. In Guadeloupe the figure was 23.5% and in Martinique 21.0%. Un-

employment is higher among young people (62% of people younger than age 25 were unemployed in Martinique in 2010) and in women (in 2009, 49.3% of women in Martinique and 54.9% of men were working). In 2007, Guadeloupe and Martinique suffered the effects of Hurricane Dean, and in that same year an earthquake in Martinique caused structural damage to one of the three main hospitals. Guadeloupe regularly receives ash clouds from the volcano of nearby Montserrat.

The three Departments share such ongoing health problems as cardiovascular diseases, certain types of cancer, obesity, diabetes, alcoholism, and unlawful homicides. That said, some diseases affect one territory more than another, such as falciform cell anemia in Guadeloupe and Martinique and malaria and yellow fever in French Guiana.

In 2008, the general birth rate was 13.3 births per 1,000 population in Martinique, 14.3 in Guadeloupe, and 28.2 in French Guiana. The Departments' infant mortality rates are similar. The average annual rate in 2005–2007 was 7.5 deaths per 1,000 live births in Guadeloupe, 8.8 in Martinique, and 11.8 in French Guiana. In 2008–2010 the average was 7.6 in Guadeloupe, 8.3 in Martinique, and 11.6 in French Guiana.

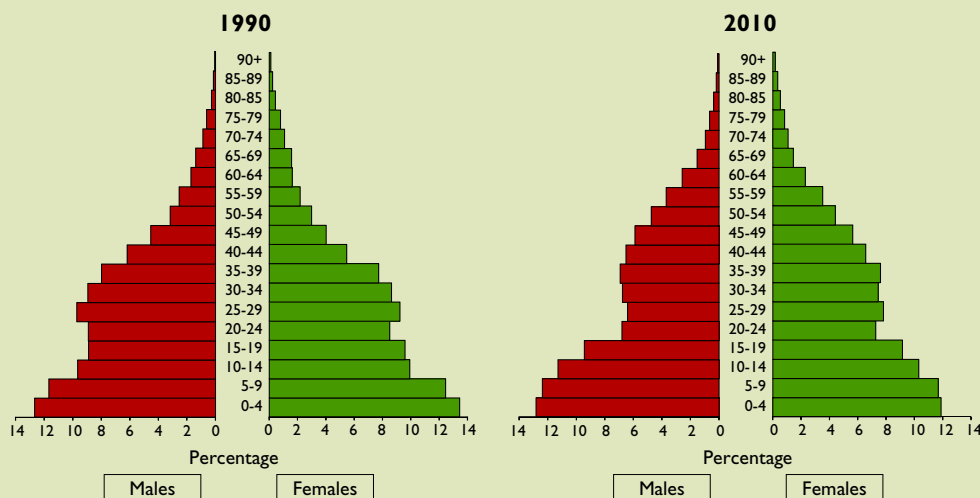
More than 6,300 deaths per year were reported between 2007 and 2009. The main causes of death are cardiovascular diseases, cancer, and trauma.

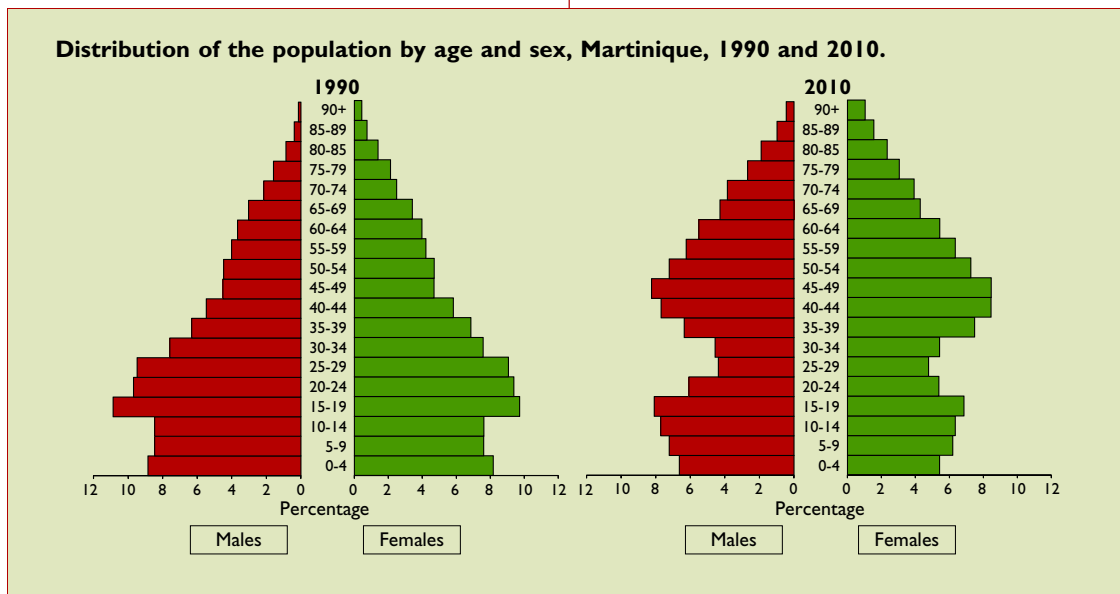
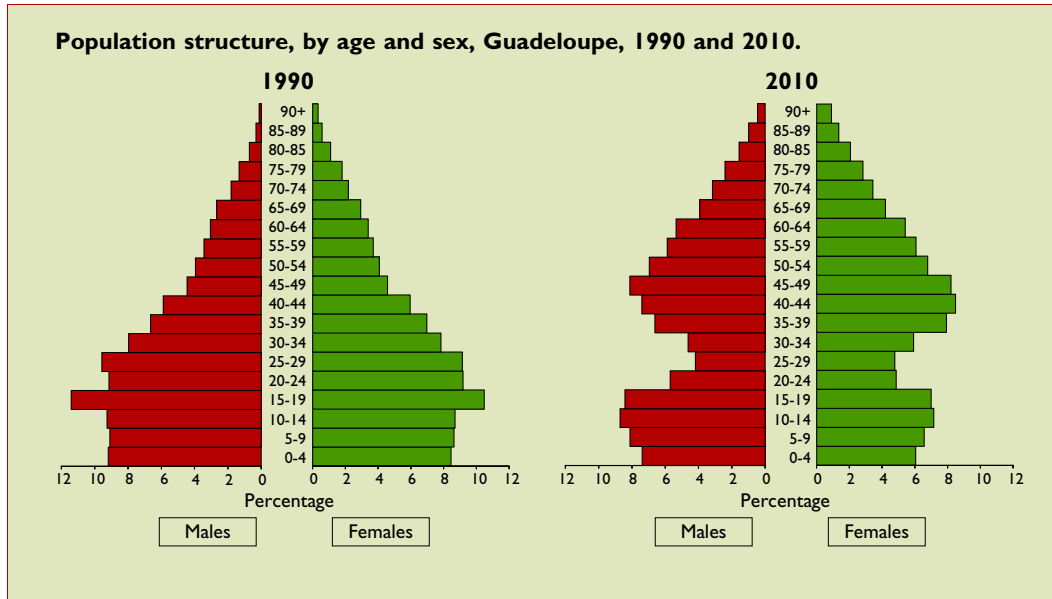
Dengue is endemic and epidemic in Martinique and Guadeloupe, showing with marked seasonal variations. In the last 10 years, the incidence of clinical cases has ranged between 3,650 and 10,000 cases per 100,000 population, with a rate of severity between three and 12 serious cases per 1,000 cases. Dengue is also endemic and epidemic in French Guiana, although it does not have marked seasonal variations.

Malaria is endemic in French Guiana, although it has declined since 2005. There were 3,345 reported cases in 2009.

The Departments are among the four regions of France most affected by HIV/AIDS. As of 31 March 2010, the rate of AIDS cases was 180 per 1,000,000 population in French Guiana, 117 in Guadeloupe, and 39 in Martinique. The rate of HIV-positive diagnoses in 2010 was 1,124 cases per 1,000,000 population in French Guiana, 517 in Guadeloupe, and 160 in

Population structure, by age and sex, French Guiana, 1990 and 2010.





Martinique. The three Departments have access to the same antiretrovirals that are available in mainland France.

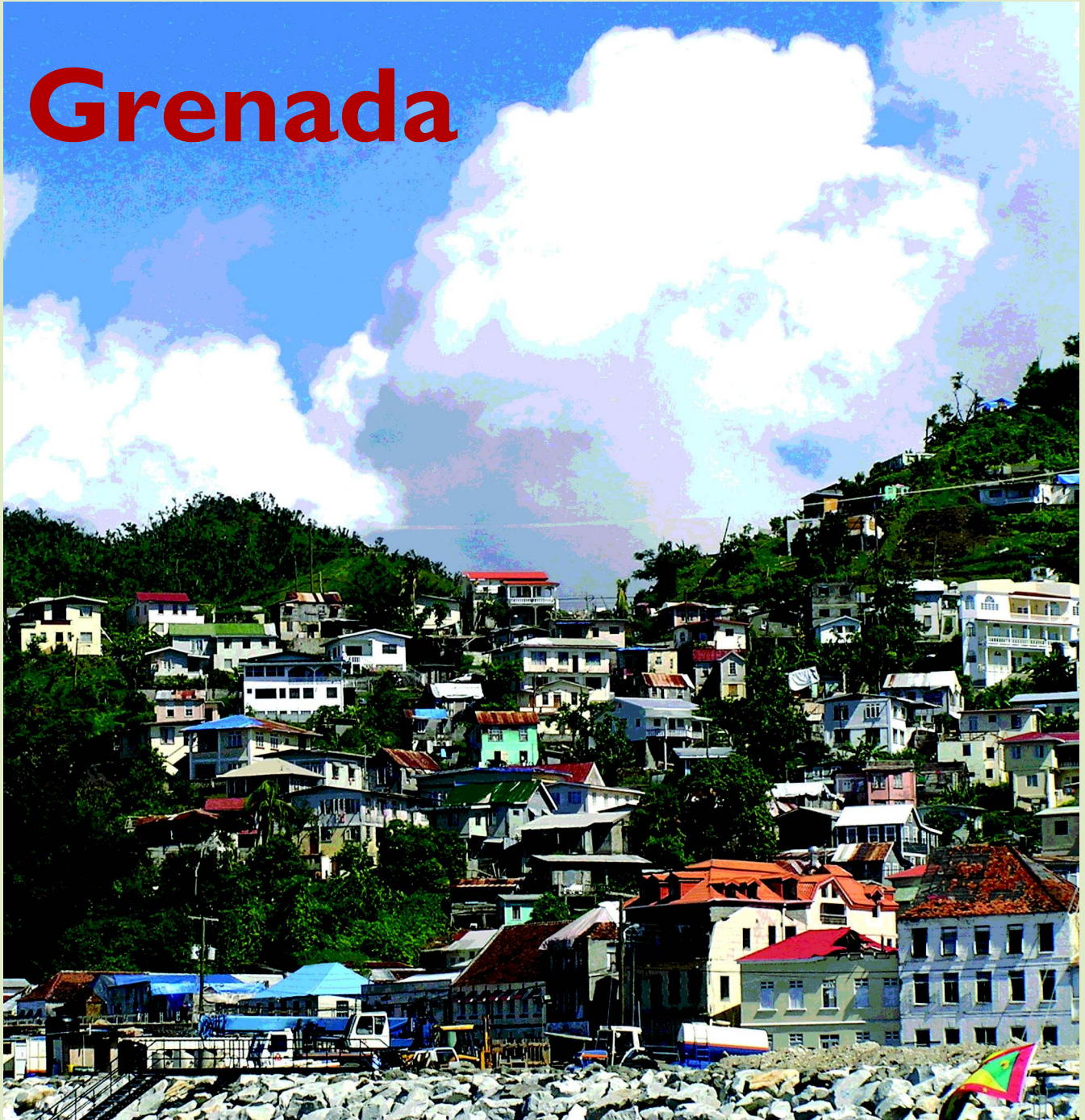
The most frequent chronic diseases are cardiovascular disease (especially cerebrovascular accidents, due to the high prevalence of hypertension) and cancer (which is the main cause of death among men). One out of every two cancer cases in men is prostate cancer, while the main type in women is breast cancer (one of every four cancer cases). Diabetes is very common in the Departments, and the proportion of those affected doubles the national average. In 2009, the French Departments in the Americas had the highest prevalence of persons with diabetes undergoing treatment.

Although French Guiana, Guadeloupe, and Martinique have similar institutional frameworks, their

geographical, demographic, social, economic, and health characteristics pose different challenges for each. The populations of Guadeloupe and Martinique are aging, while that of French Guiana is younger and faces a higher level of avoidable events (e.g., maternal mortality and communicable diseases such as dengue, malaria, tuberculosis, and HIV/AIDS).

While all of the Departments have unmet health care needs, the shortage of health workers is particularly acute in French Guiana. It is anticipated that the new regional health agency structure established in 2010 and the adoption of a geographically appropriate public health policy should enable Guadeloupe, French Guiana, and Martinique to better meet their people's health needs.

# Grenada



Grenada is made up of the islands of Grenada, Carriacou, and Petit Martinique, plus several islets. It is located in the far south of the Windward Islands, approximately 160 km north of Venezuela and 145 km southwest of Barbados. The total surface area is 344 km<sup>2</sup>. It has a Westminster-style parliamentary system of government and belongs to the Commonwealth of Nations. Queen Elizabeth II is Head of State, and is represented in Grenada by a Governor-General. Its political-administrative subdivisions include six parishes plus the islands of Carriacou and Petit Martinique; the capital is Saint George's.

Grenada's per capita gross national income was US\$ 5,392 in 2009, a slight drop from 2006. The global economic crisis caused a major recession in 2009 and 2010, the collapse of several financial institutions, and a crisis in several sectors; living conditions of many families were affected. The country is still recovering from the devastating effects of two major hurricanes in 2004 and 2005.

Between 2006 and 2010, public spending was mainly aimed at helping the population to stabilize living conditions and at avoiding an increase in poverty as a result of the economic losses from natural disasters and the economic crisis. This effort made it possible to reduce extreme poverty and income inequality. Health overall improved in the country, as manifested by increased life expectancy at birth, reduced general and child mortality, and the near elimination of maternal mortality. The vaccination rate stayed high, and access to and use of health services rose.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

According to a poverty assessment survey undertaken in 2007 and 2008, the percentage of poor had risen 5.6% since 1998, but the percentage of the extremely poor had declined considerably, from 12.9% in 1998 to 2.4% in 2008.

Between 2006 and 2010, public spending was aimed mainly at helping the populace to stabilize living conditions and avoid a rise in poverty as a result of the large 2004 and 2005 hurricanes.

In 2005, the adult literacy rate was 97%. Primary education was universal; enrollment among children 5 to 9 years old was 93.8% and in children 10 to 14 years old the rate was 97.2%.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2010, nearly all households (98%) had access both to drinking water and garbage collection services.

After the devastation caused by Hurricanes Ivan and Emily in 2004 and 2005, a national disaster preparedness plan was developed. The process involved consultations with all health sector stakeholders and training for health personnel in care for mass-casualty victims and general response to emergency situations.

#### Selected basic indicators, Grenada, 2005–2010.

Indicator	Value
Population 2010 (thousands)	111.8
Poverty rate (%) (2008)	37.7
Literacy rate (%) (2005)	97.0
Life expectancy at birth (years) (2009)	70.0
General mortality rate (per 1,000 population) (2009)	7.0
Infant mortality rate (per 1,000 live births) (2010)	12.1
Maternal mortality rate (per 100,000 live births) (2010)	0
Physicians per 1,000 population (2010)	1.0
Hospital beds per 1,000 population (2009)	2.4
DPT3 immunization coverage (%) (2009)	99.4
Births attended by trained personnel (%) (2009)	100.0

International cooperation has been key in the reconstruction that the country had to face after the hurricanes.

From 2006 to 2010, people worked intensely to reverse the devastating loss of housing caused by Hurricanes Ivan and Emily. Grenada's Agency for Reconstruction and Development and several donor countries funded housing reconstruction and provided technical cooperation in a number of areas. By the end of 2010, housing investment had surpassed US\$ 110 million.

Climate change is a critical issue and the Government enacted legislation and policies to manage the environmental risks associated with it.

### HEALTH CONDITIONS AND TRENDS

From 2006 to 2010, the country made progress in maternal and child health. Births in hospital or maternity centers accounted for 99% of the total during this period and trained staff attended all deliveries.

Extensive vaccination coverage was maintained, reaching 99.4% of the populace in 2009 for DPT3 vaccination and 100% for the MMR vaccine. As a result, no cases of vaccine-preventable disease were recorded between 2005 and 2010.

Crude mortality was 7.2 deaths per 1,000 population in 2006 and 7.0 in 2009. The infant mortality rate declined from 14.0 per 1,000 live births in 2006 to 12.1 in 2010. There was one maternal death during this period.

Between 2007 and 2009, the 10 main causes of death in Grenada were due to noncommunicable diseases. The most frequent were: malignant neoplasms, endocrine

### Restructuring Grenada's Ministry of Health

The country's health sector was restructured during the reporting period. Until 2008, the health system's management and operations had come under the portfolio of the Ministry of Health, Social Security, and the Environment. That year, the Ministry of Health was created to deal exclusively with health matters, and the remaining portfolios were reassigned to other ministries.

In addition, the National AIDS Secretariat, which had been within the Office of the Prime Minister, was transferred to the Ministry of Health.

Currently the Ministry of Health is responsible for the overall management of the health sector. It performs its managerial role through a centralized administration at headquarters, and is charged with formulating, planning, programming, and regulating health policies.

Having all health issues under the Ministry of Health's aegis constitutes major progress for designing and implementing policies and regulating the country's health sector.

and metabolic disease, ischemic heart disease, and cerebrovascular disease.

Grenada participated in the STEPS Survey on risk factors for chronic diseases in 2010. Notable among the results of the survey were the high consumption of tobacco and alcohol, low physical activity, and chronic human papillomavirus and hepatitis infections.

The prevalence of HIV/AIDS in Grenada is 0.57%.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

A policy and preliminary plan concerning mental health was developed and the mental health law was amended in 2006.

Protecting women against all forms of violence is a national priority. The Ministry of Social Development's domestic violence unit, created in 2003, was strengthened in this period by relevant legislation including a law against domestic violence, amendments to the penal code, and laws on child protection and adoption.

Expenditures on pharmaceutical products and medical supplies increased almost US\$ 736,000 between 2006 and 2010. The General Hospital's technological capacity improved in 2010 with the installation of a new ophthalmic surgery system and new surgical and imaging equipment.

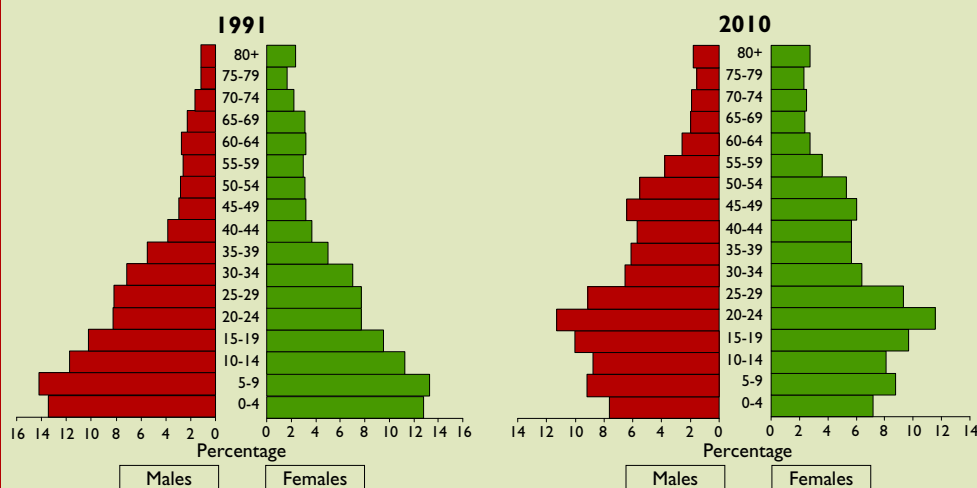
Between 2003 and 2010, the Government steadily added health workers in the public sector, increasing the ratio of nurses from 1 per 467 inhabitants in 2003 to 1 per 314 in 2010. Likewise, the number of physicians increased from 1 per 1,769 inhabitants in 2003 to 1 per 1,016 in 2010. Between 2006 and 2010, the Government facilitated continuing education and in-service training for health workers.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The Ministry of Health, with the assistance of PAHO/WHO, analyzed its health information systems in 2008 and drew up a strategy to develop a comprehensive system that would centralize data through networks. Since then, the Ministry of Health has undertaken a program to computerize and strengthen the health information system.

The Environmental Health Department (Public Health) investigates food safety, water quality, and waste management problems, and monitors, assesses, and controls the spread of infectious diseases. It also investigates and controls hazardous materials, among other items.

Population structure, by age and sex, Grenada, 1991 and 2010.



## MAIN CHALLENGES AND PROSPECTS

According to a 2007/2008 country poverty assessment, the unemployment rate was 24.9%, mainly affecting people from age 15 to 24, who represented 42% of all of the unemployed. Many people in this age group worked in construction and lost their jobs because of this sector's notable slump in the wake of the country's economic crisis.

With regard to sanitation, serious challenges remain. Only 8.2% of the population had access to residential public sewerage services; 53.1% had access to septic tanks, 36.3% to latrines, and 2.4% to no toilet facilities at all. Latrines were used by 66.6% of the poor.

The country must confront the serious challenge of preparing some of its infrastructure for rising sea levels in Carriacou, Petite Martinique, and some coastal areas on the island of Grenada.

Noncommunicable diseases also are a significant problem. They accounted for some 65% of deaths each year from 2006 to 2010. The most common disorders in 2010 were related to cardiovascular diseases (37%), hypertension (26%), diabetes (21%), and other noncommunicable diseases (16%). Preventing these diseases and promoting good health are among the main challenges Grenada faces.

A mental health policy has been in place since 2006, but mental health care is not still integrated effectively into primary health care.

Health as a percentage of total public-sector expenditures declined from 11.8% in 2006 to 10.1% in

2008, but rose again to 11.4% in 2009. This corresponds to between 3.1% and 3.5% of the gross domestic product (GDP), and falls short of the 6% necessary to fuel the health agenda. The budget shortfall was evident in such areas as primary health care and specialist services.

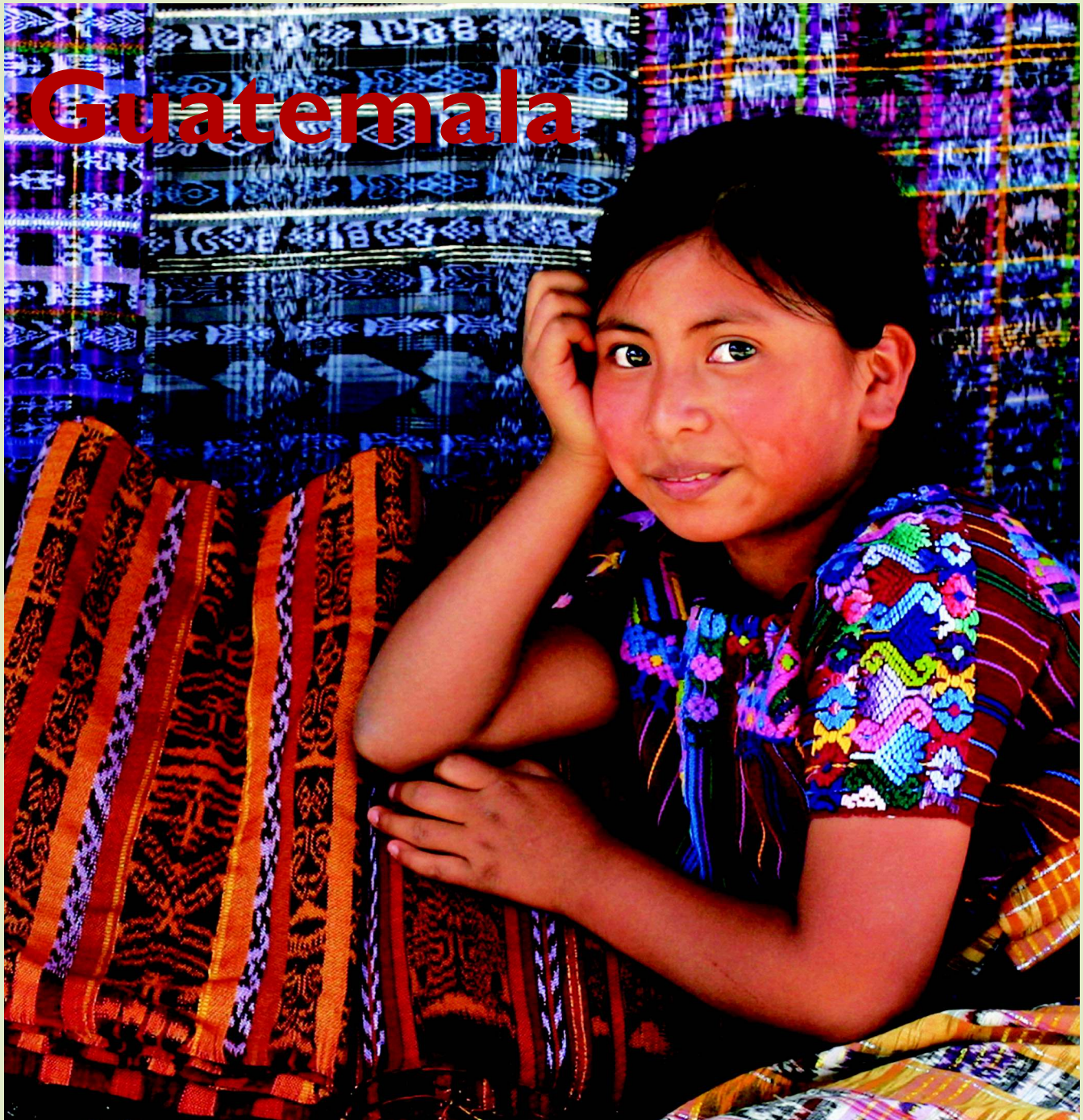
In 2010, the Government withdrew the annual subsidy to hospital service and closed the account that allowed hospitals to procure goods and services. Each hospital then functioned as an individual cost center in budget estimates, as had been done in the past.

Despite the increase in numbers of health workers over the period, shortages of nutritionists, social workers, rehabilitation personnel, and mental health workers remained.

Between 2006 and 2010, important gaps were detected in data collection and processing in the health system, among them inconsistent and incomplete data. The government did not have data from private health facilities at its disposal. Technological and connectivity limitations between hospitals, health centers, and pharmacies impede the transfer of information and data to the Ministry of Health's health information unit.

Communicable diseases continue to be a cause for concern in Grenada. In addition, the adolescent birth rate remains high and the number of people affected by injuries and violence continues to increase.

Health sector reforms must include an overall evaluation of primary health care and the creation of more solid partnerships in health and other sectors.



# Guatemala

Guatemala is located in Central America and borders Mexico to its north and northwest; Honduras, El Salvador, and Belize to the east; and the Pacific Ocean to the southwest. It has a land area of 108,889 km<sup>2</sup> and terrain that is largely mountainous, with elevations higher than 4,000 m above sea level. The country enjoys diverse ecosystems and variations in climate. Its location along major geologic fault lines and the presence of volcanoes pose a continuous hazard of earthquakes and volcanic eruptions. The government is a democratic republic, with its capital in Guatemala City. Administrative and political divisions include 22 departments, 331 municipalities, and 20,485 villages.



Guatemala is among the countries classified with a medium level of human development. It is currently experiencing an economic slowdown, which will hinder its ability to achieve the Millennium Development Goals (MDGs) in its health and social sectors. Half of its population is indigenous. There are significant gender, ethnicity, and geographic disparities in working conditions, education, and health status. The incidence of poverty and extreme poverty is much higher among indigenous groups and in rural areas. In Guatemala, there is a correlation between poverty and ethnicity.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Forty percent of the population is economically active. Half of this population lives in rural areas, where only 37% of residents are fully employed. From 2007 to 2010, unemployment rose, and in 2010 the government set the minimum monthly wage at US\$ 250. Illiteracy, which fell from 24% in 2006 to 18.5% in 2010, continues to be found predominantly in women. School enrollment rates increased steadily at all levels of education, with coverage reaching 98.7% for primary education. Although the average number of years of schooling for the general population is 5.3, for the indigenous population it is only 2.1.

### THE ENVIRONMENT AND HUMAN SECURITY

Access to basic sanitation services has improved. Marked differences between urban and rural areas persist, however, and the country is still unable to ensure safe drinking water for most of the population. In urban areas, 95% of households have access to improved water sources, compared to 82% in rural areas. Of the total urban population, 71% live in adequate housing.

### HEALTH CONDITIONS AND TRENDS

In 2007, the National Maternal Mortality Study was conducted, providing knowledge about the causes, risk factors, and social impact of maternal mortality, as well as the barriers to accessing care. From 2006 to 2010, infant mortality fell from 39 to 34 per 1,000 live births.

Malaria is endemic in Guatemala, and malaria cases have fallen by 75%. Dengue epidemics (hyperendemic, with circulation of the four serotypes) were recorded during 2009 and 2010. An estimated 1.4 million people in Guatemala are exposed to Chagas' disease, and some 170,000 are infected. Onchocerciasis (river blindness) transmission was interrupted in three foci; only one central focus remains, which is under

#### Selected basic indicators, Guatemala, 2006–2010.

Indicator	Value
Population 2010 (millions)	14.4
Poverty rate (%) (2006)	51.0
Literacy rate (%) (2010)	81.5
Life expectancy at birth (years) (2010)	70.8
General death rate (per 1,000 population) (2009)	6.1
Infant mortality rate (per 1,000 live births) (2010)	34.0
Maternal mortality rate (per 100,000 live births) (2007)	139.7
Physicians per 1,000 population (2010)	1.1
Hospital beds per 1,000 population (2010)	0.6
DPT3 immunization coverage (%) (2010)	94.0
Births attended by trained personnel (%) (2009)	51.2

surveillance. Notifications of leishmaniasis have fallen, but the disease is probably underreported. From 2006 to 2008, five deaths from human rabies transmitted by dogs were reported.

Mortality from tuberculosis declined over the period. The treatment success rate in new smear-positive cases was 83%, and the drop-out rate was 9%. The country has been free from the circulation of wild poliovirus and has made progress toward eliminating measles, rubella, and congenital rubella syndrome. Neonatal tetanus remains eliminated. Diphtheria, tubercular meningitis, whooping cough, hepatitis B, and invasive *Haemophilus influenzae* type b infections are being monitored and controlled. Immunization coverage rates of over 90% have been achieved in children under age 2. In 2010, the rotavirus vaccine was added to the vaccination series, and more than 1.2 million doses of the pandemic influenza A(H1N1) vaccine were administered.

Implementation of the International Health Regulations has been a priority. Contributions for research amounted to US\$ 9.5 million in 2008–2009.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Health Code stipulates that the Ministry of Public Health and Social Welfare is formally responsible for governance of the health sector, but legal instruments to facilitate the exercise of this role are limited. There are various forms of insurance, including public and private insurance schemes and social security. Private insurance and social security cover less than 25% of the population. Ministry of Health service delivery takes place at three levels of care. The first level comprises health posts, primary health care centers, and the Extension of Coverage Program, which includes outpatient care focusing on prenatal care, immunization, nutritional supplementation, and growth monitoring in children. At the second level of care, services are provided in health centers and integrated maternal and child

### The Maternal Mortality Challenge

In 2007, the National Maternal Mortality Study was conducted and 537 maternal deaths were identified, expressed as a maternal mortality ratio of 139.7 per 100,000 live births. Among the social impacts of these deaths were 1,716 orphaned children. The study also found maternal mortality to be underreported by an estimated 40.7%. The women who died were largely indigenous (70%), with limited education (46% illiterate), multiparous (56%), and had died at home (46%). An estimated 41% of the maternal deaths were found to be related to the health service being unable to prevent, identify, or handle the emergency appropriately. Barriers to accessing health services were identified—e.g., lack of transportation or the money to pay for it (47%) and the failure by the women or their families to make the decision to seek care (33%).

In this context, it is unlikely that Guatemala will achieve the maternal mortality ratio of 55 per 100,000 live births by 2015 set by the Millennium Development Goals.

In response to this situation, in 2009 the national government implemented a conditional cash transfer program called “Mi Familia Progresá” (“My Family is Making Progress”), as well as a policy that made access to public education and health services free. These programs produced positive results in prenatal care coverage, particularly in rural areas. However, the impact that financial support for pregnant women has had on maternal mortality or the fertility rate has not been evaluated.

health centers. The third level is made up of hospitals. In 2006, the network of services comprised 43 hospitals, 279 health centers, 903 health posts, 46 health posts staffed with a physician, and 4,163 “convergence centers” (clinics held periodically and served by visiting medical staff).

The Ministry of Health’s 2010 budget was US\$ 462.5 million (US\$ 40.20 per capita). Payments to nongovernmental organizations (NGOs) that are providers in the Extension of Coverage Program represented 18.9% of this sum. Of the

remainder, 55% went to hospitals and 45% to first- and second-level health care facilities.

In 2010, the Ministry joined with the National Association of Municipalities in promoting the Strategy for Healthy Municipalities.

Guatemala’s public university and four private universities provide medical training. Cuba’s Latin American School of Medicine also trains students from Guatemala. In 2010, there were 16,043 licensed physicians, 9,447 of whom were working in the profession. Although 71% were men, the number of female physicians has been steadily growing. The country has an estimated 11 physicians per 10,000 population, but they are not evenly distributed geographically. With 36.1 physicians per 10,000 population, the Department of Guatemala has 71% of the physicians, while the Department of Quiché, for example, has barely 1.4 physicians per 10,000 population. The Cuban Medical Brigade provides 235 physicians who work in the country.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The country has continued to implement various projects and activities under the National Science, Technology, and Innovation Plan for 2005–2014, coordinated by the National Science and Technology Committee. This includes projects and activities in which public, private, and academic institutions participate. The Plan also includes research activities.

### MAIN CHALLENGES AND PROSPECTS

Disparities in working conditions that are based on gender, geography, and ethnicity are a major challenge. Indigenous populations (Mayan, Garífuna, and Xincas) constitute 58% of the poor and 72% of the extremely poor. More than 75% of the indigenous population lives in poverty.

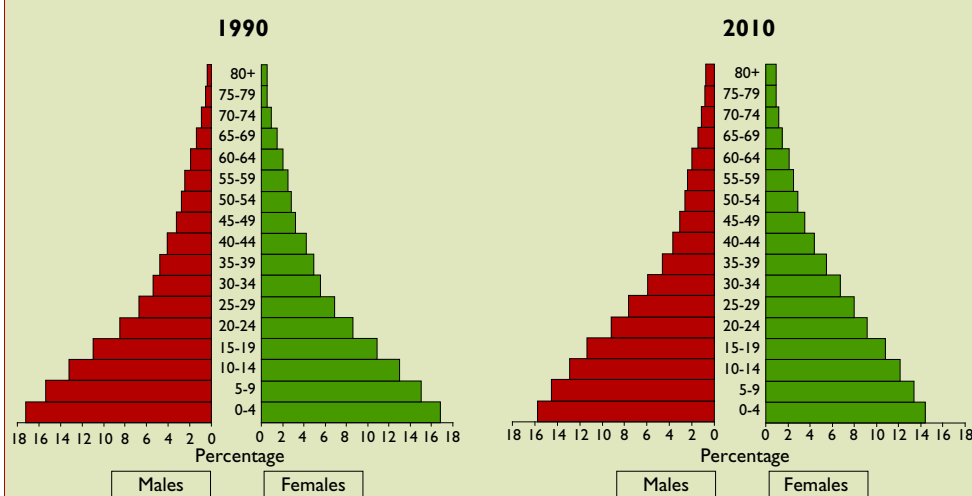
Forty-five percent of women and girls have been reported

to have experienced some type of violence, a figure that is even higher in urban areas. In 2009, an estimated 2.5 million Guatemalans were at risk of food scarcity and nutritional insecurity. In 2008, only 58% of adolescents had finished primary school, placing Guatemala among the least developed countries in Latin America.

Although 52% of Guatemala’s forests are in protected areas, 26,300 hectares are nonetheless reportedly lost from these areas each year, especially in the Maya Biosphere Reserve. In 2010, damages and losses in Guatemala from Tropical Storm Agatha exceeded US\$ 1.5 billion.

In 2008 the water quality surveillance system reported that more than 50%

Population structure, by age and sex, Guatemala, 1990 and 2010.



of samples did not have adequate chlorine levels and 25% exhibited bacteriological contamination. In 2006, adequate wastewater disposal reached 23% coverage in rural areas (82% in urban areas). Not all waste that reaches the sewer network is treated.

Eighty-five percent of solid waste is disposed of improperly or without treatment. Only 35% of households have refuse collection services, and 84% of garbage dumps are unauthorized. In rural and peri-urban areas, more than half the population lives in unhealthy and overcrowded conditions. Housing is ramshackle, with dirt floors and few barriers to disease vectors.

Air quality in Guatemala City is deteriorating due to increased ambient concentrations of suspended particles, nitrogen dioxide, and sulfur dioxide. Compared with 2009, average annual  $PM_{10}$  (levels of breathable particulates smaller than 10  $\mu m$ ) increased by 26% and nitrogen dioxide, by 19%.

The total fertility rate in 2009 continues to be high (3.6 children per woman). Maternal mortality also remains high (140 deaths per 100,000 live births, which may be even higher since underreporting is estimated at 40%). Maternal mortality is affected by limited hospital delivery coverage, and only half of deliveries take place in health facilities. This underscores the need to strengthen safe motherhood strategies.

The leading causes of death in children under age 5 are highly preventable, especially pneumonia (34.4%) and diarrhea (18.4%).

Among school-age children, 45.6% suffered from chronic malnutrition in 2008. Guatemala has the highest rate of chronic malnutrition in Latin America and the fourth highest in the world. Malnutrition in Guatemala has fallen by only 5.1% in the past 20 years.

Twelve percent of adults aged 18–25 have alcohol dependency or abuse problems. An estimated 27.8% of adolescents begin drinking at age 13 or earlier. Sixteen percent of adults are smokers. The country enacted a law requiring smoke-free environments in 2008.

From 1984 to 2009, one-third of all AIDS cases in Guatemala were among adults aged 20–29, which suggests they may have become HIV-positive as adolescents. In 2009, an estimated 68,000 people were living with HIV, and there were 7,500 new infections each year. The HIV/AIDS epidemic has spread, is concentrated in urban areas, and is affecting women in ever-greater numbers.

Among adolescents the leading cause of death is from gunshot wounds. The homicide rate is 41.5 per 100,000. Much of the problem stems from gangs, organized crime, and drug trafficking. Violent assaults against women have increased. In 86.5% of the reported cases of domestic violence in 2010, men were the perpetrators.

There are no public policies or legislation to protect the mentally ill. With regard to traffic accidents, there is no

specific regulation relating to child safety seats. In addition, the legislation governing speed limits, blood alcohol level, and helmet use is not very effective.

Health expenditures as a percentage of gross domestic product (GDP) held steady at 1.2% from 2006 to 2010, and accounted for 18.6% of social spending in 2008. The burden of health care financing that falls on households (over 60%) and what families pay out-of-pocket for health services are higher among poorer families. A 2006 survey on family remittances revealed that 10% of household expenditures were for health services. Of these expenses, 98% were for medicines, diagnostic tests, physician's fees, and hospitalization, and only 2% were for insurance. Total household outlays exceeded total health expenditures by the Ministry of Health.

The country has achieved positive results in terms of institution building, child health, and prevention of communicable diseases. However, the health system continues to have a weak performance, especially at the second and third levels of care. Six out of 10 non-poor people seek health services while only 3 of 10 poor people do.

The Department for Regulation and Control of Pharmaceutical and Related Products of the Ministry of Health and the National Health Laboratory constitute the national regulatory authority. However, there are no legal mechanisms to guarantee the regulation work.

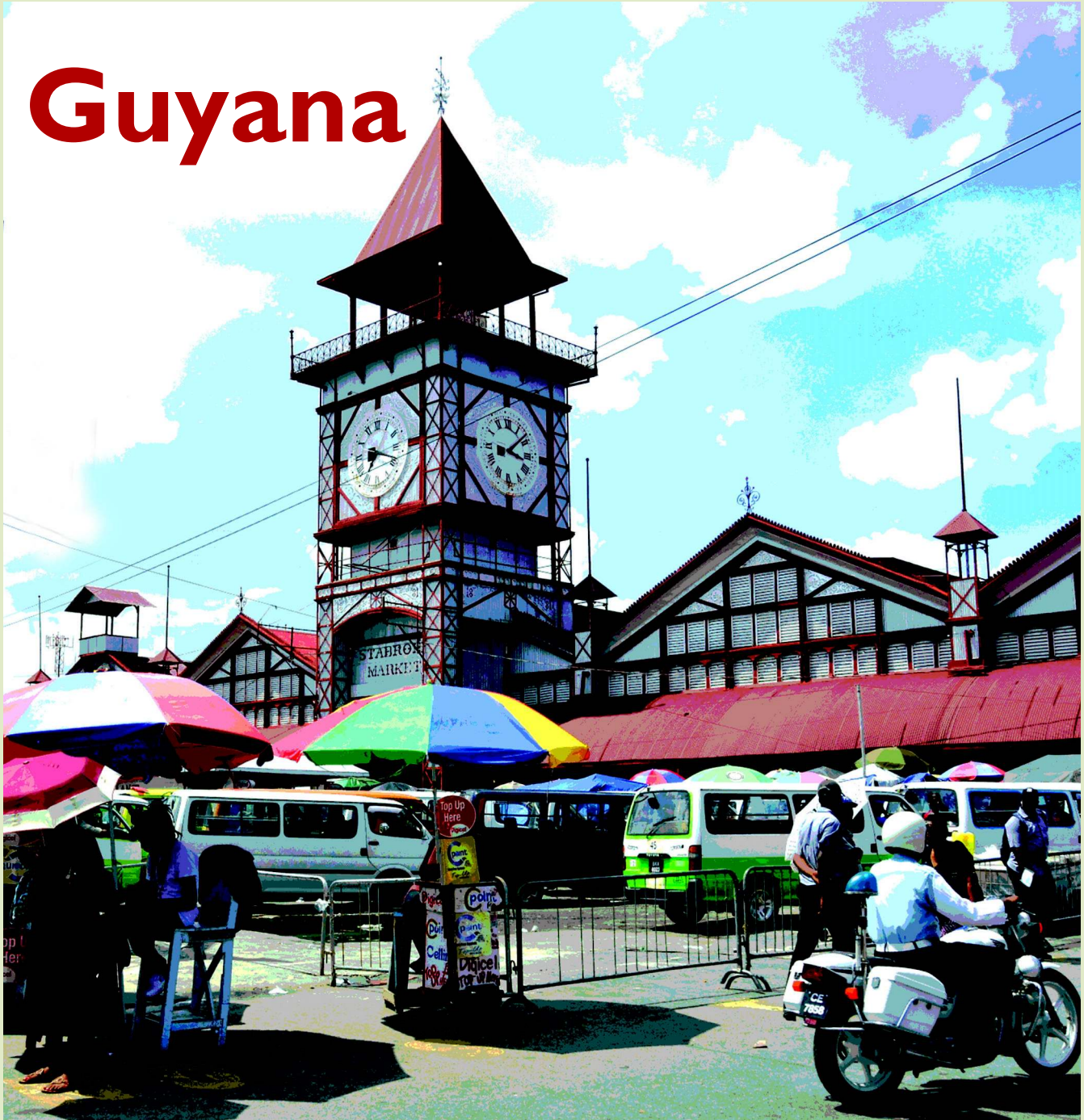
The Ministry has had difficulties in covering health posts in rural areas, particularly in the departments of Quiché and Sololá. Furthermore, given the difficulties in finding physicians to provide outpatient care services in the Extension of Coverage Program, the Ministry began hiring nurses to do this work. In some jurisdictions, basic health teams include a health and nutrition educator and a provider of basic maternal and neonatal care. These personnel are responsible for the health care of 4.5 million inhabitants.

Technological developments and innovation in health mean that the country needs to adhere to best practices in the use of technology, information dissemination, and knowledge generation with the support of technical cooperation.

Guatemala continues to face challenges related to environmental and social determinants, economic development, food insecurity, and social violence. In order to improve health, the country must not only maintain the gains it has made thus far, but also reduce inequities, increase access to services among the most vulnerable groups, prevent and control chronic, noncommunicable diseases, and promote health.

In the future the country must fight to achieve the Millennium Development Goals, integrate the health system, and strengthen the leadership role of the Ministry. Likewise, the challenge of working across sectors must be taken on while considering strategies that take an intercultural and gender approach.

# Guyana



Guyana is located on the northeastern coast of South America; it borders Venezuela to the west, Brazil to the south, and Suriname to the east. It is the only English-speaking country in South America. The country covers an area of approximately 215,000 km<sup>2</sup>. Guyana obtained its independence from the United Kingdom in 1966, and has since been a member of the Commonwealth of Nations. The country is a republic governed under a Westminster system of government, with a president who is both the head of state and of government. Georgetown is the nation's capital. The country has 10 administrative regions, which, in turn, are divided into neighborhood democratic councils.

Guyana has a small and open economy, with a relatively limited domestic market, given its small population. Economic activity in the country increased by 2% in 2008 and by 3.6% in 2009. The per capita gross domestic product (GDP) was US\$ 1,911 in 2006 and US\$ 2,629 in 2009.

Sugar exports, primarily to the European Union, account for nearly 12% of GDP and more than 20% of the country's exports.

Life expectancy is 69 years for women and 63 years for men. With regard to the country's ethnic makeup, 43.5% of the population is of Indian origin, 30.2% of African descent, 9.2% Amerindian, and 16.7% mixed race.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Guyana is a party to international human rights treaties and has established constitutional commissions to address the rights of women, indigenous peoples, children, and ethnic groups. Amerindian women have the highest levels of poverty. The country's Amerindian Law of 2005 provides protection to indigenous peoples, and it has been instrumental in increasing from 6.4% to 14% these groups' control over the national territory.

Between 1993 and 2006, moderate poverty declined from 43.2% to 36.1% and extreme poverty from 28.7% to 18.6%. However, the proportion of total poverty remains high.

Between 1990 and 2009, the average years of schooling increased by approximately 3 years among women and 2 years among men.

Over the 2006–2010 period, improvements were made in basic water and sanitation services. The coastal populations have better access to drinking water than do people living in the interior. Guyana has developed a multisectoral nutrition and food security strategy.

### THE ENVIRONMENT AND HUMAN SECURITY

Efforts to reduce air pollution due to deforestation and forest

#### Selected basic indicators, Guyana, 2006–2010.

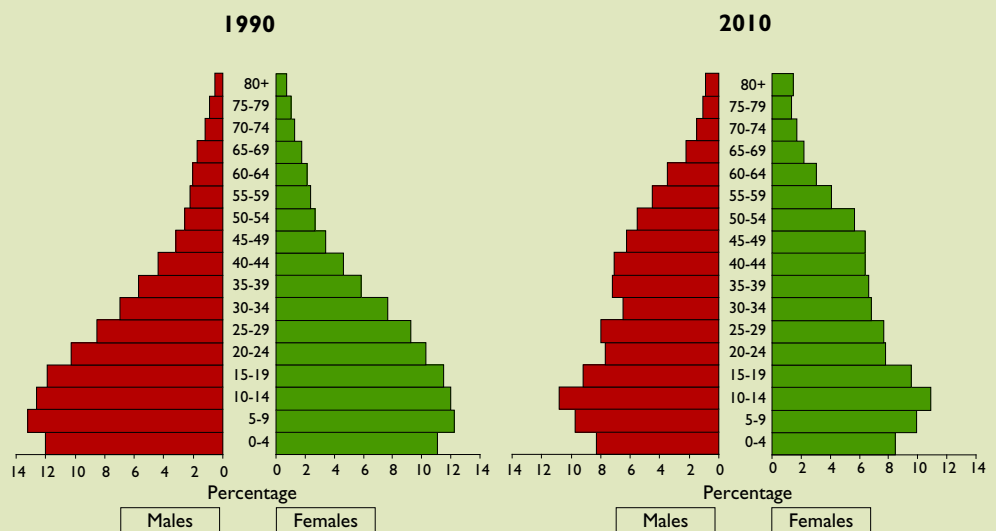
Indicator	Value
Population 2010 (thousands)	785.2
Poverty rate (%) (2006)	54.7
Literacy rate (%) (2009)	92.0
Years of schooling (2009)	9.3
Life expectancy at birth (years)	...
General mortality rate (per 1,000 population) (2010)	6.4
Infant mortality rate (per 1,000 live births) (2007)	20.3
Maternal mortality rate (per 100,000 live births) (2009)	92.2
Physicians per 1,000 population (2008)	0.5
Hospital beds per 1,000 population (2010)	2.3
DPT3 immunization coverage (%) (2010)	95.0
Births attended by trained personnel (%) (2009)	98.9

degradation have made good progress. Guyana is vulnerable to floods. Moreover, there are significant areas of mercury contamination in the northwestern part of the country.

The country's development strategy, which emphasizes low carbon emissions, has charted a new course for Guyana by focusing on the conservation of forest resources as a means to mitigate climate change. In exchange, Guyana receives carbon credits and allowances from global markets. In fact, Guyana is recognized as a global leader in the promotion of climate change mitigation.

Mortality due to traffic accidents declined from 171 deaths in 2006 to 125 in 2008.

Population structure, by age and sex, Guyana, 1990 and 2010.



### “Health in All Policies” Approach

*The places people live and work have a major impact on their health and social well-being. The ability of the Ministry of Health to integrate its work with that of other sectors—such as education, labor, and agriculture—is critical to improving the health of the population.*

*The “health in all policies” approach adopted by Guyana has been instrumental in calling attention to efficiently integrating health policy and programs into other sectors. Among the examples of this approach have been:*

- *including strategies against HIV infection in the policies and programs of the tourism, education, and labor sectors*
- *implementing a health education and family life program in schools, with collaboration between the health and education sectors*
- *recognizing the health sector’s role in the country’s nutrition and food security strategy, which is headed up by the agricultural sector*
- *collaboration between the Ministry of Labor and the Ministry of Health to address occupational health problems*
- *cooperation between the Ministry of the Interior and the Ministry of Health to carry out suicide prevention programs*

### HEALTH CONDITIONS AND TRENDS

Infant mortality declined between 2006 and 2010. Children under 1 account for 5.2% of all deaths, with the leading causes of death being respiratory infections and congenital malformations. Between 1991 and 2008, maternal mortality in the country decreased from 320 to 86 deaths per 100,000 live births, but it went back up to 92.2 deaths per 100,000 in 2009.

Immunization coverage levels approaching 98% are found among children under 1 year for tuberculosis, diphtheria, tetanus, whooping cough, and hepatitis B, and the levels for poliomyelitis and measles are around 97%. Ninety percent of newborns receive the tetanus vaccine. In 2010, the rotavirus vaccine was introduced into the country’s vaccination schedule, followed by the pneumococcal pneumonia vaccine in 2011, and plans were in place to begin administering the human papillomavirus (HPV) vaccine in girls 11 years of age by the end of that same year.

The prevalence of sexually-transmitted infections—which had risen between 2007 and 2009—declined in 2010. The increase had been partly attributable to improvements to the country’s surveillance system. The

prevalence of tuberculosis declined from 17.9 to 14.8 per 100,000 population between 2005 and 2008. Moreover, 30 cases of influenza A(H1N1) were detected between 2009 and 2010.

The prevalence of HIV in adults declined from 2.2% in 2004 to 1.1% in 2009. In addition, the proportion of deaths attributed to AIDS fell from 9.5% of all deaths in 2005 to 4.7% in 2008. This success is attributed to several interventions, such as the country’s annual weeklong HIV testing campaign. In addition, the percentage of HIV-infected pregnant women decreased from 43% to 41% of the total population living with the virus between 2005 and 2008. All pregnant women are offered antiretroviral therapy. Monitoring of drug resistance to antiretroviral drugs is now under way in Guyana.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Ministry of Health exercises the steering role in health system policies, which are based on primary care. The health system is decentralized and includes primary, secondary, and tertiary care establishments distributed among all 10 administrative regions.

Responsibility for health services delivery is increasingly being delegated from the neighborhood democratic councils to the regional health authorities and the Georgetown Public Hospital Corporation, which are semiautonomous care suppliers with legislative authority.

The country has had an increase in enrollment in programs that prepare nurses, physician assistants (the Medex program), and other health professionals. Medical school scholarships have increased, and graduate-level medicine and nursing programs have opened.

The Ministry of Health is adopting models such as integrated management of childhood illness and integrated treatment of illness affecting adults and adolescents.

In 2010, a sex crimes law was enacted to strengthen gender-based violence prevention. Also in 2010, a disabilities law was enacted guaranteeing rights and freedoms and defining the responsibilities of various sectors, including health.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The country actively promotes technology and information initiatives. In addition, Guyana is in the process of

preparing a unified domestic health research agenda for the 2010–2015 period.

## MAIN CHALLENGES AND PROSPECTS

Although poverty has decreased, the total poverty rate is still high: 55.1%, including extreme poverty of 19%. This persistent poverty presents a fundamental challenge that must be addressed in order to affect the aspects of health that are related to social determinants.

Limitations persist with the quality of water and sanitation, which are reflected in high rates of diarrheal diseases among children between 1 and 5 years—as high as 30.8% in some areas of the country.

In 2001, Guyana was certified as free of foot-and-mouth disease. However, because the disease continues to be present in at least one neighboring country, surveillance along all borders is crucial to maintaining the country's certification, which is vital to the expansion of the livestock industry. Measures and interventions currently under way to strengthen the country's basic capacity to implement the International Health Regulations (2005) will help facilitate this process.

Between 2006 and 2008, the leading causes of death among the 15 to 24 years age group were suicide (24%) and malignant neoplasms (4.6%). In 2006, the leading causes of death in the 25 to 44 years age group were AIDS (17%), suicides (13.6%), traffic accidents (11%), homicides (9.9%), and neoplasms (5.3%). Among the population under age 65, the leading cause of death was ischemic heart disease (17%), and among people over age 65 it was cerebrovascular disease (17.4%).

Between 2005 and 2008, the leading causes of morbidity were viral respiratory infections, malaria, hypertension, skin disorders, accidents and injuries, and diabetes.

Malaria remains a significant problem. It is endemic in the interior of Guyana. The number of dengue cases increased from 258 in 2006 to 1,468 in 2010. The country conducts surveillance to control larval and adult *Aedes aegypti*, which are prevalent along the coast as well as inland. Leishmaniasis is common, with 56 cases being reported between 2002 and 2007.

In 2008, chronic, noncommunicable diseases accounted for 60% of deaths. Of these, cancer was responsible for 20% and diabetes for 10%. Cervical cancer rates are higher among Amerindian women, which is

attributed to factors such as the early initiation of sexual relations, the prevalence of HPV (22.8%), and average fertility of 4.5 children per woman.

Mental disorders and the use of psychoactive substances are major public health challenges. In 2009, a new mental health policy was proposed. In the 2004–2006 period, suicide was the seventh leading cause of death overall, as well as the leading cause of death among those 15–24 years old and the third leading cause of death among those 25–44. The prevalence of suicide was 24 per 100,000 population, more than twice the world prevalence. A study of suicide risk factors is under way, and the results are expected soon for a retrospective suicide study that was begun in 2010.

In Guyana, there are regional differences in the causes of death that warrant research. Unmet demand for contraception services among the population in the 15 to 19 years age group approaches 35%.

There is a need to develop an integrated model of service delivery in order to carry out and expand the package of health services that have a public guarantee.

A majority of the country's physicians (57.5%) work in the private sector. The country has a dearth of highly skilled and trained human resources; consequently, foreigners fill approximately 90% of these jobs. The country has difficulty attracting and retaining trained staff due to low wages, difficult working conditions, and the absence of a comprehensive plan for human resources development. The lack of adequate compensation and incentives for jobs in the interior of the country results in a low number of professionals working there. Many nurses have emigrated from Guyana in search of better professional opportunities, higher quality of life, and better working conditions. Addressing this problem poses an enormous challenge for the country.

In general, the performance and results of the health system have been improving. The challenge now focuses on hiring and retaining sufficient numbers of trained health workers, and on ensuring the population has equitable access to comprehensive, good-quality health care services.

The country needs to strengthen its health information systems, determine the costs of health care services, and evaluate and follow up on those findings.

Among the main challenges facing the country are to improve maternal and child health and to adopt an integrated approach to controlling and preventing chronic, noncommunicable diseases, as well as HIV and other significant infectious diseases.



Haiti is located on the west end of the island of Hispaniola, which it shares with the Dominican Republic. The country covers an area of some 27,700 km<sup>2</sup> (40% of the island). The government is a semi-presidential republic, but the last decade has seen great political instability, aggravated by economic crises and violence. Since 2004, the United Nations Stabilization Mission in Haiti (MINUSTAH) has strived to maintain peace and safety. The January 2010 earthquake worsened the effects of the global crisis on the country. The country's political-administrative divisions include 10 departments, 41 districts, 135 *communes* (municipalities), and 565 communal sections. The capital is Port-au-Prince.



From 2006 to 2010, Haiti continued to suffer political instability, which added to the effects of a stagnant economy, widespread poverty, and environmental degradation. Over the last two decades, the country's economic growth has been negative.

Haiti suffered a food crisis in 2008 that caused food prices to rise 80%, severely affecting the population and leading to violent protests. That same year, the country also suffered the consequences of serious hurricanes.

In this context—a fragile economic structure and impoverished living conditions—the 2010 earthquake occurred, devastating the country and its health system. Haiti has yet to recover.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Haiti's poor economic and social conditions, further deteriorated as a result of a chain of disasters and crises, made it impossible for the country to achieve any gains during the 2006–2010 period. That said, international-assistance efforts designed to help resolve the country's situation have been commendable. The active participation of the international community through various agencies, especially the United Nations Stabilization Mission in Haiti (MINUSTAH), has helped maintain order, security, and peace during political, economic, and food crises that were exacerbated by the extraordinarily devastating disasters of 2008 and 2010.

In 2006, 92% of the schools in Haiti were private and covered 80% of primary and secondary school enrollment of students.

### THE ENVIRONMENT AND HUMAN SECURITY

After the 2010 earthquake, the United Nations Office for the Coordination of Humanitarian Affairs mobilized “clusters,” a coordination mechanism that is intended to organize the international response to devastating disasters into thematic areas (health, nutrition, water and sanitation, emergency shelters, for example) and is directed by the

#### Selected basic indicators, Haiti, 2001–2011.

Indicator	Value
Population 2010 (millions) (2010)	10.3
Poverty rate (%) (2001)	54.9
Literacy rate (%) (2003)	61.0
Life expectancy at birth (years) (2011)	62.2
General mortality rate (per 1,000 population) (2011)	8.8
Infant mortality rate (per 1,000 live births) (2006)	57.0
Maternal mortality rate (per 100,000 live births) (2006)	630.0
Physicians per 1,000 population	...
Hospital beds per 1,000 population	...
DPT3 immunization coverage (%) (2010)	68.6
Births attended by trained personnel (%) (2008)	25.0

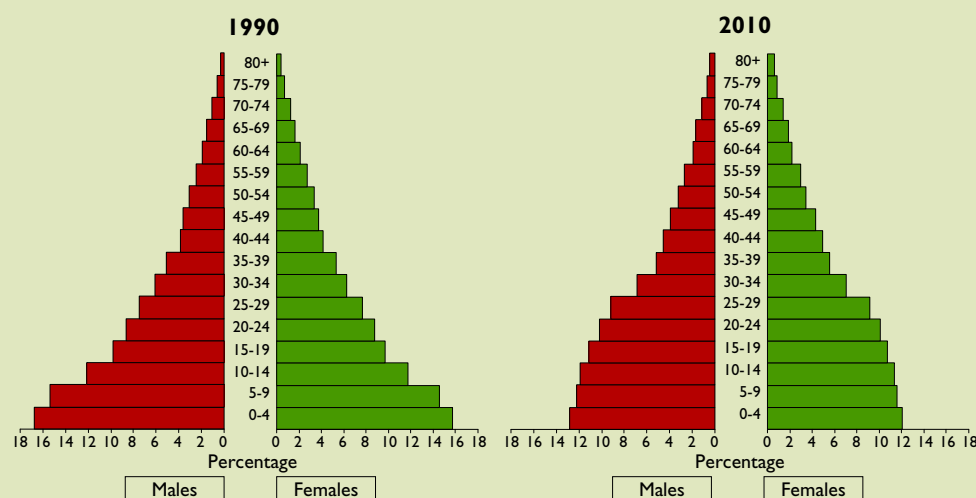
relevant UN agencies. Vast quantities of economic support poured into the country, as did resources and assistance from different international sources and countries.

### HEALTH CONDITIONS AND TRENDS

In 2010, the prevalence of HIV infection in persons 15–49 years old was 2.2%. Since 2003, the outlook for HIV patients has significantly improved, given the increase in the availability of antiretroviral treatment, which rose more than 1,600% from 2003 to 2011.

A program providing free obstetric care was launched in July 2008, with support from PAHO/WHO. Thanks to this program, institutional birth coverage increased by 26.5% and health complications fell significantly in areas where the program was implemented. It was estimated that in 2006–2007 only 25% of births were attended in health facilities by trained midwives.

Population structure, by age and gender, Haiti, 1990 and 2010.



### Increased Availability of HIV/AIDS Treatment in Haiti

*Haiti's HIV/AIDS prospects have improved significantly since 2003, thanks to the convergence of two key support strategies—the Global Fund to Fight AIDS, Tuberculosis, and Malaria (2003) and the United States President's Emergency Plan for AIDS Relief (PEPFAR) (2004).*

*The resources to target HIV/AIDS from these two funds helped to expand antiretroviral treatment coverage from 2,000 people in 2003 to almost 35,000 in 2011. According to the 2012 Global Aids Response Progress Report by the UN General Assembly Special Session on HIV/AIDS (UNGASS), an estimated 59,750 patients still need treatment.*

*Major challenges facing the national HIV/AIDS program include a lack of effective coordination, the inefficient use of resources, insufficient coverage, and the unsustainability of programs.*

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

After the 2010 earthquake, the Health Cluster in Haiti supported the initial assistance and restoration of essential health services, such as primary health care and mobile clinics, hospitals and trauma care, the patient referral system, health information management, mental health and psychosocial support, attention to disabilities, medical supplies, and early warning of communicable diseases. The Health Cluster included more than 390 national and international entities that provided essential support to ensure the population's access to health care.

Epidemiological surveillance has been a priority for the Ministry of Health. Surveillance systems are in place for vaccine-preventable diseases, HIV/AIDS, malaria, and tuberculosis. Seventy-one sentinel centers report weekly data on 23 communicable diseases. In more complex cases or larger outbreaks, the Ministry works with the Division of Epidemiology, PAHO/WHO, and other associated agencies.

PROMESS, the Program for Essential Medicines and Supplies, which was established in 1992 by PAHO/WHO, is the main distributor of essential drugs in Haiti. It has played an important role over the last two decades, especially in periods of crisis and disaster.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The Ministry of Health is working in this area through the National Committee on Health Information Systems

(CONASIS), established in 2008 with the participation of several Ministry units and other organizations.

### MAIN CHALLENGES AND PROSPECTS

According to 2003 data, 61% of the population 10 years old and older was literate. The net enrollment rate in primary school (for children 6–11 years old) was 60% and in secondary school it was only 41%. Significant differences exist in years of schooling according to household income: for children in the highest-income quintile, the enrollment rate in secondary school was 71%, while for those in the lowest-income quintile it was only 23%.

In recent years the country has undergone several natural disasters, which have degraded the population's health situation and continue to pose new challenges for the health system in the context of a difficult economic situation. In 2008, the country endured four hurricanes and tropical storms in a two-month period, resulting in 793 dead, 310 missing, 135,000 families left homeless, and severe material damage. In January 2010, Haiti suffered a devastating earthquake (7.0 on the Richter scale), causing more than 200,000 deaths, forcing nearly 1.5 million people to seek refuge in camps and shelters, and displacing another 500,000 to less-affected regions of the country.

Before 2010, only 10%–12% of the population had access to piped water, with only intermittent service. The earthquake caused interruption of these services in the metropolitan region of Port-au-Prince, and no statistics are available on the current situation. Before the earthquake, only 17% of the population had access to improved sanitation services.

It is estimated that more than 30% of health care centers do not have access to drinking water, and while 80% of centers have pit latrines, only half of these meet the minimum sanitation requirements.

The Expanded Program on Immunization has low coverage because of shortages of vaccines and the population's limited access to the program. In 2010, coverage for rubella and measles vaccination was 44.9%; for polio, 61.9%; and DPT3, 68.6%.

Long-standing deficiencies in availability of and access to food and the 2008 food crisis contributed to between a 2% and 5% prevalence of acute malnutrition from 2008 to 2009, and a chronic malnutrition prevalence of 18% to 32% in the same period. In 2005–2006, the prevalence of anemia in children from 6 to 59 months old was 61%, and in children 6 to 24 months old it was 75%.

Malaria has an estimated prevalence of 2%–3% in the population, presenting a serious public health problem. In 2010, 84,153 cases were reported. The national malaria eradication program is based on individual and community prevention, early detection, and treatment.

There is a high level of violence of all types (such as robbery, kidnappings, and murder), but statistics are lacking. Twenty percent of women in domestic relationships report that they have been victims of physical or sexual violence on the part of their partner.

The maternal mortality rate continues to be high, estimated at 630 deaths per 100,000 live births in 2006. The leading causes are highly avoidable (hemorrhage, eclampsia, abortion, and septicemia), and are related to low access and limitations in the health system.

In October 2010, a cholera outbreak in the Centre department quickly spread throughout the entire country. By March 2012, 532,000 cases and 7,000 deaths had been reported.

Haiti continues to be the country most affected by human rabies in the Region of the Americas, and the situation worsened after the earthquake. In response, the Ministry of Agriculture and Livestock prepared a national rabies eradication plan. Lymphatic filariasis is endemic in Haiti, with an estimated prevalence of 30% in 2002. The filariasis eradication program of the Ministry of Health expected to conclude mass drug administration throughout the country by the end of 2011.

In 2006, the estimated prevalence of diabetes mellitus in the metropolitan region of Port-au-Prince

was 4.8% in men and 8.9% in women; estimated prevalence of hypertension was 48.7% in men and 46.5% in women.

Access to health care poses an essential challenge for the country. Inadequate numbers of health centers and health professionals, added to geographic and financial barriers, limit the population's utilization of health services. Health facilities are concentrated in urban areas of Haiti. The delivery network is fragmented and coordinating mechanisms for services provided by nongovernmental organizations (NGOs) and donors are lacking. Traditional medicine plays an important role and is the initial contact sought by almost 80% of the population.

Haiti lacks both a national regulatory authority and a national policy on pharmaceutical products. This presents serious problems in controlling the prescription, production, and sale of drugs, which means that the country continues to depend on the PROMESS project.

Health information systems are poor, which has led to the lack of or inaccurate data, hindering decision-making. In response to this situation, various programs have adopted their own information systems, further eroding the capacity to have a functioning, unified health information system.

Although a significant number of international organizations provide cooperation in different health areas, Haiti needs to coordinate and integrate those efforts more effectively with the existing health system and the country's health priorities, thus advancing toward an integrated care network.

# Honduras



Honduras is located at Central America's extreme north. It borders El Salvador, Nicaragua, and Guatemala, and has coastlines on the Caribbean Sea and the Pacific Ocean. The country extends for 112,492 km<sup>2</sup>. Its topography is irregular, with mountains, valleys, and plains, and 19 river basins. Honduras is rich in biodiversity. It is governed as a democratic and representative republic; its government includes legislative, executive, and judicial branches. The country's political and administrative organization encompasses 18 departments, 298 municipios, 3,731 villages, and 30,591 hamlets. The capital is the Central District, which is made up of Tegucigalpa and Comayagüela.

The country's average annual economic growth from 2001 to 2010 was 6%. However, in 2009, the country's serious political crisis and the world economic crisis slowed growth. In 2010 the Country Vision 2010–2038 and National Plan 2010–2022 law was approved. With regard to health, this law prioritizes sectoral reform. It also develops a comprehensive care model and promotion and prevention actions. In 2010, life expectancy at birth was 73.6 years. Over the 2006–2010 period, there were achievements in maternal and child health, immunization, communicable diseases, and regulatory changes in noncommunicable disease control.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

From 2001 to 2009, the total poverty rate was reduced by 4.9 percentage points and extreme poverty by 7.8 percentage points. In 2010, 58.8% of households lived in poverty (64.4% in rural areas). The monthly average income was US\$ 252 (US\$ 375 in urban areas and US\$ 152 in rural areas).

Illiteracy fell to 17% in 2010. School enrollment for children 6–11 years of age reached 89.5% in 2009. The Second Gender Equality and Equity Plan 2010–2022 was prepared.

In 2010 the Secretariat of State for the Development of Indigenous and Afro-Honduran People and Racial Equality Policies was created. Together, the country's six indigenous groups and two groups of people of African descent make up 7.2% of the population.

### THE ENVIRONMENT AND HUMAN SECURITY

Between 2006 and 2010 the coverage of water supply services increased from 84% to 86% (81.3% for rural dwellings and 95% for urban residences). In 2009, 78.2% of the dwellings had access to sewerage and basic sanitation services (62% in rural areas and 80% in urban areas), thus achieving one of the Millennium Development Goal (MDG) targets.

In 2010 a national strategy was prepared to help adapt to and mitigate the effects of climate change. Honduras ranks third in the world in terms of exposure and vulnerability to the risks of climate change.

In 2009 the National Risk Management System Law was enacted, to create a legal framework so the country is able to prevent and decrease the risks of potential disasters. This step represents an important achievement in disaster preparedness.

### Selected basic indicators, Honduras, 2006–2010.

Indicator	Value
Population 2010 (millions)	8.0
Poverty (%) (2010)	58.8
Literacy (%) (2007)	83.6
Education (years) (2010)	5.0
Life expectancy at birth (years) (2010)	73.6
General mortality rate (per 1,000 population) (2010)	4.6
Infant mortality rate (per 1,000 live births) (2006)	23.0
Maternal mortality (per 100,000 live births) (2010)	74.0
Physicians per 1,000 population (2008)	0.3
Hospital beds per 1,000 population (2010)	0.8
DPT3 immunization coverage (%) (2010)	100.0
Births attended by trained personnel (%) (2006)	66.9

### HEALTH CONDITIONS AND TRENDS

The updating of the regulatory framework on care for women and newborns made possible a substantial increase in prenatal and childbirth professional care, as well as in access to family planning methods. Infant mortality was reduced by 12% between 1995 and 2006 (23 per 1,000 live births in 2006). Mortality in children under 5 years of age decreased as a result of the reduction in deaths due to diarrhea and acute respiratory infections.

There were several outbreaks of dengue between 2005 and 2010. The largest, which occurred in 2010, had 66,814 cases and a 2.6% case-fatality rate. Over that same time span, the incidence of malaria was reduced substantially. There were 9,085 cases in 2010, thus reaching the MDG target. Interruption of transmission of Chagas' disease by *Rhodnius prolixus* was certified. In 2009, 17 cases of canine rabies and one case of human rabies were reported. Leptospirosis occurs throughout the country. In 2010, a total of 92 cases were reported, with a 7.5% case-fatality rate. Seventeen cases of leprosy were diagnosed, all in the department of Choluteca. The MDG target for tuberculosis (TB) was achieved. Since 2000 there has been a steady downward trend in the prevalence of TB. In addition, TB mortality decreased from 18.0 to 7.9 per 100,000 population between 1990 and 2009 (56% reduction).

The Ministry of Health assessed data on hospital discharges for 2008 and 2009 for female and male patients treated for malignant neoplasms. In women, cervical cancer and breast cancer were the main causes of medical care (24.1% and 10.3%, respectively). In men, the primary causes of medical care were acute lymphoblastic leukemia (13.5%) and stomach cancer (13.1%). Chronic, noncommunicable diseases (NCDs) are considered in the current National Health Plan.

### HIV/AIDS and Other Sexually-transmitted Infections

In 2008 Honduras was the second most affected country in Central America by the HIV/AIDS epidemic, with a prevalence level of 0.68%. The epidemic is concentrated mainly in the urban areas on the Atlantic coast and in the central area of the country. The highest number of cases occurs among persons between 15 and 39 years of age. From 2005 to 2010 the male/female ratio of HIV transmission was 1.4. AIDS affected 2,964 men and 3,194 women, with a male/female ratio of 0.9.

In 2010 the health services provided care for 44,312 women who had prenatal examinations for the first time. A total of 69% of them took the HIV infection test, and 0.2% were found positive. Access to antiretroviral therapy has increased. From 1985 to 2010 a cumulative total of 7,326 people received treatment; 1,196 of them died and 1,334 discontinued therapy.

According to the "Towards Universal Access" report of 2010, 322 of the 1,510 health facilities (21%) that provided prenatal care also had HIV testing and counseling services for pregnant women. Eighty percent of the pregnant women who took the HIV test received the result during pregnancy, childbirth, or the puerperium. There are 37 comprehensive health care centers distributed throughout the 18 departments and the 20 health regions of the country. In all of these centers, treatment is offered for prevention of mother-to-child transmission of HIV.

A national plan of action of the program for prevention of mother-to-child HIV transmission and elimination of congenital syphilis was developed in 2010.

In 2010 the Special Tobacco Control Law took effect, and the National Strategic Plan for Cancer Prevention and Control 2009–2013 was initiated.

By achieving prevalence levels of 30.1% for chronic malnutrition, 1.4% for acute malnutrition, and 8.7% for overall malnutrition in children under 5 years of age, Honduras has met the MDG 1 targets.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Executive Branch, through the Ministry of Health, exercises authority over health and coordinates the activities of the sector through a national health plan. The National Health Plan 2006–2010 prioritized sectoral reform, maternal and child health and nutrition, and prevention and control of communicable diseases and NCDs.

Among the country's national policies that focus on health issues are ones dealing with maternal and child health, sexual and reproductive health, nutrition, and mental health.

The National Health Plan 2010–2014 includes the bases for adopting a model of comprehensive family and community care, establishing a national quality system, strengthening surveillance, reinforcing the evaluation system, and mapping out a health information system.

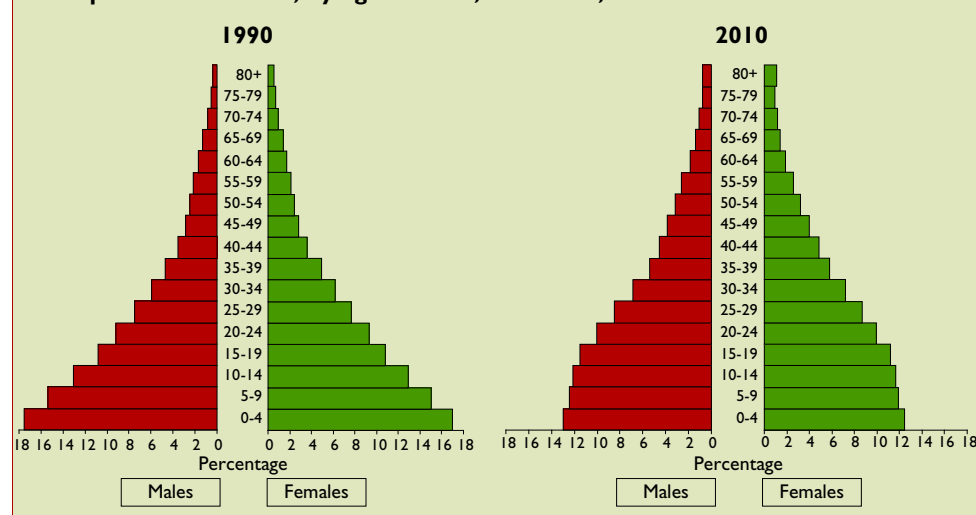
According to the budget of the Ministry of Health, 76% of the funds invested in health are from the National Treasury, 11% from foreign borrowing, 9% from donations, and, recently, 4% from relief of the national debt. Between 2005 and 2010, the proportion of those health expenditures going toward medicines ranged between 9.7% and 12.8%. The Ministry of Health operates 28 hospitals, 61 maternal and child health clinics, 394 urban health centers, 1,048 rural health centers, 4 peripheral emergency clinics, and 14 family counseling centers that specialize in managing family violence.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

In 2008 the National Health Research System was created.

The Virtual Health Library continues to include new subjects and sources of information. In a 2006 assessment of the health information system, the Ministry of Health pointed to the lack of a governing unit, an incomplete legal framework, personnel with insufficient training, and limited use of information. With the support of PAHO, a strategic plan to strengthen the system was prepared. This plan includes nine strategic objectives, one of which concerns vital statistics.

Population structure, by age and sex, Honduras, 1990 and 2010.



## MAIN CHALLENGES AND PROSPECTS

Among persons over 15 years of age, the average amount of education completed is 5 years. Of the population with some level of education, 85% of them have only finished primary school, and just 3% have completed a higher level. Only 60% of the children who enroll in first grade ultimately finish primary school. The MDG target for education will probably not be met as long as structural problems that affect the educational system remain unresolved.

Approximately 1.6 million Hondurans (20% of the population) are unemployed. The unemployment rate for women is twice as high as that for men. One-fourth (25.4%) of youth aged 15–24 years do not study or work, and they have few possibilities of joining training programs. In 2006 the wages of women represented 67% of the average wages of men with equivalent working conditions and capacities.

The availability of drinking water poses a major challenge. In rural areas, the water is not chlorinated. In urban areas, lack of continuity of service and network deficiencies cause pollution of the water that has been adequately chlorinated at the source.

Wastewater treatment coverage was only 27.3% in 2009. In 2010, 4,880 tons of waste were generated daily, but only 20% of the municipalities had collection services, and just 4% had adequate waste disposal facilities. Most of the waste is disposed of in open air dumps.

Honduras identified a total of 3.6 tons of pesticides considered to be persistent organic pollutants. However, the country lacks the capacity to manage and reduce these pollutants.

Pregnancy in adolescents is considered to be a health sector problem and is currently a priority of the National Plan. In 2009, 22.6% of the adult population of Tegucigalpa had hypertension, 6.2% had diabetes, and 53% had high levels of total cholesterol. Furthermore, 7.3% of this population smoked, 11.3% consumed alcohol, and 51.7% were overweight or obese. Cardiovascular diseases are more common in women (231.9 per 100,000 population) than they are in men (169.1 per 100,000). As a result of the lack of consolidation and the underreporting of information on cancer, its incidence, prevalence, mortality, and survival rate are not known.

The registry of vital records is incomplete, and the quality of the declaration of cause of death is deficient. Out of the total hospital deaths in 2009, perinatal disorders were the most common (16.3%), followed by diabetes (6.7%) and congenital malformations (6.7%). Hypertension, stroke, and ischemic heart disease accounted for 20.1% of the total deaths, and 8% were attributed to external causes.

The risk of death due to traffic accident increased from 2006 to 2010. There is no national policy on road safety aimed at reducing the high accident rate. Homicides increased from 3,118 in 2006 to 6,239 in 2010. As a result, the country is one of the most violent in the Region of the Americas. There is a mental health policy. However, 88% of the resources invested are assigned to the two existing psychiatric hospitals, showing that providing preventive services in mental health care is a challenge.

The National Health Plan 2010–2014 points the way towards a system of social health protection based on linking care, management, and financing. Special attention is given to health promotion, decentralization, quality, and broad social participation. However, limited progress has been made. Few changes have been seen in the care model or the impact on the health of the population.

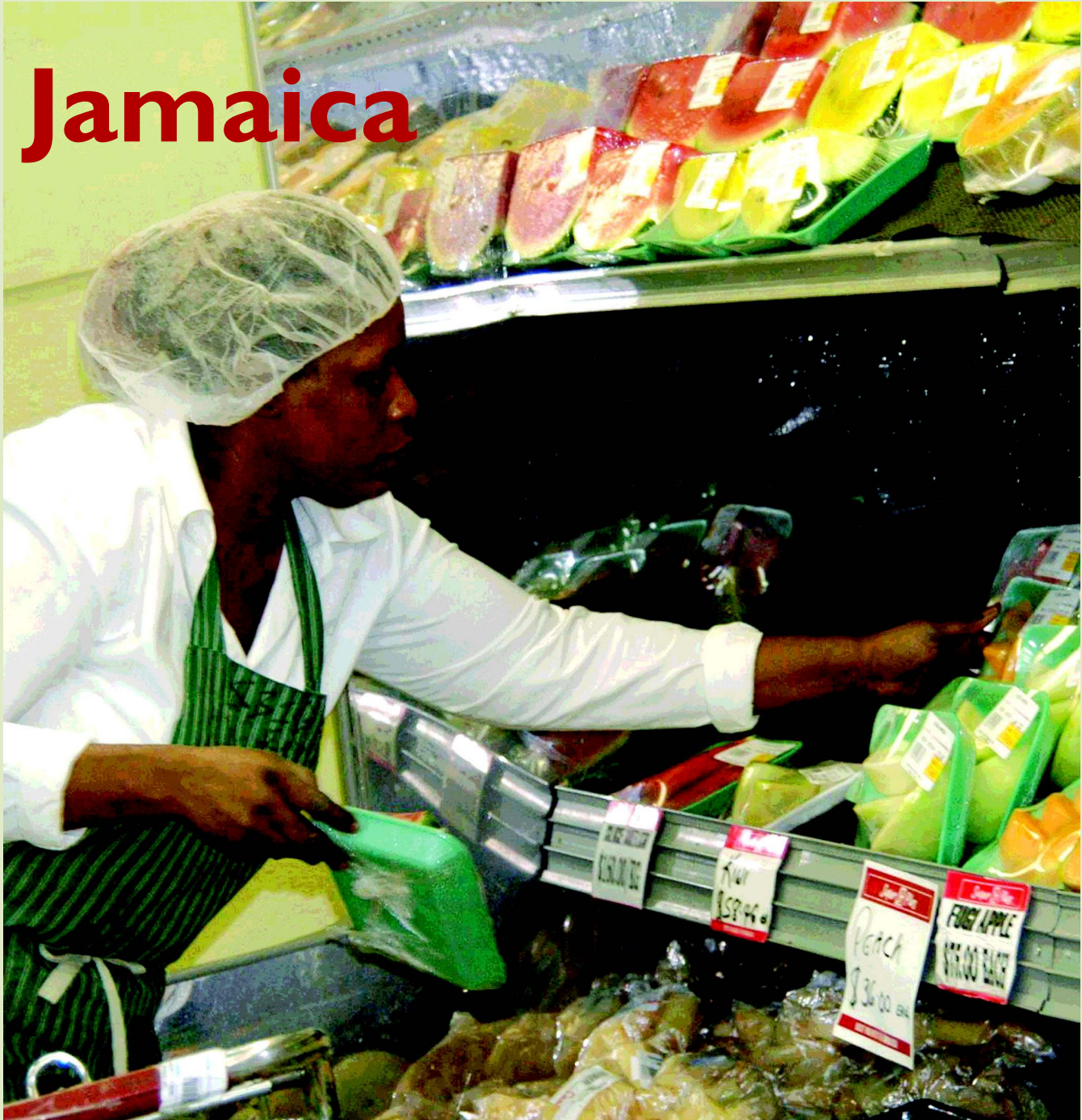
In 2008, there were 6,792 physicians in the country, but only 54.1% of them were active. Of the practicing physicians, 2,323 of them (63.2%) were employed by the Ministry of Health, 880 (23.9%) by the private sector, and 474 (12.9%) by the Honduran Institute of Social Security. There is disparity of distribution by department, ranging from 23.8 physicians per 10,000 population (in Francisco Morazán) to only 2 physicians per 10,000 population (in Lempira and in Santa Bárbara).

The productivity of hospitals is low, considering that they receive 42% of the total budget of the Ministry of Health. Contributing to the reduced productivity and quality of hospital services are problems in resource management, along with insufficient supply and distribution of medicines and other critical supplies.

As a lower-middle-income country, Honduras has priority for PAHO assistance, and it also receives support from the international community to develop its health programs. Official development aid rose by approximately 30% in the 2004–2009 period, to US\$ 119.6 million, including a substantial increase in funding for the area of HIV and sexually-transmitted infections.

In spite of the progress made in achieving MDG targets, Honduras faces important challenges related to the National Plan and Country Vision, as well as to the Health Agenda for the Americas 2008–2017. These challenges concern strengthening the national health authority, with a clear characterization of the orientation of the health services. Identifying health inequities should accompany strategies to address the determinants of health and measures that ensure social protection. In order to contribute to world safety, Honduras will need to comply with the International Health Regulations. To successfully address these challenges will require the country to improve the management and education of health workers.

# Jamaica



With a land area of 11,424 km<sup>2</sup>, Jamaica is the largest English-speaking country in the Caribbean Sea. It is located 150 km south of Cuba and 160 km west of Haiti. Much of the island's interior is mountainous, and agricultural production and tourism are concentrated on the coast. The country is divided into 14 parishes. Its largest city is Kingston, the country's capital on the southeast coast. Other major population centers are Spanish Town, Portmore, and Montego Bay. Jamaica has been a stable constitutional democracy in the Commonwealth of Nations since it gained independence from the United Kingdom in 1962.



The Jamaican economy is heavily dependent on services (tourism and insurance), which represent 60% of gross domestic product (GDP), and mining, with bauxite and alumina contributing 10% of GDP. The country also exports apparel, sugar, bananas, and rum. Remittances account for 15% of foreign exchange revenues.

Life expectancy at birth increased from 38 years in 1900 to 73.1 in 2009, while the infant mortality rate fell from 174.3 deaths per 1,000 live births to 14.6 in the same period.

Total health expenditures amounted to 5% of GDP in 2009. External funding to prevent HIV/AIDS exceeded any other health expenditure category, so requirements for HIV/AIDS-related projects have dominated the agenda.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Despite modest economic growth in Jamaica over the past two decades, the country has made progress in reducing poverty, bringing the rate down from 30.5% in 1989 to 9.9% in 2007. However, between 2007 and 2010 poverty levels increased to 17.6%; this rise is attributed to unemployment and a decline in remittances due to the international economic crisis.

In 2009, literacy reached 89%. Preprimary school enrollment (gross percentage) was 112.97%, and relative gender parity has been achieved in primary and secondary education (gender parity index of 0.97 and 1.04, respectively).

The World Bank did a study on youth development in order to guide efforts to solve the social and public health problems that some of the country's youth face (e.g., high unemployment, crime, antisocial behavior, and gangs).

### THE ENVIRONMENT AND HUMAN SECURITY

In 2009, 72.5% of households had connections for safe drinking water. For 13.7% of the population, rainwater was the main source of drinking water, while 6.2% depended on public standpipes. In metropolitan Kingston, 96.9% of households had piped water connections, compared to only 46% in rural areas.

With regard to sanitation services, 67.6% of households had access to flush toilets and 32.3% used pit latrines. In metropolitan Kingston, 87% of households had access to flush toilets compared to 47.8% in rural areas; 76% of toilets

### Selected basic indicators, Jamaica, 2007–2010.

Indicator	Value
Population 2010 (millions)	2.7
Poverty rate (%) (2010)	17.6
Literacy rate (%) (2009)	89.0
Life expectancy at birth (years) (2010)	73.1
General mortality rate (per 1,000 population) (2007–2009)	5.0
Infant mortality rate (per 1,000 live births) (2009)	14.6
Maternal mortality rate (per 100,000 live births) (2008)	89.0
Physicians per 1,000 population (2008)	1.0
Hospital beds per 1,000 population (2010)	1.9
DPT3 immunization coverage (%) (2010)	94.0
Births attended by trained personnel (%) (2009)	98.0

in the country are not connected to a sewage system, and the figure can be as high as 95.1% in rural areas.

Some 63.4% of households have trash collection services; 33.5% burn their trash and 3.2% take it to dumps. In metropolitan Kingston, 92.1% of households have trash collection compared to 33.9% in rural areas.

### HEALTH CONDITIONS AND TRENDS

Fifteen percent of all births were to adolescent mothers (10–19 years old). In 2008, maternal mortality was 89 per 100,000 live births, and in 2009 the infant mortality rate was 14.6 per 1,000 live births.

The number of imported cases of malaria soared from 9 cases in 2003 to 141 in 2004, but has since fallen to fewer than 10 per year. Malaria eradication activities were reintroduced in 2006 and have reduced local transmission of the disease. Twelve cases of malaria were confirmed in 2010, 10 of them imported.

Dengue is endemic and increases after the rainy season; typically, there are three outbreaks each year. From 2000 to 2011, there were 3,337 dengue cases. By epidemiological week 19 of 2012, there were 172 clinical cases (79 of them confirmed).

Jamaica has had an outstanding tradition when it comes to immunization. Immunization is mandatory for school enrollment, but enforcement is lax. There were no reported cases of tuberculous meningitis, diphtheria, tetanus, whooping cough (pertussis), or poliomyelitis in 2010, but 2,646 cases of chickenpox were reported.

### Essential Public Health Functions

In 2001 and again in 2010, the Ministry of Health collaborated with PAHO/WHO on evaluations of Jamaica's performance of the essential public health functions (EPHF). Jamaica's performance was evaluated as above average both years, with a slightly higher overall score (0.74) in 2010 than in 2001 (0.72).

For 8 of the 11 functions, scores for 2010 were 10 points higher on average than they were in 2001. The exception was "Human resources development and training in public health" (EPHF 8), in which the country obtained 25 points more in 2010 (0.82 compared to 0.57). The functions with the lowest scores in 2010 were: "Monitoring, evaluation, and analysis of health status" (EPHF 1), for which it obtained 0.62 in 2010 and 0.85 in 2001; "Development of policies and institutional capacity for public health planning and management" (EPHF 5), with 0.73 in 2010 and 0.81 in 2001; and "Strengthening of public health regulation and enforcement capacity" (EPHF 6), with 0.29 in 2010 and 0.68 in 2001.

Mortality from tuberculosis has declined steadily, from 20% in 2003 to 9% in 2009. In 2010, there were 145 confirmed cases of tuberculosis; 29 were HIV co-infected. HIV co-infection affects case fatality from tuberculosis (5 of 17 deaths in 2010).

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The health sector is still in the process of consolidating the health sector reform which began in 1997 and has

restructured the Ministry of Health, decentralized the health care system, and created regional health authorities. The goal is to continue strengthening the Ministry of Health's stewardship role as well as administration of the health services overseen by the regional health authorities.

In 2008, user fees at public health facilities were abolished to facilitate the population's access to care. This measure led to greater use of the services, but it became difficult to meet the growing demand, and funding fell short despite the subsidies provided to compensate for loss of revenue. People at every income level increasingly sought private medical care.

Services in the public health sector are provided through a network of facilities. Primary care represents the contact between the client and the health care delivery system. The first level of care consists of 348 primary health care centers that refer patients to secondary or tertiary facilities. There are 24 secondary-level hospitals that provide hospitalization and surgery and 5 tertiary-level hospitals providing specialized care. There are 4,736 hospital beds in the country. In addition to public-sector services, the private sector provides hospitals, laboratories, radiology services, and areas of specialization. Because the country has a well-developed network of health centers and hospitals, there are no significant geographic barriers that prevent physical access to basic public health services.

Between 2008 and 2009, 98.73% of pregnant women received prenatal care. Approximately 93% of all births took place in a public hospital and 5% in other facilities.

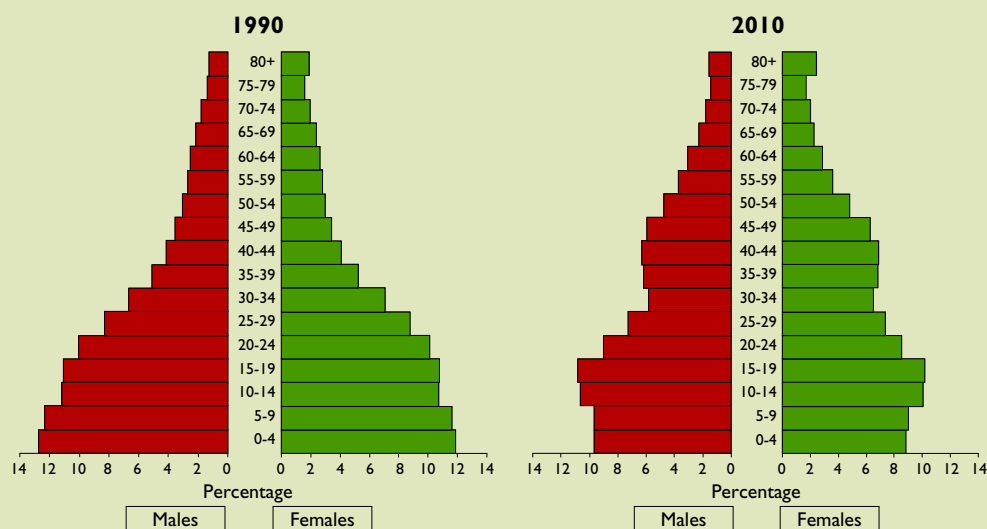
The National Health Fund (NHF) subsidizes 800 prescription drugs, while the Jamaica Drugs for the Elderly Program (JADEP) provides 72 essential medicines free of

charge to people over 60 who suffer from any of 10 chronic diseases.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The Ministry of Education plays an important role in developing and training health professionals. The Hospital of the University of the West Indies (UWI) is the main institution for educating and training physicians, while the Nursing School of the UWI is the main institution for training nurses.

Population structure, by age and sex, Jamaica, 1990 and 2010.



## MAIN CHALLENGES AND PROSPECTS

Preventing and controlling the social problems affecting Jamaican youth is a major challenge that must be addressed by all sectors. Youth unemployment fuels crime, antisocial behavior, and gang activity and young people dropping out of school leads to serious economic losses. The lifetime income of men who drop out of school is estimated to be as much as US\$ 157,000 lower than that of their counterparts who stay in school; the comparable figure for women is US\$ 115,000.

Significant annual emigration (7.4 migrants per 1,000 population in 2009) adversely impacts family life, the labor market, and the economy, and must be considered in worker retention strategies, especially for skilled labor.

The main reasons for deteriorating air quality are industrial and vehicle emissions, field burning of sugarcane, and the open-air incineration of solid waste. The country has 57 air quality monitoring stations. A total of 3,056.31 tons of pesticide were imported in 2010. Adopting environmentally friendly agricultural practices would reduce future imports of pesticides.

Deforestation, the destruction of wetlands, the elimination of marine grasses, and the degradation of coral reefs have resulted in a loss of biodiversity. Continuous road construction has led to selective logging and deforestation. This in turn causes soil erosion, excess sedimentation of waterways, and flooding in low-lying areas.

Tourism has been developed in especially vulnerable coastal areas. Jamaica is at risk to natural hazards such as hurricanes, tropical storms, floods, and earthquakes. Tropical Storm Nicole caused major damage on the island in 2010, and resulted in the death of 16 people.

Adult prevalence of HIV/AIDS in Jamaica is 1.6%, but there are groups at higher risk. Among men who have sex with men, 31.8% are HIV-positive. The percentage of sex workers, crack users, and prisoners infected is 4.9%, 4.5%, and 3.3%, respectively. From 1982 to 2009, a total of 14,354 cases of AIDS were reported, with 7,772 deaths. This disease is the second leading cause of death among adults aged 30–34.

In 2009 more men than women died: 9,893 compared to 7,660. That same year, most deaths occurred in people over the age of 75 (34% men and 50% women). Cancer mortality in men was 1.4 times higher than in women. The opposite occurred with diabetes, where mortality in women was 1.6 times higher. Cerebrovascular

disease was the leading cause of death in women and the second leading cause in men. Men were at significantly higher risk of death by homicide or accident.

In 2009, 2,849 people over age 5 died from malignant neoplasms (21% of all deaths). Among men, the leading causes were lung, prostate, and stomach cancer, non-Hodgkin's lymphoma, and leukemia. Among women, the main causes were breast, cervical, colorectal, uterine, and lung cancer.

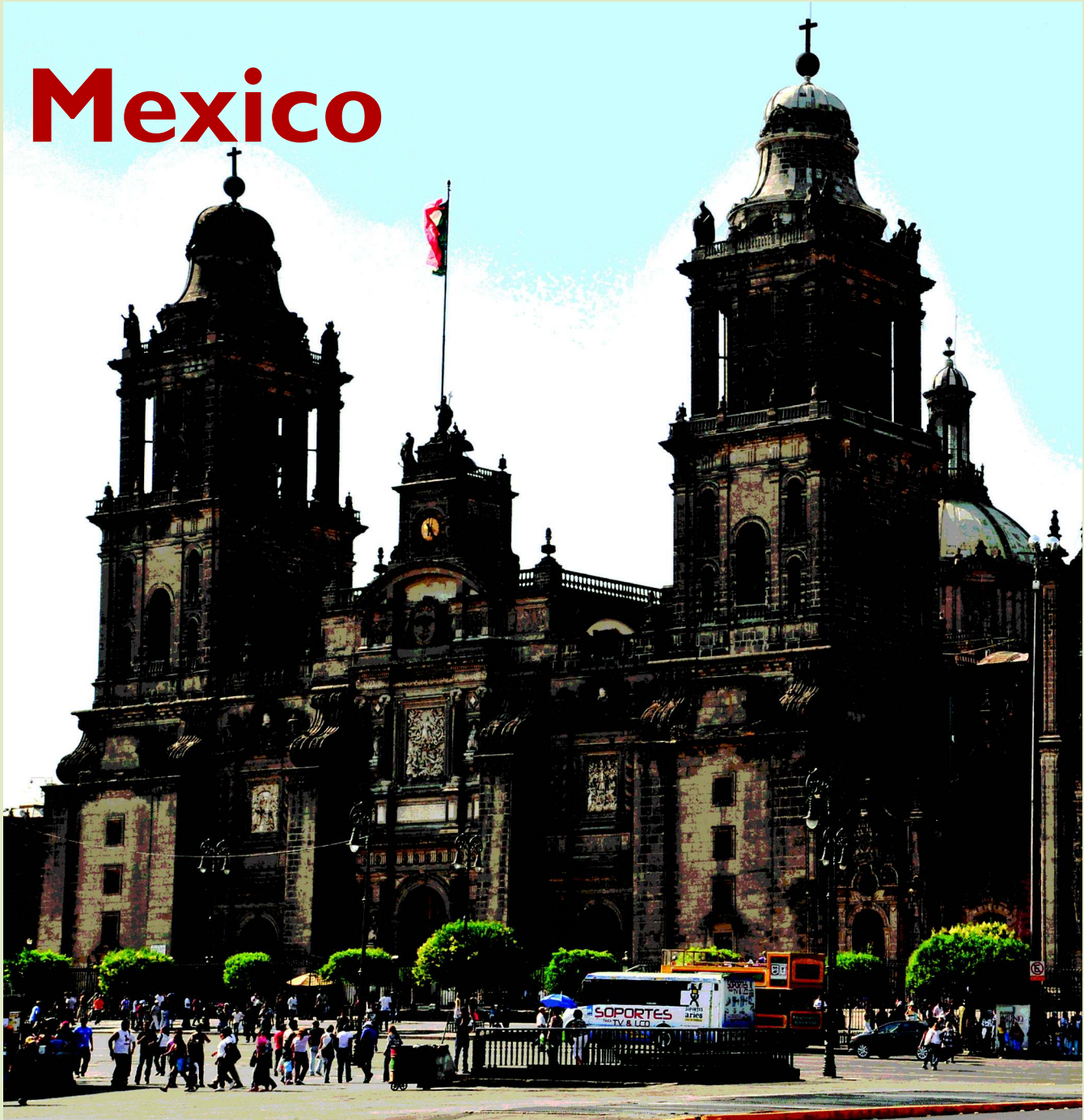
In 2009, the homicide rate was 62 per 100,000 population. Death due to violence is concentrated among men aged 15–29. Violence is perpetrated by men against men, the poor against the poor, and youth against youth. The ratio of men to women who commit serious crimes is 49:1. In 2001, the cost of crime and violence was estimated at 3.7% of GDP.

In terms of morbidity, communicable diseases, including reemerging ones, and the high prevalence of chronic, noncommunicable diseases pose a major challenge. Between 2000 and 2008, prevalence of diabetes rose from 7.2% to 7.9%, hypertension from 20% to 25%, obesity from 9.7% to 25%, and sedentarism from 17% to 30%. According to the survey on health and lifestyles, the prevalence of chronic, noncommunicable diseases and risk factors is on the rise. Surveys from 2000 and 2008 show few changes in health-related behaviors.

The numbers and geographic distribution of health service personnel do not match epidemiological and medical needs in Jamaica, nor is there a good balance of staffing between the public and private sectors. Retention of health service personnel is a challenge given that they emigrate (especially nurses and physicians) or move to the private sector. Obstacles to hiring and retention efforts are related to working conditions and compensation. In specialties such as psychiatry and radiology there is a shortage of trained professionals. It is difficult to staff health facilities in hard-to-reach areas, despite the incentives offered.

The Vision 2030—Jamaica National Development Plan focuses on restructuring the health system, emphasizes the government's responsibility in meeting the health needs of the people, recognizes determinants of health, and promotes cost-effectiveness in health services. In the context of the plan, it is important to adopt a strategy that promotes health and healthy lifestyles, to strengthen primary care service delivery, and to forge partnerships between the public and private sectors and civil society to improve governance, management, and outcomes in the health sector.

# Mexico



Mexico is located in the southern portion of North America. It shares a border with the United States of America to its north, and with Belize and Guatemala to its east; it has coasts on the Gulf of Mexico, the Caribbean Sea, and the Pacific Ocean. The country extends for 1,972,550 km<sup>2</sup> and encompasses a diverse geography from coastal areas to mountains and a variety of climactic zones. It is governed as a representative and democratic federal republic, with executive, legislative, and judicial branches. The country's political and administrative structure includes the Federal District (Mexico City, the capital), 31 states, and 2,438 municipios.

In 2009, the Mexican economy suffered the effects of the international financial crisis as well as the influenza A(H1N1) epidemic, with a 6.5 % contraction in the gross domestic product (GDP) that year. The 2010 census confirmed that Mexico continues to be a country with a young population: half of the country's population is 26 years old or under, and 29% is 14 years old or under. In 2008, 50.6 million Mexicans were considered to be poor, and 19.5 million were extremely poor. The proportion of the population that is economically active is estimated at 57.5%, and a growing share (28.5%) of this population works in the informal economy. The unemployment rate in the country is estimated at 5.2%.

The country has experienced noteworthy progress in health. For example, maternal mortality fell from 55.6 to 53.2 deaths per 100,000 live births between 2007 and 2009, and infant mortality declined from 15.9 to 14.9 deaths per 1,000 live births between 2006 and 2009.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Advances were made in housing quality as well as in access to drinking water, with 69.7% of households now having a connection to a potable water network.

In 2010, the literacy rate among persons 15 years old or older reached 93.1% (94.4% for men and 91.9% for women), and with that group having an average of 8.5 years of schooling.

The 2010 national occupation and employment survey found that 59.2% of the population 14 years old and older was economically active (94.7% employed and 5.3% seeking work).

With support from the United States, the fight against transnational crime continues through the Mérida Initiative. The temporary agricultural workers program cosponsored by Canada is also still operating.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2009, potable water coverage was 90.7% (94.3% urban and 78.6% rural). Sewerage coverage had reached 86.8% (93.9% urban and 63.2% rural). The total amount of urban solid waste generated is estimated to be 34.6 million tons per year (53% organic waste, 28% potentially recyclable waste, and 19% unusable). Solid waste accounts

### Selected basic indicators, Mexico, 2008–2010.

Indicator	Amount
Population 2010 (millions)	112.3
Poverty rate (%) (2008)	47.4
Literacy rate (%) (2010)	93.1
Life expectancy at birth (years) (2010)	76.7
General mortality rate (per 1,000 population) (2009)	4.8
Infant mortality rate (per 1,000 live births) (2009)	14.9
Maternal mortality rate (per 100,000 live births) (2009)	53.2
Physicians per 1,000 population (2008)	1.4
Hospital beds per 1,000 population (2009)	1.6
DPT3 immunization coverage (%) (2010)	95.0
Births attended by trained personnel (%) (2009)	97.4

for 87% of the total waste generated, of which 64% is sent to sanitary landfills, 21% to controlled sites, and the remaining 15% put in open dumps or uncontrolled sites.

## HEALTH CONDITIONS AND TRENDS

In 2010, infant mortality fell to 14.2 deaths per 1,000 live births. If the recent downward trend continues through the end of 2012, it is expected that the goal of reducing infant mortality by 40% in the 100 municipalities with the lowest human development index (HDI) will be achieved.

The incidence of dengue dropped by 48% from 2009 to 2010, and with a low case-fatality rate maintained. A large part of the country is in a position to be certified as malaria-free. The incidence of onchocerciasis, a disease in the process of being eliminated, dropped from 92 confirmed cases in 2006 to 8 in 2010. Detection and treatment have been strengthened for both Chagas' disease and leishmaniasis. The incidence of leprosy remains low, and control and elimination activities are continuing.

## HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Secretariat of Health performs the steering role in the sector. The National Health Council promotes this function in the 32 federative entities. The National Health Program 2007–2012 and the Sectoral Health Program 2007–2012 guarantee access to basic services and reduce inequalities through interventions with vulnerable groups. The federal “Opportunities” and “Food Support”

### Obesity and Excess Body Weight: An Urgent Public Health Challenge in Mexico

The number of obese and overweight people in Mexico has tripled over the last 30 years. Currently more than 71% of the adult population is overweight: 39.5% are overweight (body mass index 25–29 kg/m<sup>2</sup>) and 31.7% are obese (body mass index ≥ 30 kg/m<sup>2</sup>).

Almost an epidemic in the country, obesity is a risk factor that can lead to the development of not only pathologies (such as diabetes and cardiovascular diseases) but also shorter life expectancy, and it can also affect quality of life.

Control of noncommunicable chronic diseases is considered to be the major public health problem in Mexico. This is especially true for diabetes mellitus, which affects 14% of adults. In 2009 it caused 78,121 deaths and for several years it has been the leading specific cause of death in the general population.

In 2010, the National Agreement on Nutrition and Health was approved, a strategy to combat overweight and obesity that is now under way.

programs provide money, food, scholarships, and free health packages to 5.8 million poor households. In 2009, spending in health was equal to 6.9% of the gross domestic product, although 47.7% of the total came from out-of-pocket expenses, 59% of which was for buying medications.

The vaccination series, which includes ones for rotavirus and pneumococcus, is one of the most complete in the Region of the Americas. The program has high coverage levels, and strategies are in place to maintain it.

Between January 2009 and August 2010, 72,731 confirmed cases of influenza A(H1N1) were reported, with a high case-fatality rate.

With the 2008 approval of the general tobacco control law, significant progress has been made toward compliance with the commitments of the WHO Framework Convention on Tobacco Control.

Some 45.2 million Mexicans used health services in 2010. Of these, 42.7 million used the services through Popular Insurance, the federal and state secretariats of health, and the Opportunities program. Popular Insurance supported 275 interventions that are included in the Universal Health Services Catalog, which in 2010 represented 100% of primary care, 95% of secondary care, and 60% of illnesses involving catastrophic spending. Health coverage is complemented with Health Insurance for a New Generation, which since 2006 has provided protection beginning at birth for 5 million children. The country has 20,002 outpatient and hospitalization facilities and 62,239 clinics, 30% with general or family practitioners.

According to the Fifth Task Report of the Secretariat of Foreign Affairs of Mexico, the country made progress in its joint efforts with Mesoamerican regional agencies to reach approval for a governance structure for the Mesoamerican Public Health System (SMSP). Through these collaborative activities, 332 staff members from the countries of the region have received training.

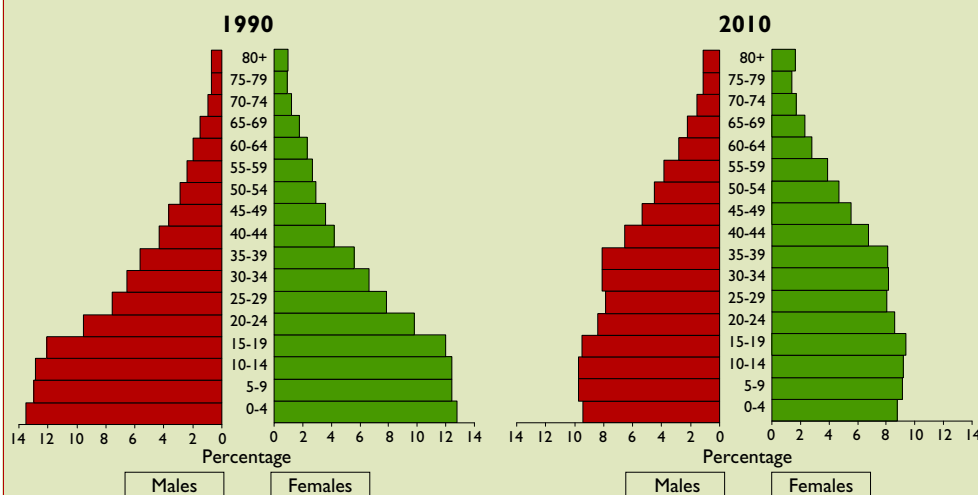
Mexico has had good results with immunization coverage against measles, prevalence of underweight in children under 5, average number of prenatal checkups in public health institutions, treatment provided in confirmed cases of malaria, and HIV/AIDS prevalence.

Other indicators have also improved, such as infant mortality, mortality in children under 5, deliveries attended by skilled personnel, prevention and control of dengue, and mortality from tuberculosis in all its forms.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

According to the Fourth Report of the Federal Government (2010), the National Council of Science and Technology granted 35,000 fellowships for graduate studies, 68% for students in scientific areas. This demonstrates a

Population structure, by age and sex, Mexico, 1990 and 2010.



greater emphasis on providing opportunities for students to receive quality training in strategic areas of development. According to the Information System on Science and Technology, in 2010 Mexico had 16,598 researchers accredited by the National Research System (66.75% men and 33.25% women).

## MAIN CHALLENGES AND PROSPECTS

From 2006 to 2008, the incidence of general poverty (the proportion of poor people) rose from 42.6% to 47.4%, while extreme poverty rose from 13.8% to 18.2%. The million poorest Mexicans live in 100 municipalities, predominantly indigenous municipalities (in the states of Chiapas, Oaxaca, Guerrero, and Veracruz). Infant mortality in these municipalities is 1.7 times higher than in the rest of the country, and life expectancy is lower: only 51 years for women and 49 for men (compared to the national level of 77.4 and 72.6, respectively).

Gender-based inequalities persist. For example, 2.5 million more women than men live in poverty; 8 million more women than men work without health insurance or pension benefits; and more women over age 15 are illiterate (7.6% of women vs. 4.8% of men). The illiteracy rate of the indigenous population over 15 years old is 32.5%. In some cases the illiteracy rate of indigenous women is two to three times that of indigenous men.

The principal mode of land transport is the private car, a method that has various negative consequences, including accidents, traffic congestion, and high emission of polluting gases. In Mexico City in 2008, moving vehicles (private cars, cargo vehicles, and buses) were responsible for 16.1% of the PM<sub>10</sub> emissions and 51.8% of the PM<sub>2.5</sub> emissions, as well as 49.3% of the sulfur dioxide, 99% of the carbon monoxide, 82.4% of the nitrous oxides, and 20.6% of the toxic pollutants. Successfully reducing the pollution generated by these sources is an urgent challenge.

Every day 50 people die from violence, 1,250 receive medical treatment, and 100 suffer some type of disability. Murders related to drug trafficking have increased drastically. The financial cost of the insecurity in Mexico was estimated at 8.9% of the GDP in 2009.

Maternal mortality is a priority challenge. Between 2006 and 2008, it increased 12.3% in the 40 municipalities with the lowest HDI. Although overall infant mortality

has dropped, the rate in the low-HDI municipalities is 2.2 times above the national average.

Mortality from breast cancer in women 25 years old and older has been rising, reaching a rate of 16.9 deaths per 100,000 women in 2009. However, deaths from cervical cancer dropped by 32% over the 2000–2009 period, with a rate of 13.6 per 100,000 women in 2009.

Underreporting of deaths is estimated at 1.5%. Ill-defined causes account for 1.9% of total deaths. Between 2006 and 2008, noncommunicable diseases and injuries were responsible for 84% of the deaths. Adolescents are involved in 34.1% of traffic accident fatalities.

Tuberculosis is a public health priority; 18,850 new cases were reported in 2010 and 2,222 deaths in 2009. In 2009, 59% of the people living with HIV did not know it, and 14% of the persons who had been diagnosed as carriers were not yet receiving treatment.

The incidence of diabetes increased from 2000 to 2009, and this emerging problem must be tackled. Diabetes caused 78,121 deaths in 2009, making it the leading cause of death for the country. Mortality from ischemic heart diseases varies significantly from state to state. The highest rate is in Sonora (26.3 deaths per 100,000 population), and the lowest in Quintana Roo (7.3 deaths per 100,000 population).

Tobacco is responsible for 60,000 deaths annually in Mexico, where 14 million people between 12 and 65 years old smoke. Alcohol consumption is the most common cause of death among the young, as well as the fourth most common cause in the general population.

The disparate standards and operating norms at health institutions are among the biggest problems to be solved in order to functionally integrate the national health system. Segmentation in the national health system leads to gaps in people's access to health care services, and it reduces cost-effectiveness. Given this situation, it is a challenge to harmonize the treatment provided by the different entities around the various state secretariats of health with the treatment from the decentralized public agencies and the social security actors at this level.

In the health sector there are no human-resource policies or master plans to guide the education of professionals in line with the sector's priority needs. Current challenges include the need to adequately assess family doctors, nurses, and the health team as a whole.

Among the main challenges for the future are reducing maternal mortality and preventing and controlling noncommunicable chronic diseases.

# Montserrat



Montserrat is an overseas territory of the United Kingdom located at the northern tip of the Leeward Islands in the Eastern Caribbean, 43 km from Antigua and 70 km from Guadeloupe. Volcanic in origin, it covers 102 km<sup>2</sup> and has three mountainous regions. The Soufrière Hills volcano (914 m), active since 1995, has caused severe ecological damage and a mass population exodus. The southern part of the island, including the capital city of Plymouth, is now virtually uninhabited. Brades is the temporary seat of government. The island is vulnerable to hurricanes and earthquakes. Of the three parishes, only Saint Peter has an established population, since the other two are within the volcano exclusion zone.



**Selected basic indicators, Montserrat, 2007–2011.**

Indicator	Value
Population 2010 (thousands)	4.9
Poverty rate (%) (2011)	36.0
Literacy rate (%)	...
Life expectancy at birth (years) (2010)	72.9
General mortality rate (per 1,000 population) (2008)	8.7
Infant mortality rate (per 1,000 live births) (2007)	23.2
Maternal mortality rate (per 100,000 live births) (2009)	0.0
Physicians per 1,000 population (2010)	1.2
Hospital beds per 1,000 population (2009)	6.0
DPT3 immunization coverage (%) (2009)	100.0
Births attended by trained personnel (%) (2009)	100.0

The island of Montserrat became a British colony in 1632 and is currently an internally governed overseas territory of the United Kingdom. Its government is responsible for foreign affairs, defense, domestic security, public services, and extraterritorial financial services.

Montserrat made great strides in the area of health during 2006–2010. High vaccination rates have made for low morbidity and mortality from vaccine-preventable diseases. Maternal and child mortality rates are also low. Pregnant women are seen in prenatal clinics by staff trained in obstetric care who also attend deliveries.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Montserrat has a small and open economy. It has few natural resources to rely on. The economy grew between 2006 and 2008, but the world economic crisis caused a downturn in 2009 and 2010. Inflation was under 5% throughout the 2006–2010 period. The proportion of population below the poverty line was 36.0% in 2011. In 2006 there were 3,006 people in the workforce, and the unemployment rate was 13.7%. Primary school enrollment was 99.3% in 2006 and 96.2% in 2007.

## THE ENVIRONMENT AND HUMAN SECURITY

In 2010, the entire population had access to drinking water sources and improved sanitation facilities. Solid waste is eliminated safely throughout the territory. Household solid waste is collected and disposed of by private contractors.

### HEALTH CONDITIONS AND TRENDS

The territory has been successful in the area of maternal health. All pregnant women received prenatal care and all deliveries were attended by trained professionals. All pregnant women were screened for HIV and other sexually transmitted infections during the period from 2007 to 2010. Between 2006 and 2009 there were no maternal deaths. A total of 281 live births were reported in 2006–2010. One infant death was reported in 2006 and another one in 2007.

There were no cases of malaria between 2006 and 2010, and only two cases of dengue. There have been no cases of rubella or measles in the last 25 years.

Ten people were found to be seropositive for HIV in the 2006–2010 period, and HIV incidence declined from 0.43 in 2006 to 0.2 in 2010. One case of tuberculosis, the only one during the period, was diagnosed in 2007.

### Life After the Volcanic Eruption

*The Government of Montserrat prepared the Sustainable Development Plan for 2008–2010, which establishes two pillars for realizing the vision of “A Healthy Montserrat.” The Plan’s first objective is to see that the population is prosperous and viable, and the second objective is to ensure that the health care system is comprehensive and accessible.*

*Accordingly, the Ministry of Health and Community Services has launched a series of initiatives to examine and improve the quality of health services. The improvements, which can already be seen, include greater opportunities for training and a thorough review of policies and levels of action for delivering care.*

*Additional improvements are being considered under the Strategic Development Plan of the Ministry of Health and Community Services and the Project for Health Sector Support for 2011–2014, a collaborative effort between the governments of Montserrat and the United Kingdom. These improvements include strengthening community programs with prevention activities and better management of chronic, noncommunicable diseases, as well as increased attention to the needs of the elderly. The project will also provide support for strengthening the legal framework within which health care is provided.*

## HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

In 2006, the budget for health was US\$ 5.24 million. This amount increased to US\$ 5.88 million in 2007 and US\$ 5.96 million in 2008. The percentage of the total budget allocated to health was 16.2% in 2008.

The territory has no national health insurance program. For the most part, the inhabitants of Montserrat pay for their own health care. However, some groups are exempt from paying, including children, pregnant women, students, the poor, and prisoners.

Montserrat participates in the Pharmaceutical Procurement Service of the Organization of Eastern Caribbean States. Medicines are subsidized in the public sector, and many inhabitants receive them at no cost.

## KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The health monitoring system was updated by the Caribbean Epidemiology Center (CAREC) in 2008, so that it now reports timely data on all diseases under surveillance in the Caribbean.

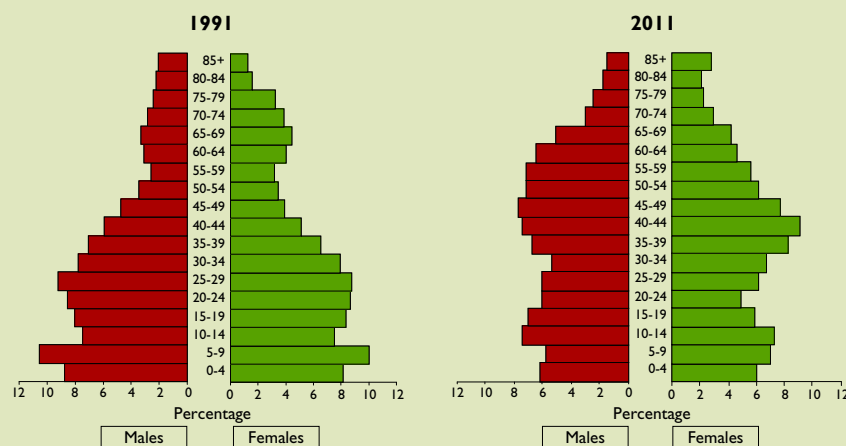
Research and scientific output from 2006 to 2010 included participation in the Global School-based Student Health Survey (2008) and a survey of knowledge, attitudes, beliefs, and practices regarding HIV among the students graduating from the Montserrat High School (2006 and 2007).

## MAIN CHALLENGES AND PROSPECTS

Despite development policies during the recent period, poverty continues to be a serious challenge. Poverty is most prevalent in children under 15 (45.0% of their age group), and 25.0% of the heads of household are poor. In addition, inadequate housing remains a problem for some of the population.

Montserrat is vulnerable to several types of natural disasters. Although the most serious threat is volcanic activity, the territory is also susceptible to cyclonic winds

Population structure, by age and sex, Montserrat, 1991 and 2011.



and storm surges associated with hurricanes, as well as earthquakes. In addition, it has environmental health problems as a result of volcanic ash, which are subject to surveillance.

The continuous threat posed by the Soufrière Hills volcano, which began to erupt in 1995, has effectively limited the possibility of economic growth, since it is difficult to maintain the population and the economy at acceptable levels. The population resides in the northern part of the island, which is considered safe. Volcanic activity has deforested most of the mountains and the southern part of the island. Erosion is a cause for concern in places where slopes have been cleared for cultivation.

The main causes of mortality during the 2006–2010 period were chronic, noncommunicable diseases: diabetes (46 deaths), ischemic cardiopathy (33), hypertensive disease (20), and cerebrovascular disease (17). There were 24 deaths due to malignant neoplasms; 5 of these deaths were due to prostate cancer and 5 to breast cancer.

Diabetes was the leading cause of hospitalization between 2006 and 2010, with a total of 307 admissions. This disease was also the main cause of mortality, with 46 deaths. Hypertension was the second leading cause of hospitalization, accounting for 276 admissions.

The Global School-based Student Health Survey revealed that approximately one-third of all students have been physically attacked at least once.

Montserrat passed legislation on mental health treatment in 2006 and a draft mental health plan in 2002, but it does not have a mental health policy. There is no psychiatric hospital, and mental health services are community-based. The mental health service unit consists

of two specialized mental health nurses and an invited psychiatric consultant.

In 2008, one-third of schoolchildren between the ages of 13 and 15 had consumed at least one alcoholic beverage a day during the month prior to the survey, and 28% of the schoolchildren stated that they had been drunk at least once in their life. During the 12 months before the survey, 16.4% (8.3% of boys and 23.9% of girls) had considered suicide.

Thanks to its small population, the territory has an effective primary health care system, but the secondary and tertiary health care establishments are still inadequate. One of the objectives of the Sustainable Development Plan for 2008–2020 is to guarantee access to affordable secondary and tertiary health care by 2020. Currently, when patients require tertiary health care or specialized diagnostic tests, they are sent abroad. From 2006 to 2010, a total of 58 patients were referred to facilities outside the territory.

The shortage or lack of health professionals creates serious problems for the health sector. Because the population is so small, there is not enough work for health personnel to keep their skills up to date, and there is not a large enough pool of health workers to replace employees who leave.

Montserrat does not have a formal health research program, and various factors in the health sector constrain

the generation of information. The territory lacks a strategic health information plan to coordinate the production, analysis, dissemination, and use of data.

Building on the success that has been achieved so far, Montserrat continues to improve the health status of its population. While progress has been made in communicable diseases, more emphasis needs to be placed on chronic diseases such as diabetes and hypertension, and measures are needed to address the associated risk factors (smoking, lack of physical activity, and obesity). In line with the foregoing, it should be kept in mind that the population of Montserrat is aging, which has consequences for health services delivery and entails the added cost of treating chronic diseases and the need for support systems for the elderly.

Several factors can be expected to increase health costs, including the use of new technology, the improvement of health facilities, and the adoption of incentives to attract and retain health professionals. In addition, one of the stated objectives is to improve access to secondary and specialized health care services. Finally, strategies are needed to mobilize funds for the health sector and improve efficiency. A shift in focus to health promotion and collaboration will be important for improving the health of the Montserrat people.

# Netherlands Antilles



Between 1954 and October 2010, the Netherlands Antilles was an autonomous territory of the Kingdom of the Netherlands. It is made up of five islands: Bonaire and Curaçao (the southern Leeward Islands) and Saba, Sint Eustatius, and Sint Maarten (the northern Windward Islands). (Sint Maarten occupies 40% of an island shared with the French territory of Saint-Martin.) In 2010, the Netherlands Antilles was dissolved, and Curaçao and Sint Maarten became autonomous countries within the Kingdom of the Netherlands, while Bonaire, Sint Eustatius, and Saba became special municipalities of the Netherlands. The islands' new status will remain at least until 2015.

Up to its dissolution as a territory of the Netherlands in 2010, the Netherlands Antilles had the right of self-determination in internal affairs, and had its own constitution. However, it delegated defense, foreign policy, and judicial affairs to the Kingdom of the Netherlands. Its Governor was a representative of the reigning monarch of the Kingdom of the Netherlands. The seat of the central government, which was parliamentary in form, was in Willemstad, Curaçao. Each island had a local government as well, with an island council and legislative assembly.

Between 2006 and 2010, the Netherlands Antilles continued making advances in health. Contributing to this were a relatively high degree of economic development, high coverage by the social security system, a well-developed health care network, and close relations with the Netherlands, which helped alleviate the impact of the economic crisis that occurred during this period.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

In 2009, the unemployment rate was 9.7% in Curaçao, 12.2% in Sint Maarten, 6.3% in Bonaire, 6.2% in Saba, and 8.3% in Sint Eustatius. In Curaçao, unemployment was higher for women (11.3%) than men (7.9%), and was 24.7% among young people. The adult literacy rate in 2009 was 96.4%, with little difference between the sexes. High school enrollment was 78%, and the average number of years of schooling for adults of both sexes was approximately 14 years.

Through a variety of public services, the social security system guaranteed every family a minimum of resources to meet its basic needs. The territory's social security institutions had premiums and subsidies that varied in amount and by types of beneficiaries, including the elderly, widows, orphans, and private-sector workers. A housing subsidy was provided for some low-income groups.

### THE ENVIRONMENT AND HUMAN SECURITY

Sint Maarten, Curaçao, and Bonaire depend on water provided

#### Selected basic indicators, Netherlands Antilles, 2001–2010.

Indicator	Value
Population 2010 (thousands)	197.6
Poverty rate (%)	...
Literacy rate (%) (2009)	96.4
Life expectancy at birth (years) (2010)	76.9
General mortality rate (per 1,000 population) (2010)	6.3
Infant mortality rate (per 1,000 live births) (2009)	8.0
Maternal mortality rate (per 1,000 live births) (2005)	13.3
Physicians per 1,000 population (2001)	1.6
Hospital beds per 1,000 population	...
DPT3 immunization coverage (%) (2009)	93.6
Births attended by trained personnel (%) (2008)	90.0

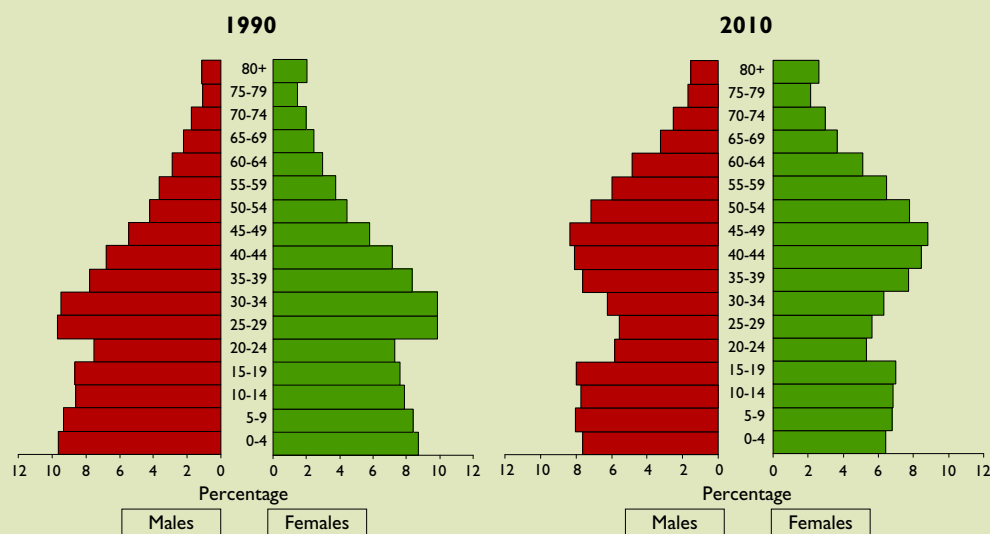
by desalination plants; drinking water on Sint Eustatius and Saba comes mainly from cisterns or groundwater. Curaçao and Sint Maarten have wastewater treatment plants, while the other islands depend largely on septic tanks.

There is a system to monitor air and water pollution from oil (the presence of a local refinery poses a risk), as well as other environmental risks. A preparedness plan for possible emergencies is also in place.

### HEALTH CONDITIONS AND TRENDS

Maternal and child health, which was relatively good in the former Netherlands Antilles, is related to the high coverage and quality of maternal, child, and pediatric health services. The maternal mortality rate was 13.3 deaths per 1,000 live births in 2005. Approximately 90% of births took place in hospitals.

#### Population structure, by age and sex, Netherlands Antilles, 1990 and 2010.



### Health Funding in the Netherlands Antilles

The principal institution that financed health care in the former Netherlands Antilles was the Social Insurance Bank (SVB), which provided compulsory health insurance coverage for employees in the private sector, and covered 36.4% of the population as of 2001.

The *Pro Pauperi* system covered 16.3% of the population through local governments, providing health care insurance to the unemployed, the very-low-income population, and private-sector retirees who lacked insurance coverage.

The government of Curaçao was responsible for providing health insurance to government employees and pensioners in the island's oil sector. The central government provided health insurance for 15.4% of the population, including disability insurance coverage.

Private health insurance (covering 10.6% of the population) was purchased by people whose yearly income was above the maximum for eligibility for the insurance provided by the Social Insurance Bank.

Health care facilities received direct payments for their services when applicable, or billed the relevant insurance institution.

Although the annual number of infant deaths was small in the reporting period, the infant mortality rate fluctuated, from 13 deaths per 1,000 live births in 2007 to 8 per 1,000 in 2009. The leading causes of death in children under 1 year were respiratory diseases and congenital malformations.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

In 2009, spending on social services and health represented 6.7% of the gross domestic product (GDP). Most inhabitants were covered by health insurance through a series of institutional provisions. The main institutions funding health care were the Social Insurance Bank, the *Pro Pauperi* system, the central government of Curaçao, and the private health insurance sector.

The distribution of human resources in health in the Netherlands Antilles was adequate for covering the size of population and staffing the health care facilities on each island, with an overall ratio of 1.6 physicians per 1,000 population. Most general physicians and specialists, including public health specialists, received their training in the Netherlands, with a small proportion trained in other European countries, the United States, or Latin American countries.

Pharmaceuticals and medical supplies were imported by private firms and distributed through hospitals, doctors' offices, and pharmacies. New drugs were required to be officially registered with the Department of Public Health and Environmental Protection. However, the pharmacies of the principal hospitals were allowed to dispense unregistered drugs.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Up-to-date epidemiological information, on communicable diseases in particular, was reported directly by the epidemiology and research units within the ministries of health of Curaçao and Sint Maarten.

The majority of the technologies used in the health care system were digital technologies consistent with international standards. This was facilitated by the training that health personnel received in information technology.

### MAIN CHALLENGES AND PROSPECTS

In 2008, 37% of households earned less than US\$ 560 per month, but most families with higher levels of education had monthly incomes of more than US\$ 2,793. The greatest inequality of income and the lowest average income were in Curaçao, where households in the highest income quintile had 14 times more income those in the lowest quintile. Throughout the Netherlands Antilles, approximately 14% of households had monthly incomes of US\$ 280 or less (adjusted for family size); this figure ranged from 5% in Saba to 16% in Curaçao. Some 32% of households reported that their income could not cover all their needs.

Urban and industrial development has had harmful environmental effects—such as air and water pollution and soil contamination—and also has exacerbated solid waste disposal problems.

Dengue is endemic on the island of Curaçao, where a total of 3,457 cases were reported between 2008 and 2010. The majority of cases of tuberculosis reported in the former Netherlands Antilles were on Curaçao, where there were 33 new cases and 5 deaths in the 2006–2010 period. Between 1985 and 2010, 2,147 inhabitants of the Netherlands Antilles tested positive on HIV screening tests; 57.3% were men and 42.7%, women. The majority of the cases were on Curaçao.

Chronic diseases are responsible for the principal burden of morbidity and mortality. According to the latest

available information (1998–2000), diseases of the circulatory system were the leading cause of death, with 195 deaths per 100,000 population (ischemic heart disease accounted for 51.8 per 100,000, and cerebrovascular disease for 54.2 per 100,000). Malignant neoplasms were responsible for 142.6 deaths per 100,000 population, and external causes for 38.6 deaths per 100,000.

According to data from the last available census (2001), 5.1% of the population reported having hypertension (the percentage ranged from 6.7% in Saba to 3.7% in Sint Eustatius), while 3.5% reported suffering from diabetes (ranging from 5.5% in Sint Eustatius to 3.7% in Sint Maarten), 2.8% from asthma or chronic bronchitis, and 1.7% from heart problems.

The prevalence of risk factors in the population is high. According to findings from a series of studies conducted on the islands in 2001, 69.1% of the population consumed alcoholic beverages habitually, and the majority had poor eating habits, with low consumption of vegetables (57.2%) and fruits (46%). Moreover, 26% habitually engaged in very little physical activity, and 16.9% smoked.

Until October 2010, the Ministry of Public Health and Social Development of the Netherlands Antilles was located in Willemstad, Curaçao. It included a Public Health Bureau, a Bureau of Social Development, a Support Office, and a Public Health Inspectorate. The provisions for implementing the new national ministries of health in Curaçao and Sint Maarten include assigning new functions to civil servants at the central level and in the island municipalities.

With the dissolution of the Netherlands Antilles and the establishment of new national health systems in Curaçao and Sint Maarten, the islands confront organizational and public health challenges associated with the new health

institutions that are being implemented. The challenges in terms of health spending and systems stem from the epidemiological transition and problems such as obesity and chronic diseases.

As regards population size and the availability of human resources in health, nearly 90% of health care personnel are concentrated in Curaçao, and the availability of physicians on the other islands with smaller populations was limited. This may pose problems in terms of the distribution of health care personnel in the future, especially in light of the new status of the smaller islands as municipalities.

Health care priorities on Curaçao include building a new hospital, increasing the number of medical specialists both in hospitals and outpatient facilities, and strengthening primary health care.

In the former Netherlands Antilles, plans were in place to make periodic checkups compulsory, but the measure was not implemented. The system of vital statistics also had limitations, which led to incomplete and outdated information on mortality and other statistics at the central office in Curaçao. The development of a new governmental and health authority on Sint Maarten poses the challenge of structuring the health information system of that new country, as well as strengthening the existing system on Curaçao.

The restructuring of the health care systems that is under way will prepare each country and new municipality to confront future challenges. It is to be expected that health insurance systems will emphasize disease prevention and health care coverage. Technical assistance will be needed in order to guarantee the national capacity to implement health projects and plans, as well as to create information and reporting systems.

# Nicaragua



Nicaragua is located in Central America, bordering Honduras on the north and Costa Rica on the south. It covers an area of 130,373.47 km<sup>2</sup> in three geographical regions: the Pacific region (15.2% of the territory and 54% of the population), the Central region (28.4% of the territory and 32% of the population), and the Atlantic region (56.4% of the territory and 14% of the population). Nicaragua is a democratic, participatory, and representative republic with four branches of government: the legislative (unicameral), executive, judicial, and electoral. Its capital is Managua, and its political/administrative divisions include 15 departments, 2 autonomous regions, and 153 municipalities.



**Selected basic indicators, Nicaragua, 2006–2010.**

Indicator	Value
Population 2010 (millions)	5.9
Poverty rate (%) (2009)	44.7
Literacy rate (%) (2010)	96.6
Life expectancy at birth (years) (2010)	74.5
General mortality rate (per 1,000 population) (2007–2009)	4.9
Infant mortality rate (per 1,000 live births) (2006)	29.0
Maternal mortality rate (per 100,000 live births) (2010)	64.7
Physicians per 1,000 population (2010)	0.6
Hospital beds per 1,000 population (2009)	0.8
DPT3 immunization coverage (%) (2009)	98.0
Births attended by trained personnel (%) (2010)	70.8

Nicaragua's constitution established a democratic, participatory, and representative republic. The country is currently going through a process of consolidating peace, strengthening democracy and the exercise of freedom, and economic stabilization. As a young democracy, it is in the process of developing public and private institutions. It has developed a health policy that promotes the multi-sectoral treatment of health risks and problems, expanding coverage by providing free health care, and improving the quality of services.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Indigenous populations and ethnic communities constitute 8.6% of Nicaragua's total population. There are 10 indigenous populations: 6 in the Atlantic region and 4 in the Pacific, Central, and northern regions. The social and health indicators of these groups reveal higher levels of vulnerability and risk than are present in the rest of the population.

During the 2006–2010 period, illiteracy nationwide declined to 3.4%, although illiteracy in the indigenous population above the age of 10 was 25%. The net primary school enrollment rate increased from 86.4% in 2006 to 92.8% in 2010, and for formal

early education the rate increased from 55.3% in 2007 to 56.1% in 2010.

In 2010, the economically active population increased by 290,138 individuals over its 2009 level (women represented 65% of the increase and men 35%). Between 2005 and 2009, the extreme poverty rate dropped by 2.6%, and the general poverty rate by 5.8%. In 2009, the poor population represented 44.7% of the total population; 35% were living in poverty, and 9.7% in extreme poverty. In the country's rural areas, 67.8% of households were poor.

## THE ENVIRONMENT AND HUMAN SECURITY

In 2004, drinking water services covered 95.1% of households in urban areas and 48.5% in rural areas. By 2008, these figures had risen to 98% in urban and 68% in rural areas. In 2008, 63% of urban households had access to sanitation services. In 2007, 66% of urban and 35% of rural households had waste collection coverage.

## HEALTH CONDITIONS AND TRENDS

There was a reduction in infectious diseases, maternal and child health problems, and premature mortality in the 2006–2010 period. Between 2000 and 2009, 996 deaths related to pregnancy, childbirth, and the puerperium were reported. In 2010, 89 maternal deaths were reported, and between 2006 and 2010 the maternal mortality rate dropped from 90 to 64.7 deaths per 100,000 live births.

### Nicaragua's National Health Plan for 2004–2015

*The National Health Plan is the instrument guiding the implementation of the National Health Policy for the 2004–2015 period. The Plan is based on a set of health priorities along with certain challenges that the sector must meet. It defines the results hoped for, as well as the operational aspects of the strategies and interventions to be conducted by the institutions and organizations of the health sector and health system.*

*The National Health Plan establishes goals for the population's health that correspond to those of the National Development Plan, the Millennium Development Goals, and the targets of the Strengthened Growth and Poverty Reduction Strategy. The central premises behind the selection of the National Health Plan's strategies and interventions come from three specific areas: the legal framework of the health sector, the National Health Policy for 2004–2015, and a broad process of consultation with the stakeholders who have an influence on the health sector, all of which help to strengthen the sectoral and intersectoral approach that is necessary to address the health situation.*

Chronic malnutrition in children under age 5 declined from 25.8% to 21.7% between 2001 and 2006. Between 1998 and 2006, mortality in children under 5 declined from 72 to 35 per 1,000 live births, while the infant mortality rate declined from 58 to 29 per 1,000 live births. Between 2007 and 2009, there was an 8% reduction in deaths of children under 5 (from 2,249 to 2,068), while deaths of children under the age of 1 declined by 9.13% (from 1,947 deaths to 1,759).

Malaria is in the pre-elimination phase, and preparations are under way to certify qualifying municipalities as being free from transmission. The annual parasite index moved from 0.56 per 10,000 population in 2006 to 0.10 per 10,000 population in 2010. In 2010, the mortality rate from dengue was 0.15 per 100,000 population, and the case-fatality rate from severe dengue was 26%.

No cases of poliomyelitis, diphtheria, measles, or rubella were reported between 2006 and 2010.

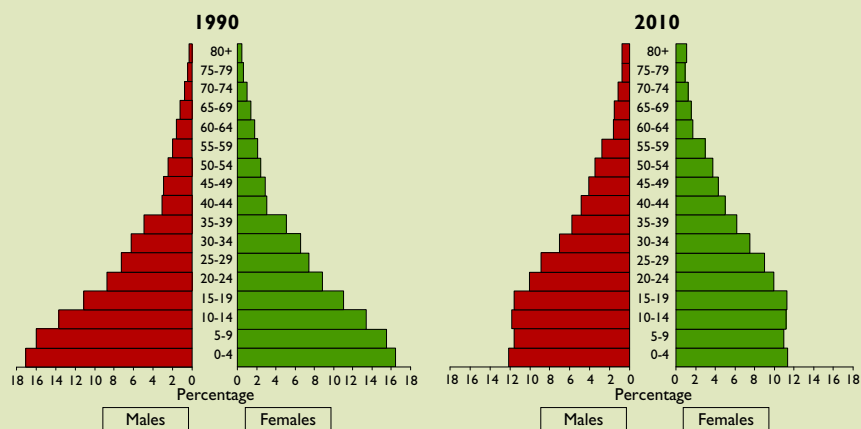
### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Nicaragua's national health policy promotes the multi-sectoral treatment of health risks and problems. The policy also supports expanding free coverage and improving the quality of services through the use of the Family and Community Health Model and the Citizen Participation Model. The National Human Development Plan for 2008–2012 and the National Health Policy for 2007–2011 call for expanding coverage and improving the quality of health services. The National Health Plan for 2004–2015 endeavors to guarantee the right to health by providing equitable, universal, and free access to public health services.

The annual health budget was US\$ 186.8 million in 2010, an increase of 33.5% over 2006. It should be noted that 64.2% of this amount was treasury income, 11.8% was donations, 9.2% was from the World Bank, 7.8% was from the Paris Club, and 2.2% was from the Inter-American Development Bank.

In 2010, the Ministry of Health had 27,294 employees, and there were 5.6 physicians, 4.4 nurses, and 6.4 nursing assistants per 10,000 inhabitants. The

Population structure, by age and sex, Nicaragua, 1990 and 2010.



number of openings for the education of specialized physicians increased from 50 in 2006 to 300 in 2010.

The national drug policy promotes free access to essential drugs and the use of generics, in accordance with the National Strategic Plan for the rational use of drugs. In 2010, the country had 1,563 pharmacies.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Currently, the National Health Library is the principal source of health information. Advances have been made in strengthening the Virtual Health Library in order to enhance information access.

In 2007–2008, a center for advanced technology was established, and in 2010, 6 new primary care hospitals and 14 hospitals at the departmental or national reference level were equipped.

A pilot project was launched to connect 45 sites (departmental headquarters, hospitals, and municipal health centers) in remote areas.

### MAIN CHALLENGES AND PROSPECTS

There are inequalities associated with health determinants that particularly affect Nicaragua's ethnic communities. Poor housing conditions exist for 71% of the Miskito and 82% of the Sumo populations, as compared with 65% of the general population. Overcrowding affects 62% of the Miskito compared to 38% for the country as a whole. Electrical service is lacking for 62% of the Miskito, 90% of the Mayagnas, and 100% of the Rama, as compared with

28% for the country as a whole. Moreover, 47% of the Miskito do not have accessible roads in the rainy season, as compared with 27.3% for the nation.

Annual deforestation is estimated to amount to 70,000 hectares annually. Firewood is used for cooking by 59% of households, which represents annual consumption of 2 million cubic meters of wood. Bosawas, the country's largest forest and biodiversity preserve, lost 32% of its forest cover between 1987 and 2010 due to the lack of a land use policy that would fund agricultural production alternatives and limit the migration of subsistence farmers in search of fertile land.

Nicaragua is subject to natural disasters that represent major financial and material costs, as well as taking human lives. Between 1990 and 2009, economic damage from natural disasters totaled US\$ 2.746 billion. During that period, 61 events were recorded that affected 3.5 million people and caused 17,000 deaths.

Malignant neoplasms, ischemic heart disease, cerebrovascular disease, diabetes, and chronic renal failure are the principal causes of death in Nicaragua. These are diseases with high mortality rates and are responsible for premature deaths. Between 2007 and 2010, these health problems were responsible for 44% of the 72,862 reported deaths (51% of male deaths). During this period, morbidity from ischemic heart disease increased by 11%, cerebrovascular disease by 15%, hypertensive disease by 13%, and heart failure by 3%. There were 18,090 deaths from cardiovascular disease between 2007 and 2010. Also during this period, 5,673 deaths from diabetes were reported, of which 69% were in those 60 years and older, 57% were women, and 79% lived in urban areas. There were 9,042 reported cancer deaths, also in the 2007–2010 period. Fifty-three percent of these deaths were women, 57% were over age 60, and 38% were in the 20–59-year age group.

Chronic malnutrition in children under age 5 persists in rural areas and is twice that of children in urban areas. The risk of malnutrition is 3.4 times greater

for children of mothers who have three or fewer years of education, and 6 times greater in the poorest quintile of the population compared to the wealthiest.

The incidence of HIV infection increased from 7.6 per 100,000 population in 2006 to 16.2 per 100,000 in 2010. The number of HIV tests administered increased from 59,995 to 123,547 between 2005 and 2009, and the proportion of children and adults with HIV who were undergoing antiretroviral treatment rose from 44% in 2007 to 65% in 2009.

Accidents and violence continue to be an important public health problem. There were 107,587 traffic accidents in the 2006–2010 period, with 2,680 deaths and 24,678 injuries. The number of traffic accidents increased 55% during this period, while injuries from traffic accidents rose by 56% and deaths by 21%.

Morbidity and mortality associated with pregnancy, childbirth, and the puerperium, as well as neonatal and infant mortality, should be given high priority. External causes including violence, suicide, and traffic accidents merit special attention. The epidemiological profile of the country is highly complex, and will require effective multisectoral interventions.

The health sector's organization and operation are currently highly fragmented. The network of facilities has major limitations in terms of structure and process, and underreporting in the information system is a constant. All of this affects the capacity of the Ministry of Health to provide effective leadership.

Difficulties in accessing virtual health information and communication persist in several areas of the country.

The main challenge that the country faces is to consolidate and strengthen a participatory democracy that supports the current economic productive model. This will make it possible to maintain political and financial backing for activities that target social sectors where development is lagging, particularly as regards education and health.

# Panama



Panama borders the Caribbean Sea to the north, Colombia to the east, the Pacific Ocean to the south, and Costa Rica to the west. The country covers 75,517 km<sup>2</sup> and has a mountainous terrain bisected by the Panama Canal. It is governed as a democratic unitary republic. The capital is Panama City. The country's political-administrative divisions include 9 provinces; 75 districts or municipalities; 3 indigenous territories known as *comarcas*, which have provincial rank in the system (Guna Yala, Emberá, and Ngäbe-Buglé); and 2 territories with the status of *corregimientos*, or mayoral jurisdictions (Guna de Madungandí and Guna de Wargandí).

Panama is classified as an upper-middle-income country and is experiencing significant economic development associated with the Panama Canal, which connects the Atlantic Ocean and the Pacific Ocean and which is currently undergoing expansion. Despite those strengths, the country faces problems associated with the distribution of wealth, and consequently, disparities in health. In addition, Panama's demographic profile is becoming similar to that of the developed countries, with a growing proportion of adults and the elderly and a shrinking population of young people. In Panama, there has been a decline in avoidable deaths, such as maternal and child mortality, and a growing predominance of chronic diseases—except in the county's indigenous regions, where infectious and parasitic diseases are still the leading causes of death.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

In 2008, 32.7% of the population was living below the poverty line. Over the 2003–2008 period, there had been a reduction in both general poverty (by 4.1 percentage points) and extreme poverty (by 2.2 percentage points). Life expectancy at birth was 75.3 years in 2006 and 75.8 in 2009. Illiteracy declined from 7.6% in 2000 to 5.4% in 2010. The country's indigenous population and people of African descent account for 12% and 9.2% of the total population, respectively. Urban dwellers make up 64.4% of the total population. With regard to employment, 66.4% of men work, as compared to 37.0% of women.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2010, 91.8% of dwellings were connected to a municipal system supplying water that was safe for human consumption, and 94.5% had toilet facilities. However, the corresponding coverage rates for the indigenous population continue to be low.

Panama has a national policy on comprehensive disaster management, enabling it to respond in a timely manner to the frequent emergencies and disasters that occur in the country and to prevent and mitigate their impact on the population.

### Selected basic indicators, Panama, 2008–2010.

Indicator	Value
Population 2010 (millions)	3.4
Poverty rate (%) (2008)	32.7
Literacy rate (%) (2010)	94.6
Life expectancy at birth (years) (2009)	75.8
General mortality rate (per 1,000 population) (2009)	4.5
Infant mortality rate (per 1,000 live births) (2010)	11.9
Maternal mortality rate (per 100,000 live births) (2010)	24.9
Physicians per 1,000 population (2009)	1.4
Hospital beds per 1,000 population (2009)	2.2
DPT3 immunization coverage (%) (2009)	84.0
Births attended by trained personnel (%) (2009)	96.0

## HEALTH CONDITIONS AND TRENDS

The overall maternal mortality rate declined from 83.6 per 100,000 live births in 2006 to 24.9 per 100,000 live births in 2010. However, in the indigenous regions of the country the corresponding rate remained at approximately 90 per 100,000 live births. Overall infant mortality dropped from 14.8 per 1,000 live births in 2006 to 11.9 per 1,000 live births in 2010, although some areas of the country have infant mortality rates far above the national average. Morbidity due to malaria decreased from 50.6 per 100,000 persons in 2006 to 11.9 per 100,000 in 2010. Between 2006 and 2010, a total of 18,987 cases of dengue were reported, with a case-fatality rate of 10.6%. The tuberculosis incidence rate decreased from 52.7 per 100,000 population in 2006 to 40.5 per 100,000 in 2010.

## HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Panama allocates a significant and growing percentage of its gross domestic product (GDP) to health: 8.4% in 2006, 8.6% in 2008, and 10.5% in 2010. Although out-of-pocket expenditures decreased between 2006 and 2010, they have continued to be high. Between 2006 and 2009, spending on public health remained steady, at 14% of total public spending. In 2010, 77.8% of public spending on health went toward the social security system. That same year, Panama's State investment in health amounted to US\$ 962 per capita.

The primary care model governing individual, family, community, and environmental health was formulated in

### Building Innovative Primary Health Care Centers

The Innovative Primary Health Care Centers (Centros de Atención Primaria en Salud Innovador, or MINSA CAPSi) are health care establishments of the Ministry of Public Health that provide the most highly complex health services at the first level of care. CAPSi centers aim to develop new facility models that incorporate human resources and information and communications technology so as to provide the population with comprehensive care through the regional and national service networks.

The creation of CAPSi centers is based on compliance with criteria for the renewal of primary health care, which seeks improvement in the access to and operation of such services, based on meeting pressing needs and priority demands.

The framework of this initiative was put forward by the Renewed Primary Health Care Strategy, based on the individual, family, community, and environmental models developed by the Ministry of Health in 2010; the Strategic Plan of Government; and Executive Decree No. 531 of July 2009. Pursuant to that Executive Decree, work has begun on the construction of and procurement of equipment for 7 hospitals and 35 innovative primary care establishments.

2010. One of its objectives is to provide infrastructure and human resources support that facilitates access to health care services for the indigenous population and people living in remote areas.

In 2010, the Ministry of Public Health began building and procuring equipment for 7 hospitals and 35 innovative primary health care establishments, in order to offer an innovative care model, expand service coverage, and improve access to health care for a variety of population groups.

In 2009, the country had 4,904 physicians, or one for every 704 inhabitants. Nevertheless, 2,561 of these professionals were practicing in Panama City, which thus had a little more than half of the nation's physicians to attend to the needs of a third of the country's total population. In 2008, there were 32.3 physicians per 10,000 persons in Panama City, while in the province of Darién there were only 5.7 physicians per 10,000.

The country has a national pharmaceuticals policy geared toward ensuring access to quality drugs. The policy includes criteria for bioequivalence and interchangeability in order to reduce costs. Within this framework, the Sectoral National Drug Surveillance Commission was established.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

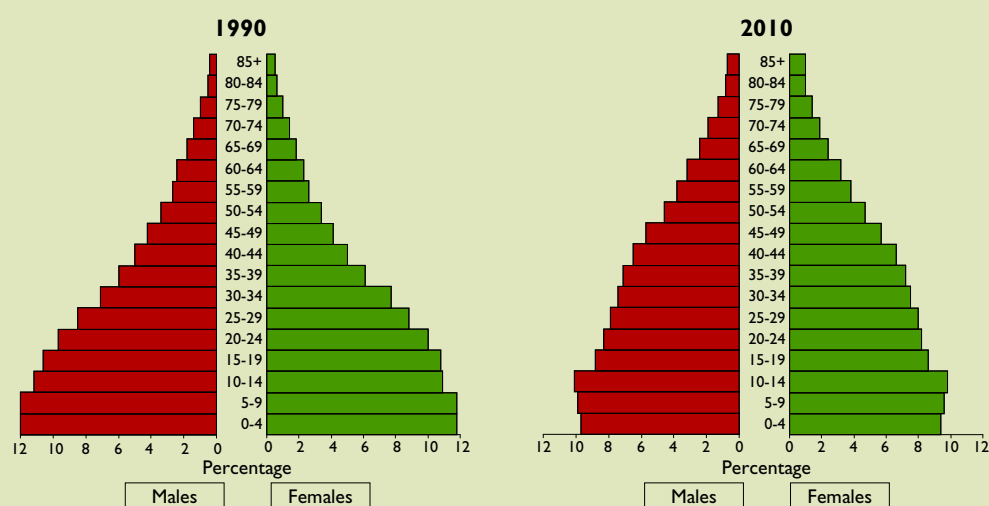
The Ministry of Public Health implemented a virtual hospital network that provides teleradiology service, enabling various hospitals to remain interconnected via the Internet for consultation and diagnostic imaging purposes.

Panama has developed a National Strategic Plan for Science, Technology, and Innovation 2010–2014. Scientific and technical research is governed by the country's National Research System, which is responsible for encouraging research by raising the number and skills of investigators who work on scientific and technological development and by increasing the number of public and private research centers.

The country has progressively incorporated information management tools to improve health care services.

Panama also has a system of technical data sheets on human health products that are available for consultation.

Population structure, by age and sex, Panama, 1990 and 2010.



### MAIN CHALLENGES AND PROSPECTS

According to demographic projections on the gradual aging of the population, in 50 years' time people age 65 and older will make up 17% of Panama's population, indicative of a greater need and demand for social welfare and health care services.

Indigenous and rural populations face substantial inequalities. Protecting these groups with national health programs is both a challenge and a priority. In recent years, poverty affected 17.7% of urban residents, 50.7% of rural dwellers, and 96.3% of the indigenous population.

Life expectancy in indigenous regions of the country is between 7 and 9 years less than the level attained in the rest of the country. Life expectancy in the Emberá indigenous region was 66.2 years in 2007 and 66.9 years in 2009. Similarly, in the Ngäbe-Buglé indigenous region, it was 68 years in 2007 and 68.6 years in 2009.

Between 2007 and 2010, there were 892 emergency or disaster events in Panama. The national emergencies due to floods and landslides in December 2008 and in December 2010 resulted in the loss of human life and health services infrastructure and, for the first time, made it necessary to temporarily close the Panama Canal.

Panama City alone generates between 900 and 1,200 tons of refuse daily. In 2010, most of the country's waste collection sites did not meet the minimum requirements established for controlled landfills.

Arid and degraded lands make up 27% of Panama. These lands are home to approximately half a million people, the majority of whom live in conditions of poverty or extreme poverty. These lands encompass five provinces and an indigenous region. In an effort to preserve the country's forests, Panama increased its percentage of protected areas from 34.3% in 2006 to 38% in 2009.

Although the level of health has markedly improved in recent decades, rural and indigenous populations still encounter major inequalities in health status and in access to health care services. Overall malnutrition levels have decreased, but in the impoverished indigenous areas, malnutrition has actually increased. Low weight-for-age affects 12.4% of children under 5 in those indigenous regions, and low weight-for-height affects 62.0% of them; these values are triple the national levels. According to the WHO reference standard, indigenous children at 5 years of age are 9.2 cm shorter than their counterparts in urban areas and 6.9 cm shorter than children in rural areas. Growth among indigenous children under age 5 is inadequate, but it is even worse among the indigenous children between 12 and 24 months of age.

Diseases of the circulatory system are the leading cause of death in the large majority of the country's provinces. In 2009, mortality due to diseases of the circulatory system was 45.51 per 100,000 population. Mortality due to malignant tumors remained practically

unchanged between 2007 (at 24.64 per 100,000) and 2009 (24.33 per 100,000). In 2009, the incidence of diabetes was 157.5 per 100,000 persons.

The country allocates a substantial percentage of its GDP to health sector spending, but out-of-pocket expenditures continue to be high, and social spending on health has declined. The public health sector provides care to 90% of the population. However, health establishments, services, and human resources are highly concentrated in the urban areas. With this inequitable distribution, the indigenous population and people living in remote areas have limited access to care.

Although the social assistance networks of the Ministry of Public Health and the Social Security Fund are being expanded, their inequitable distribution persists, along with a segmentation in the portfolio of services. Those two entities maintain cross-subsidies, duplicate services, and compete against each other. Moreover, there is no clear separation of functions, thus giving rise to inequity, undermining leadership capacity, and increasing costs.

The indigenous regions have access to outpatient care through a basic services package that applies some degree of cultural adaptation. In general, however, the indigenous population and people living in remote areas lack access to services due to economic and geographical barriers, but especially owing to the lack of infrastructure and available technical personnel.

The availability of skilled human resources and infrastructure to use in endeavors related to science, technology, and innovation is quite limited. The country invests 0.26% of GDP in research, development, and innovation, and has only 476 investigators working on a full-time basis. These are low figures, even for Latin America, where the average investment in research, development, and innovation is 0.7% of GDP.

As Panama's Strategic Plan of Government 2010–2014 is carried out, an important step could be taken to reduce health inequalities. The Plan has two key priorities: human capital formation for development and social inclusion. The social inclusion priority encompasses such concerns as reducing malnutrition; expanding drinking water supply systems; increasing the coverage and enhancing the quality of basic health services; expanding access to decent housing; establishing a system of safe and efficient public transportation; implementing preventive measures on behalf of citizen safety; and strengthening the social protection system.



## Paraguay

Paraguay lies in the central-southeast part of South America and shares borders with Argentina, Bolivia, and Brazil. It covers 406,752 km<sup>2</sup> and has two distinct natural regions: the Eastern Region, which covers approximately 40% of the national territory and has 97% of the population, as well as important water resources and arable land, and the Western Region, or Chaco, with 60% of the national territory and the remaining 3% of the population. Paraguay has no seacoast, but it does have river connections to the Atlantic through the Paraguay and Paraná rivers. Asunción is the capital city, and the country's political/administrative divisions include 17 departments with their municipalities and districts.



**Selected basic indicators, Paraguay, 2008–2010.**

Indicator	Value
Population 2010 (millions)	6.4
Poverty rate (%) (2009)	35.1
Literacy rate (%) (2010)	94.7
Life expectancy at birth (years) (2010)	72.4
General mortality rate (per 1,000 population) (2010)	5.5
Infant mortality rate (per 1,000 live births) (2009)	15.4
Maternal mortality rate (per 100,000 live births) (2009)	125.3
Physicians per 1,000 population (2008)	1.3
Hospital beds per 1,000 population (2009)	1.3
DPT3 immunization coverage (%) (2009)	72.0
Births attended by trained personnel (%) (2008)	93.1

Over the 2006–2010 period, Paraguay's social and economic situation continued to improve. In 2009, the government launched Paraguay for All: A Public Policy Proposal for Social Development 2010–2020. This initiative brings together 11 programs with four concentrations: quality of life, social inclusion, economic growth without exclusion, and results-based management. In the health area, important administrative reforms have been carried out in response to the development plan, improving access to and coverage of services.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Unemployment declined in the last decade, and was 5.7% in 2010. Between 2003 and 2008, 256,000 Paraguayans emigrated abroad (almost 1 out of 10 in the economically active population).

The principal programs of the government initiative Paraguay for All: A Public Policy Proposal for Social Development 2010–2020, which was formulated in 2009, include developing family health units and addressing the issues of water supply, sanitation services, and food security, factors that directly or indirectly help improve living conditions and health.

Paraguay has great potential for food production. Its agriculture and livestock sectors contributed 47.0% and 8.5%, respectively, to gross domestic product (GDP) growth in 2010. Given the high level of chronic malnutrition (low height-for-age), which in 2009 affected 13.7% of children under age 5, as well as 41.7% of the indigenous population, a National Food Sovereignty and Security Plan was created that year. Its objective is to address conditions of vulnerability and high indices of malnutrition and undernutrition.

## THE ENVIRONMENT AND HUMAN SECURITY

In urban areas, the proportion of the population with access to drinking water was 77.7% in 2009, while the figure for rural areas was 59.0%. In 2011, a construction project was approved to bring water from the Paraguay River to the central area of the Chaco region in order to supply drinking water. The population with access to the sewage was 8.5% in 2009 (16.3% for urban areas compared to 0.3% in rural areas). In 2010, 39.2% of the population had waste collection services.

## HEALTH CONDITIONS AND TRENDS

The 2006–2010 period saw improvements in health conditions. The reduction in infant mortality (15.4 per 1,000 live births in 2009) was noteworthy.

In a period of 11 years (2000–2010) there was a 99.6% reduction in the number of malaria cases. The incidence rate dropped 95.0%, from 0.79 per 1,000

### A Health System for All in Paraguay

Central to the Public Policy Proposal for Social Development 2010–2020, also known as “Paraguay for All,” is the quality of life of the population and its access to health services. The proposal's first objective (Objective 1.1) is to “implement a single, universal, comprehensive, inclusive, and solidarity-based national health system with equity and social participation.” The country strives for a health care model that is universal, comprehensive, and equitable; that provides equal opportunity and treatment for people of both genders; that features broad, inclusive, and solidarity-based social participation; and that eliminates out-of-pocket health expenditure.

The health system seeks to emphasize elimination of economic barriers to health services whenever the population needs them, thus acting to reduce poverty. It also aims to make the development of primary and specialized care networks a priority, and to promote citizen participation around Family Health Units.

population in 1990 to 0.004 in 2010. Paraguay is on the way to eliminating autochthonous transmission of malaria. The incidence of all forms of tuberculosis dropped from 38.4 per 100,000 population in 2005 to 32.8 per 100,000 in 2010.

The incidence of HIV infection in 2009 was 15.1 per 100,000 population. Between 2005 and 2010, the male/female ratio remained stable, and 47% of women who received health services during pregnancy participated in the program to prevent mother-to-child transmission of HIV.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Total annual health spending underwent a gradual increase, from 7.3% of GDP in 2005 to 8.5% in 2009 (for an average annual increase of 7.6%). Private health expenditure during the period averaged 4.6% of GDP, while public health expenditure was 3.1%. Exemption from taxation on benefits and services provided by the network of the Ministry of Public Health and Social Welfare (starting in August 2008), along with the poverty reduction strategy, reduced families' out-of-pocket expenditure for health care.

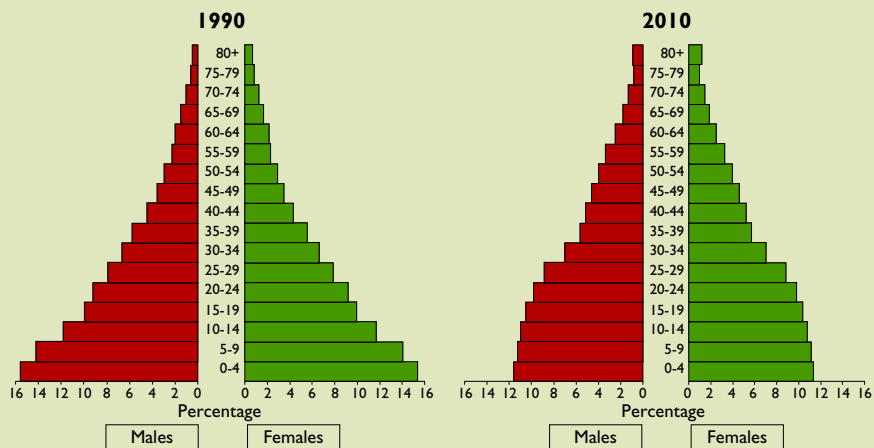
In 2008, the General Directorate of Strategic Supply Management was created to ensure efficient management of medical supplies and devices, as well as access to drugs and supplies. The national list of essential drugs was put in place, and initiatives are under way to promote the rational use of drugs and to establish the national drug formulary.

Since 2008, intersectoral work to prevent noncommunicable diseases has increased, integrating primary health care with other service levels and with the community.

The country is promoting the construction of hospitals that will be safe in disaster situations, and regards the hospital safety index as a useful tool for both structural and functional assessment of facilities.

In late 2010, the National Congress was presented with a health career proposal that was drafted with broad participation by the health sector.

Population structure, by age and sex, Paraguay, 1990 and 2010.



The process of organizing the country's blood donation centers began, with a view to increasing donations and guaranteeing access to safe blood.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The Ministry of Public Health and Social Welfare coordinates the strengthening and redesign of the Health Information System. It was in this context that the Strategic Plan for 2007–2011 was developed, which includes a new policy for managing information as well as information and communications technology.

In 2007, the country's contribution to scientific publication was very low in comparison with the rest of the Southern Cone. In response, the National Council of Science and Technology made efforts to promote health research and innovation between 2007 and 2011. Of all sectors, the health sector contributes to the greatest number of international publications, and it has 104 researchers, constituting 23% of the country's total researchers. In 2010, the Ministry of Public Health and Social Welfare launched a national health research strategy.

### MAIN CHALLENGES AND PROSPECTS

Approximately one out of four households includes at least one older adult. The country will face the challenge posed by an increase in the population age 60 and over, which is estimated to grow from 7.1% in 2000, to 11.6% in 2025, and to 18.5% by 2050.

In 2009, slightly over one-third of the Paraguayan population was poor (35.1% nationwide, but 49.8% in rural areas), while 18.8% lived in extreme poverty (32.4% in rural areas). Between 2005 and 2006, overall poverty rose from 38.6% to 43.7%, but it dropped steadily through 2009, primarily as a result of a decline in urban areas.

In 2010, the illiteracy rate stood at 5.3% (3.5% in the urban population and 8.1% in the rural). Illiteracy among men was 4.6% (3% in urban areas and 6.8% in rural), and 5.9% among women (3.9% in urban areas and 9.5% in rural). Close to 2% of the population is indigenous, and 91.5% of that population segment is rural.

In 2010, there was an estimated housing shortage of 99,000 dwellings (73% in urban areas), while another 705,000 were in need of improvement or expansion (54% in rural areas). One percent of landowners hold 77% of the arable land, while the 40% of farmers who own between 0 and 5 hectares possess only 1% of the agricultural land. Most Paraguayans consider land reform an unresolved issue.

Between 1945 and 2000, the forested area in eastern Paraguay was reduced from 55% of the region's total area to 5%. The massive use of firewood and charcoal for household consumption (43.4% of households) has contributed significantly to deforestation.

Fire and drought are the principal disasters that cyclically affect Paraguay. Climate change is expected to aggravate this. Between 2007 and 2010, the national government had to mobilize resources to address the effects of the droughts that impacted the Chaco region.

Maternal mortality has remained stable at a high level in recent years and continues to be an important challenge. In 2009 there was a rate of 125.3 maternal deaths per 100,000 live births. A third of maternal deaths were due to complications from unsafe abortions (abortions performed under dangerous conditions).

Noncommunicable diseases are responsible for the majority of mortality and morbidity in Paraguay. In 2011, the incidence of hypertension was 32.2% (women accounted for 37.9%), 9.7% of the population had diabetes (11% women), and 21.5% had high cholesterol (23.1% women).

In 2009, the mortality rate due to diseases of the circulatory system was 111.5 per 100,000 population, mortality from neoplasms was 56.0 per 100,000, death from external causes was 49.2 per 100,000, and mortality from infectious diseases was 35.1 per 100,000. As regards years of potential life lost, external causes ranked number

one in 2009, both for the population as a whole and for men.

Ischemic heart disease caused 10.2% of deaths among men in the 2006–2009 period, followed by cerebrovascular disease (9.5%) and motor vehicle accidents (7.4%). For women, the leading cause of death was cerebrovascular disease (12.8%), followed by diabetes (10.8%) and ischemic heart disease (9.2%). In 2011, the prevalence of tobacco consumption in the 15- to 74-year-old population was 22.8% among men and 6.1% among women.

The health system still has structural elements that need to be improved. Health insurance coverage is low and is concentrated in Asunción and the Central Department. Social security covers 17% of the economically active population. In 2008, barely 12.2% of the indigenous population had health insurance.

The social protection services in the health area are segmented and highly fragmented.

Structural problems persist in the area of human resources. A lack of labor regulation allows for different types of contracts, varying workloads (hours), poor distribution of the workforce, and training that is not adequate given the requirements of the care model.

The National Council of Science and Technology leads the process of encouraging health research and innovation, as well as promoting more international publication. Meeting challenges in this area involves a range of national entities, including technical, financial, and academic institutions.

There are still major gaps in some health determinants. Paraguay has unresolved public health problems in areas such as maternal mortality, dengue epidemics, cervical cancer, availability of blood, and absence of a solid human resources policy, to mention only a few. Their common denominator is lack of access to health services and quality of service.

The process of change that began in 2008, which provides for free health care and access to primary care for over 2 million Paraguayans, faces key challenges if it is to be successful. Achieving effective intersectoral and community participation in decision-making on health issues is paramount. Success on this front will pave the way to ensuring that an approach is in place that takes account of the social determinants of health, and that engages full social participation of the population. In addition, it is crucial to ensure that there is sufficient financing to make the structural changes that public health in the 21st century requires.



Peru is located in South America's central-western region. It borders with Ecuador, Colombia, Brazil, Bolivia, and Chile; the Pacific Ocean borders its west. The country has a land area of 1,285,215 km<sup>2</sup>, divided into three major geographical areas: a coastal region, a mountainous region, and the Amazon jungle. The country is rich in mineral resources and biodiversity; it is prone to natural disasters, chief among them earthquakes, tsunamis, floods, and landslides. The country is divided into 25 political-administrative regions (in addition to Metropolitan Lima), 195 provinces, and 1,834 municipalities. The capital is Lima.

Between 2006 and 2010, Peru's economy grew by 31%, and per capita gross domestic product (GDP), by 20%. Between 2001 and 2009, foreign investment jumped 43%, mainly going to mining, telecommunications, finance, and industry.

This economic boom has been accompanied by substantial population growth, longer life expectancy, lower birth and mortality rates, and the aging of the population. The country also is experiencing rising morbidity, mortality, and disability from chronic diseases, even though communicable diseases are still the leading cause of death.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Between 2005 and 2010, total poverty was reduced from 48.7% to 31.3%, and extreme poverty, from 17.1% to 9.6%. The urban-rural poverty gap remains large, however.

Illiteracy fell from 12.8% in 1993 to 7.1% in 2007. Rural populations have fewer average years of schooling than urban populations (6.4 and 10.9 years, respectively). Between 2005 and 2009, the percentage of women over the age of 15 with university studies increased from 8.7% to 12.1%, while those percentages for men rose from 11.1% to 14.3%.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2010, 76.4% of households were supplied with water through the public network. Some 57.5% of households had a public sewerage connection, 27.6% had a latrine or septic tank, and 14.9% had no excreta disposal system (30.3% in rural areas).

Coverage for solid waste collection was 74.0%. Only 66.0% of the 8,532 tons of refuse produced daily was disposed of properly through various means, while 29.8% was dumped into the environment (mainly rivers and beaches).

### HEALTH CONDITIONS AND TRENDS

Progress was made in maternal and child health between 2006 and 2010, although the urban-rural gap persisted. The total fertility rate declined from 2.9 to 2.5 children per woman. Adolescent pregnancy held stable, and 74.4% of young women used some form of contraception.

Maternal mortality decreased from 185 to 93 per 100,000 live births. That progress was attributed to the increase in institutional births, the adaptation of care to make it culturally appropriate, and the use of maternity homes. Chronic malnutrition in children fell from 31.3% to 23.2%, and infant mortality, from 33 to 17 per 1,000 live births.

#### Selected basic indicators, Peru, 2007–2010.

Indicator	Value
Population 2010 (millions)	29.5
Poverty rate (%) (2010)	31.3
Literacy rate (%) (2007)	92.9
Life expectancy at birth (years) (2010)	73.7
General mortality rate (per 1,000 population) (2007)	5.4
Infant mortality rate (per 1,000 live births) (2010)	17.0
Maternal mortality rate (per 100,000 live births) (2010)	93.0
Physicians per 1,000 population (2009)	0.8
Hospital beds per 1,000 population (2010)	1.5
DPT3 immunization coverage (%) (2010)	93.0
Births attended by trained personnel (%) (2009)	82.5

Between 2005 and 2010, malaria cases decreased but dengue cases increased. Considerable progress was made in the control of Chagas' disease, with certified elimination of vector-borne transmission in two of the three endemic departments. Some 8,000 cases of leishmaniasis are reported annually in the mountains and jungle. There are areas of enzootic yellow fever in the Amazon jungle. Since 2007, under the Accelerated Yellow Fever Plan, 11 million people between the ages of 2 and 59 have been vaccinated.

Between 2006 and 2010, coverage for vaccines in the national immunization schedule was over 90%; however, some districts still lack optimal coverage. The children's vaccination series introduced the pneumococcal, rotavirus, influenza, and pandemic influenza vaccines. In 2011, human papillomavirus vaccine was added to the regimen, and measles, rubella, and hepatitis B vaccination campaigns were carried out, achieving high coverage.

Morbidity and mortality from vaccine-preventable diseases were substantially reduced. Tuberculosis morbidity fell from 129.3 to 108.5 per 100,000 population. Sixty-seven new cases of leprosy were reported, all from the Amazon jungle. Each year, 1,000 cases of AIDS and 3,000 cases of HIV have been reported (500 in pregnant women, all of whom received antiretroviral therapy).

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The health system includes the public and private sectors. The public sector is made up of the Ministry of Health and the regional health bureaus (which serve the poor and indigent population), the Social Security system (for the

### National Solidarity Health Plan

In 2001, the Sectoral Policy Guidelines for 2002–2012 were prepared to steer health sector activities and lay the foundation for modernization of the sector. In 2006, a new health agenda was adopted and made public in the Coordinated National Health Plan, whose objectives are to: (1) develop the Government's capacity to manage and lead the health sector, (2) establish universal health insurance, (3) adopt cost-effective strategies for the primary activities, (4) improve financing, (5) implement a monitoring and evaluation system, (6) increase citizen participation, and (7) coordinate the interventions by all the stakeholders involved in the health system.

In 2009, Peru enacted the Framework Law on Universal Health Insurance. That created a regulatory structure for insurance, to guarantee the right of every person to gradually gain access to a package of interventions for diverse health conditions and diseases, whether or not they were part of the formal workforce.

The government-subsidized Comprehensive Health Insurance, which offers a basic package of services, must gradually come to resemble the social security benefits plan, which covers highly complex services.

salaried population), and the military and police health system. The private sector serves the wealthier population.

In 2005, total health expenditure accounted for 4.5% of GDP. Public expenditure represented 59.4% of total expenditure, while private expenditure represented 40.6%. Of the private expenditure, 75.4% was out-of-pocket. Some 62.6% of the population had health insurance coverage in 2010 (Comprehensive Health Insurance, 37.0%; social security, 20.1%; private insurance, 5.5%). Comprehensive Health Insurance is government-subsidized and offers basic benefits.

In 2011, the Comprehensive Family and Community Care Model was approved. This model includes disease prevention, health promotion, and recuperation services that are based on the life cycle.

In 2008, the Government promulgated Decree Law 1057, creating a new hiring system for personnel. Under this system, contracts spell out the duration of the employment, the work schedule, duties, and social protection benefits.

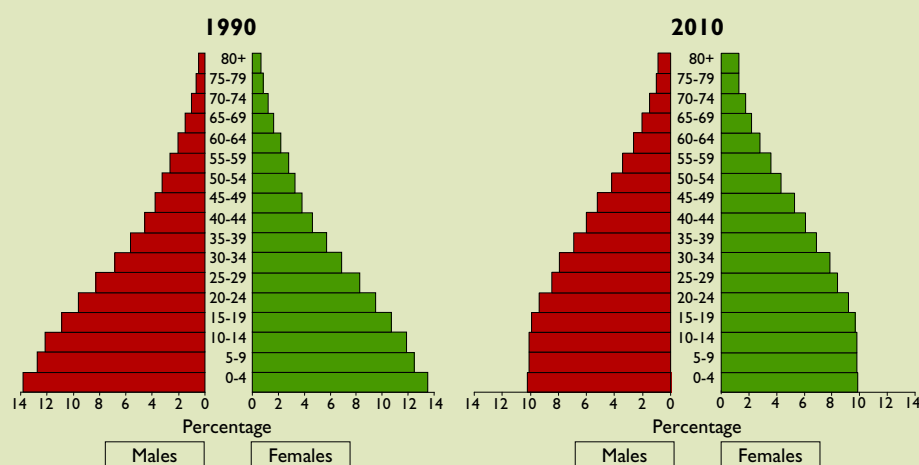
In 2009, although Peru had 7.9 physicians per 10,000 population, they were concentrated in major cities. The Ministry of Health has created incentives to encourage physicians to work in poor and remote areas. In 2006, the National System for Evaluation, Accreditation, and Certification of Educational Quality was created. The National Drug Policy addresses universal access, regulation, quality, and rational drug use.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Between 2000 and 2009, the number of Peruvian science articles cited in Science Citation Index increased from 61 to 200. Of those articles, 94.7% came from Lima. The Universidad Peruana Cayetano Heredia and the Universidad Nacional Mayor de San Marcos boasted the greatest scientific output.

In 2010, Peru relied on two scientific/technical information management tools: the Virtual Health Library (VHL) and SciELO. The country received technical and financial assistance from the United States, Spain, Belgium, and the Global Fund to Fight AIDS, Tuberculosis and Malaria. This assistance was for efforts to control sexually transmitted infections, promote primary care, and develop policies on health administration and communicable disease control.

Population structure, by age and sex, Peru, 1990 and 2010.



### MAIN CHALLENGES AND PROSPECTS

Despite its economic growth, Peru has experienced persistent and marked social and health inequalities. In 2009, the income of the wealthiest population quintile was 12.5 times that of the poorest quintile and represented 52.6% of the nation's income.

In 2009, Metropolitan Lima had unemployment rates of 8.9% among women and 4.3% among men, and 61.9% of workers in the capital were

employed in the informal sector and had no health insurance or any other social benefits. Geographical and gender gaps in education also persist. Illiteracy in rural areas is 19.7% and in urban areas, 3.7%. Similarly, the average years of schooling in rural and urban areas are 6.4 and 10.9 years, respectively. Some 10.6% of women and 3.6% of men are illiterate.

In 2010, 51.8% of the population whose mother tongue was Quechua, Aymara, or an Amazonian language was living in poverty—double the figure for the population whose mother tongue was Spanish. The indigenous population lives primarily in rural areas, under precarious health and living conditions.

Preventing water pollution and providing the population with an adequate water supply will continue to pose major challenges. A little over one-third (36.6%) of poor households collect their water from a river, canal, or spring (88.3% in indigenous communities, where no disinfection is done). In 2009, only 35.0% of wastewater received any type of treatment before final disposal. In the Amazon region, only 9.7% of the population had an excreta disposal system. Another source of water pollution is mining; the majority of watersheds are contaminated with lead, arsenic, and cadmium.

In some locations, the bioconcentration of metals exceeds the standards for food quality. Air quality in metropolitan areas of Lima, El Callao, Arequipa, and other industrialized urban centers is poor. In 2009, measurements taken in Lima found concentrations of particulates less than 2.5  $\mu\text{m}$  in diameter that exceeded the recommended level.

In 2007, a 7.9 magnitude earthquake struck the country, followed by a tsunami in the bay of Pisco, causing 596 deaths as well as serious damage to the health service infrastructure in some communities, including Lima. The country has gained experience in disaster mitigation and recovery, but preparedness for future disasters remains a challenge.

Among poor, rural, and indigenous women, it will be a challenge to achieve some of the Millennium Development Goal (MDG) targets, including ones for reducing fertility, maternal mortality, and physical and sexual violence. Efforts aimed at children should focus on lowering mortality, chronic malnutrition, and anemia (in rural areas). With adolescents, intensive efforts are needed to promote healthy lifestyles and prevent abuse of alcohol and other substances.

Workplace accidents are a major cause of death and disability, so surveillance and prevention education should be a priority. Activities to control vector-borne diseases and leprosy are needed, especially in the Amazon jungle. Multidrug-resistant tuberculosis is a public health problem, primarily in Lima and El Callao.

Communicable diseases are still the leading cause of death. However, noncommunicable diseases (NCDs) are

responsible for considerable disability, morbidity, and mortality. Particularly important are traffic accidents among adolescents and young adults, as well as cardiovascular diseases and malignant neoplasms (especially cervical, breast, gastric, lung, and prostate cancer), diabetes, and hypertension among adults.

In terms of mortality rates from NCDs for the population overall, the highest rates (per 100,000 population) are found with ischemic heart disease (44.8), cerebrovascular disease (31.4), cirrhosis of the liver (21.3), stomach cancer (21.0), and diabetes (20.4). Studies with a national scope will be needed to learn more about the population's mental health status.

Only 40% of the adult population engages in some form of physical activity. The percentage of the population that is overweight has reached 35.3%, and the obese population, 16.5%. Almost a fifth of the population (19.6%) has high cholesterol.

It is hard to achieve efficiency in the health sector, given the segmentation, divisions, inadequate financing, ineffective Ministry leadership, and limited participation by other sectors.

The development of medical devices has barely started, since there are no professionals who specialize in this area. Health technology assessment needs to be improved, and the Ministry of Health formed a committee for this purpose in 2011. With respect to human resources, the incentives to work in outlying areas should be maintained.

Progress in scientific output is expected to continue, through the creation of research centers outside Lima. As a member of the Andean Community and the Union of South American Nations, as well as an associate member of MERCOSUR, Peru participates in the implementation of the health plans of these bodies, with regard to access to medicines, strengthening health services, and human resources.

The health situation in Peru has improved, and the country expects to achieve the MDG health targets. However, access to basic services must be increased, particularly in rural areas. Reducing the burden of communicable diseases poses a real challenge. In addition, the country must work on preventing and controlling NCDs and on promoting healthy lifestyles.

Better organization of the sector and a stronger Ministry of Health role in governance will make it possible to increase access to quality health services. Improved coordination among the health services and more public spending are also needed, along with an enhanced health information system to monitor and evaluate activities and to measure their impact on health.

# Puerto Rico



The Commonwealth of Puerto Rico is a self-governing territory of the United States of America. It is located in the northeast Caribbean Sea, east of the Dominican Republic and west of the Virgin Islands. The archipelago of Puerto Rico is part of the Greater Antilles, and covers a total land area of 9,105 km<sup>2</sup>. It includes the largest island of Puerto Rico (which measures approximately 170 by 60 km) and a number of smaller islands, the largest of which are Mona, Vieques, and Culebra. Its climate is tropical and there are several ecosystems present on the island. The capital is San Juan, and the Commonwealth's administrative divisions encompass 78 municipalities.



**Selected basic indicators, Puerto Rico, 2006–2011.**

Indicator	Value
Population 2010 (millions)	3.7
Poverty rate (%) (2010)	45.0
Literacy rate (%) (2011)	90.5
Life expectancy at birth (years) (2010)	79.1
General mortality rate (per 1,000 population) (2008)	7.3
Infant mortality rate (per 1,000 live births) (2008)	8.7
Maternal mortality rate (per 100,000 live births) (2006)	4.1
Physicians per 1,000 population (2007)	2.2
Hospital beds per 1,000 population (2006)	3.1
DPT3 immunization coverage (%)	...
Births attended by trained personnel (%) (2008)	99.9

In 1952 the Constitution of the Commonwealth of Puerto Rico was approved. A system of self-government was established providing for administrative autonomy for internal affairs, but subject to United States federal laws and regulations. The delivery of services has become essentially private, with the Health Insurance Administration playing an important role. The population is covered by public or private insurance (a portion of inhabitants do not have insurance). The Department of Health safeguards the health of the population and the Government Health Plan has a model for delivery of services that contracts private insurance companies.

**MAIN ACHIEVEMENTS**

**HEALTH DETERMINANTS AND INEQUALITIES**

There was an increase in the level of education in Puerto Rico between 2006 and 2010. In 2010, 22.3% of the population aged 25 years and over had completed a bachelor’s degree and 69.5% had completed at least the fourth year of secondary education, whereas in 2006 only 20.7% had completed a bachelor’s degree and 66.1% had completed at least the fourth year of secondary education.

**THE ENVIRONMENT AND HUMAN SECURITY**

A project is being developed for the expansion and installation of water pumps and distribution lines in order to improve water delivery and access in different communities.

There are environmental protection measures in place such as daily inspection of water bodies and wetlands to prevent damage related to petroleum extraction. A fire in fuel tanks along the coastline in 2009 was fortunately controlled without major impacts.

There are several environmental health surveillance programs. In 2006 and 2007, the Environmental Health Program of the Department of Health conducted a total of 19,493 health inspections, the drinking water program conducted 612 inspections, and the milk hygiene program complied with 52.9% of the 1,523 planned inspections. The program for hygiene in food preparation and service establishments and the zoonosis program met 100% of the inspection goals established.

**HEALTH CONDITIONS AND TRENDS**

In 2006, the maternal mortality rate was estimated at 4.1 deaths per 100,000 live births. The highest rate was recorded in the 30–34-year age group (12.9 per 100,000 live births). The most common causes of death were ectopic pregnancy and presentation of placenta previa. The infant mortality rate was 8.5 per 1,000 live births in 2007 and 8.7 per 1,000 live births in 2008.

The HIV/AIDS incidence rate was 28.93 per 100,000 population in 2006, decreasing to 25.22 per 100,000 in 2007 and 23.65 per 100,000 in 2008.

**Puerto Rico Observatory on Human Resources for Health**

*The Observatory on Human Resources for Health seeks to improve coordination and collaboration between the state and territorial health offices in order to improve the knowledge and availability of health care personnel.*

*There is a need to strengthen the health care workforce in order to improve health system performance. Puerto Rico does not have a centralized information system about health care personnel and there is a lack of reliable data needed for evidence-based decision making and policy making.*

*In order to address these issues, the Observatory on Human Resources for Health manages problems in performance and communication between health care providers, coordinates meetings, and conducts data collection and activity analysis.*

*The Observatory will help strengthen the human resources information system with a basic set of data and development of data collection and analysis tools.*

## HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The delivery of government health services is almost entirely privatized. The Health Insurance Administration plays an important role in the health sector, while the Department of Health safeguards the health of the population. In 2010, it was estimated that 43.8% of the population was insured by the Government Health Plan, 25.2% had private plans, 21.6% had other types of plans, and 9.4% did not have formal health insurance.

The Government Health Plan has a service delivery model known as *Mi Salud* (My Health) in which medical and hospital services are contracted with private insurance companies and provided by a primary care physician (general practitioner, family practitioner, internist, gynecologist, or pediatrician). This model provides direct access to specialists without the need for referral within a network of providers. Preventive physical and mental health services and medicines are also provided.

In December 2008 an order was issued to reduce the rising number of cesarean deliveries and promote vaginal delivery. In February 2008, public policy on administration of HIV tests in delivery rooms in Puerto Rico was approved in response to the statistics observed by the United States Centers for Disease Control and Prevention. Public policy for use of the human papillomavirus vaccine was also established. Starting in October 2008, three doses of HPV vaccine are administered routinely to girls 11–12 years of age.

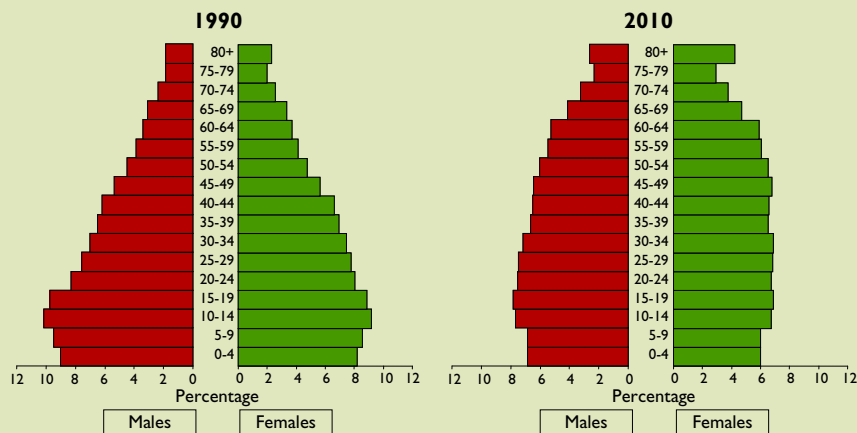
In 2007, there were 22.0 physicians, 65.9 professional nurses, and 3.9 dentists per 10,000 population. The majority of professionals (34.1%) worked in the San Juan metropolitan region.

In order to face the current challenges with regard to human resources, Puerto Rico is working on creation of the Observatory on Human Resources for Health, which is sponsored by the United States Office of Minority Health. Its purpose is to identify discrepancies with regard to the supply and demand of human resources in health.

## KNOWLEDGE, TECHNOLOGY, AND INFORMATION

A Virtual Health Library was organized through the joint efforts of the Medical Sciences Campus Library and the

Population structure, by age and sex, Puerto Rico, 1990 and 2010.



Graduate School of Information Sciences and Technology of the Río Piedra Campus, part of the University of Puerto Rico.

A technical cooperation agreement between PAHO and the Department of Health has allowed the development of a geospatial analysis tool using geographic information systems. The aim of this work is to strengthen national epidemiological capability (i.e., situation analysis, health surveillance, monitoring and evaluation of disease prevention and health promotion activities) and to improve the analytical and epidemiological capacity of managers and persons in charge of the health decision-making process in the PAHO Secretariat. This will assist in orienting technical cooperation toward increased monitoring of health inequalities and inequities and evaluation of the impact of population-based interventions.

## MAIN CHALLENGES AND PROSPECTS

According to the 2010 census, there has been a 2.2% reduction in the population compared to 2000. The main factors that influenced this change were emigration (especially to the United States) and a 26% reduction in births from 2000 to 2010. In 2010, 14.5% of the population was 65 years or older.

Since the first quarter of 2006, the economy of Puerto Rico has been in a critical situation. It experienced recession and then depression, with a decline in economic activity, especially in 2009 and 2010.

The poverty level of the population has remained at about 45%. According to 2010 data, poverty levels are

higher for women who are heads of household (57.7%) and persons under 18 years of age (56.3%). Similarly, the poverty level of persons living in rural areas (56%) is higher than that of the population in urban areas (44%).

Urban and industrial development has led to deterioration of environmental conditions. In 2006 and 2007, respectively, there were 14.3 and 14.6 metric tons per capita of carbon dioxide emissions.

In 2010, dengue reached historically high levels in Puerto Rico, with 21,298 cases recorded. In 2009, 638 cases of influenza A(H1N1) were reported, with a case fatality of 5.8%.

Chronic diseases were the main cause of death for the 2006–2008 period, with the three leading causes of death being heart disease, malignant neoplasms, and diabetes. In 2008, mortality from heart disease (135.4 per 100,000 population) was less prevalent in women (120.2 per 100,000) than in men (151.9 per 100,000). There was a similar pattern for deaths associated with malignant neoplasms (126.6 per 100,000), with mortality of 105.3 per 100,000 women and 149.8 per 100,000 men. Diabetes was the third leading cause of death (72.1 per 100,000 population), with mortality of 73.8 per 100,000 men and 70.5 per 100,000 women.

Chronic diseases are a growing problem. The prevalence of coronary disease increased from 6.7% in 2007 to 7.0% in 2009. In 2009 the prevalence of coronary disease was higher in women (7.7%) than in men (6.2%). In 2006 the incidence rate for cancer was 232.9 per 100,000 population. The three leading forms of cancer in 2006 were prostate cancer (62.3 per 100,000 population), breast cancer (33.9 per 100,000), and colorectal cancer (32.8 per 100,000).

The prevalence of diabetes in adults has been increasing. In 2006 it was 11.9%, rising to 12.8% in 2010. The prevalence of hypertension in persons 18 years of age and older has also increased (32.7% in 2007 and 34.0% in 2009). The prevalence of these diseases will continue to rise unless changes occur in people's lifestyles.

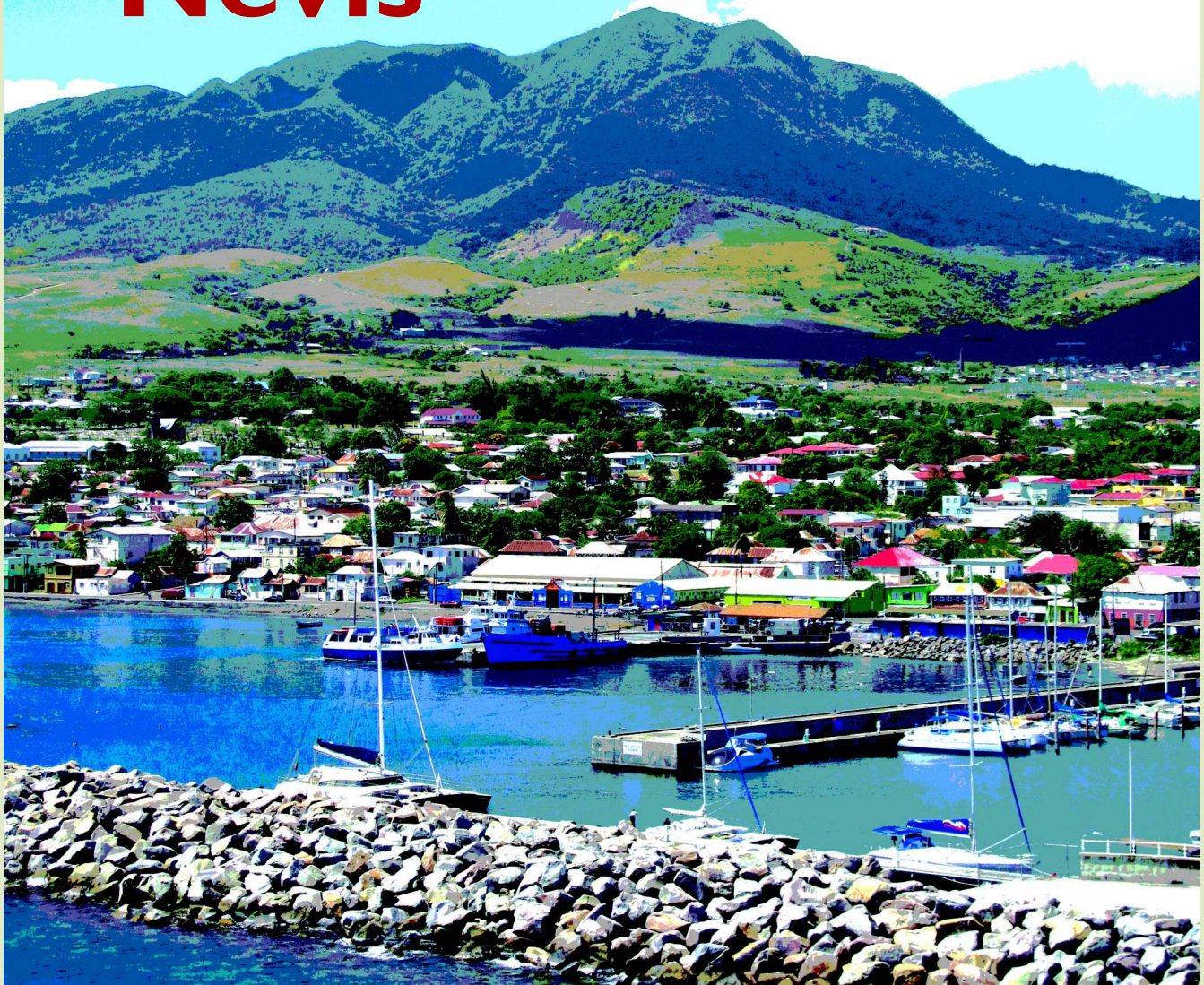
Risk behaviors of adolescents and schoolchildren also pose a challenge. In 2007, 34.6% of elementary school students (fifth and sixth grades) consumed alcohol, whereas 2.9% used inhalants and 1.5% smoked cigarettes. In 2008, 201 deaths occurred in adolescents (68.9 per 100,000 population). The leading cause of death was homicide, with a rate of 30.2 per 100,000 adolescents, representing 43% of the total deaths in this age group.

In 2010, approximately 350,000 people did not have insurance. Because they earned an income, they did not qualify for the government insurance plan, but their income was insufficient to purchase a private plan. Because of the complexity of the system of insurance and services delivery, the challenge of monitoring and supporting access to health care for these groups remains.

The aging of the population poses an important challenge for health in Puerto Rico. Chronic diseases are common and there has been a progressive increase in some of the primary risk factors such as obesity, which will have to be addressed in the future.

The information and follow-up provided by the Observatory on Human Resources for Health will improve knowledge about existing gaps between supply and demand and the distribution of health professionals.

# Saint Kitts and Nevis



The islands of Saint Kitts and Nevis are located in the northern part of the Leeward Islands in the eastern Caribbean. The country gained its independence from the United Kingdom in 1983, and it is a member of the Commonwealth of Nations and the Organization of Eastern Caribbean States (OECS). The land mass of Saint Kitts is 176.12 km<sup>2</sup> and that of Nevis is 93.2 km<sup>2</sup>. The islands are volcanic, and are separated by a channel that measures 3 km at the closest point. The capital is Basseterre and the islands' administrative divisions include 14 parishes: 9 are on Saint Kitts and 5 on Nevis.

### Selected basic indicators, Saint Kitts and Nevis, 2008–2010

Indicator	Value
Population 2010 (thousands)	52.0
Poverty rate (%) (2008)	21.8
Literacy rate (%) (2010)	97.0
Life expectancy at birth (years) (2010)	74.4
Crude mortality rate (per 1,000 population) (2010)	7.5
Infant mortality rate (per 1,000 live births) (2010)	13.6
Maternal mortality rate (per 100,000 live births)	...
Physicians per 1,000 population (2010)	1.3
Hospital beds per 1,000 population (2009)	6.0
DPT3 immunization coverage (%) (2010)	98.0
Births attended by trained personnel (%) (2010)	100.0

Saint Kitts and Nevis is an upper-middle-income country whose health conditions foster human development. The improvements in its health-related indicators represent an achievement in terms of the Millennium Development Goals. Life expectancy is high and infant mortality low; all births are attended by trained personnel.

Several factors have contributed to the improved health status of the population. The country has embraced the primary health care approach, adopting participation, health promotion, and intersectoral collaboration strategies. The population has unimpeded access to public health services ranging from prevention to palliative care.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Reducing poverty was a government priority during the 2006–2012 period. Approximately 20% of the gross domestic product (GDP) has been allocated to social security, health, and education programs, including several social welfare programs for poor and vulnerable populations. In 2008, nearly half the population aged 62 and over was receiving a social security pension.

Poverty has been moving steadily downward since 2000. In 2008, the population considered poor accounted for 21.8% of the total population. During that same period, extreme poverty fell from 11% to 1.4% in Saint Kitts and from 17% to 0% in Nevis. The total unemployment rate was 5.1% in 2007, with higher figures (14.3%) in the poorest population quintile; unemployment was higher in Saint Kitts (6.3%) than in Nevis (1.5%).

In 2009, 38% of children under age 2 were enrolled in official preschool programs, and 76% of children aged 3–5 were enrolled in primary school. The net enrollment in primary schools was 89%. The literacy rate in people over the age of 15 was 97%.

## THE ENVIRONMENT AND HUMAN SECURITY

Over 99% of the population has access to water sources and improved sanitation facilities; 83.5% of the population has water piped into their home and 9.7% to their yard. There is a company that handles solid waste disposal on the two islands.

Since Saint Kitts and Nevis is exposed to hurricanes, disaster preparedness plans have been drawn up. Members of the Ministry of Health's first response team, as well as nurses, physicians, and staff from the disaster management department, the Red Cross, and defense forces, have received training in disaster management.

## HEALTH CONDITIONS AND TRENDS

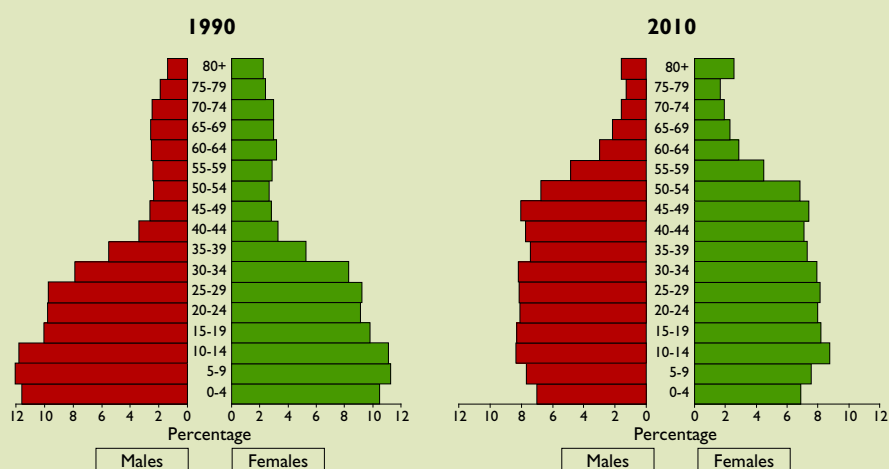
In the period 2006–2010, there was universal delivery coverage, with births attended by a trained health professional. There were three maternal deaths during the period, and infant mortality ranged from a high of 20.3 per 1,000 live births in 2007 to a low of 11.3 in 2008, and with 13.6 in 2010.

### National Strategic Health Plan for 2008–2012

*The National Strategic Health Plan is a Ministry of Health initiative grounded in the government's commitment to the idea that good health is a determinant in achieving the highest levels of personal well-being and national productivity.*

*The vision that inspires the work of the Ministry is summarized in the slogan, "People first, quality always." The Ministry's mission is to organize and develop its resources to ensure healthy population development.*

*The Plan, which is organized at the national level, covers seven priorities: reducing chronic, noncommunicable diseases and promoting good nutrition and physical activity; promoting family health; developing health systems with a primary care approach; improving mental health and reducing psychotropic substance abuse; preventing and controlling HIV/AIDS and sexually-transmitted infections; protecting the environment; and developing human resources for health.*

**Population structure, by age and sex, Saint Kitts and Nevis, 1990 and 2010.**

Dengue is endemic in Saint Kitts and Nevis. Between 2006 and 2010, 122 cases were reported, 100 of them during an outbreak in 2008. There were no indigenous cases of malaria, but three imported cases were diagnosed between 2007 and 2009. HIV case numbers dropped by 22% in 2006–2010 in comparison with 2001–2005, declining from 73 to 57 cases. There was a marked reduction in tuberculosis mortality, which fell from 2.8 per 100,000 population in 2006 to 0.6 in 2009. Tuberculosis prevalence was 11 per 100,000 population, with an incidence of 9.2 per 100,000.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Annual per capita health expenditure averaged US\$ 370, accounting for roughly 8% of total public expenditure during the period 2006–2010. Total health expenditure rose by 32.8% from 2006 to 2009. The national budget contributed over 92% of the health sector's financial resources during the 2006–2010 period. Community and institutional health services receive a similar share of the Ministry of Health budget. Human resource costs account for about 70% of total health expenditure.

Physician availability increased from 11.8 per 10,000 population in 2004 to 13.0 in 2010. There are two dentists per 10,000 inhabitants.

Because Saint Kitts and Nevis is a small economy, all medical products, vaccines, and new technologies are imported. Some 90% of the medicines used in the public

sector are obtained through the Organization of Eastern Caribbean States' Pharmaceutical Procurement Service.

Saint Kitts and Nevis has embraced the primary health care approach in health system governance and development as the most appropriate way to strengthen the delivery of health services that meet the population's needs and demands. The country has also adopted health promotion strategies to prevent and control the chronic disease burden.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

There is no official health or public health research agenda. However, the country has worked to bolster its research capacity. Between 2006 and 2010, the WHO Survey on Chronic Disease Risk Factors (WHO STEPwise approach, 2008) and the Global Youth Tobacco Survey (2010) were conducted.

### MAIN CHALLENGES AND PROSPECTS

There are still gender inequalities to overcome; households headed by women are more likely to be poor than are other groups. Despite the substantial pension outlays, poverty among the elderly remains a cause for concern.

Although the country is relatively stable economically, it is vulnerable to external forces and natural disasters, as demonstrated by the impact of the global economic crisis that began in 2008 and the hurricanes that have ravaged the Caribbean in recent years.

Soil erosion has become a problem since the collapse of the sugar industry in 2005. The industry used ceramic pipes to divert heavy rain runoff to the sugarcane fields. The cessation of this activity is causing more sediment to flow to the sea through residential areas and the main roads.

Hurricanes Omar and Earl struck the country in 2008 and 2010, respectively. Omar's impact on the balance of payments was estimated at US\$ 19 million, nearly 3.5% of the country's GDP.

Chronic, noncommunicable diseases are still among the leading causes of morbidity, disability, and death. The

leading causes of morbidity in adults are overweight, high blood cholesterol levels, hypertension, diabetes, schizophrenia, depression, and the use of psychoactive substances. Between 2007 and 2008, 15.7% of all people surveyed were suffering from a chronic disease (12.3% of the men and 18.6% of the women). Diabetes prevalence was 20% in 2010. The prevalence of hypertension in the adult population was 34.5% in 2008, with higher rates in men (38.2%) than in women (31.9%).

The relatively high level of noncommunicable diseases, mental illness, and external causes of injury and death places a high demand on the sector's current resources. Unhealthy lifestyles imply a high risk of mortality and morbidity in Saint Kitts and Nevis. The main health challenges consist of mobilizing resources and adopting effective health promotion strategies to foster changes in lifestyle to prevent and control the burden of chronic diseases.

The average annual deaths from cancer rose from 44 in 2002–2005 to 63 in 2006–2009, a 43% increase attributed to the rise in prostate and breast cancer.

Interpersonal violence is a growing public health problem. There were 103 homicides during the period

2006–2010 compared to 42 in 2001–2005, or a 160% increase. Of those deaths, 96 were men and 7 women.

Several laws authorize the Ministry of Health, Social Services, Community Development, Culture, and Gender Affairs to exercise governance. However, many of them are outdated and have therefore been under review with an eye to their amendment.

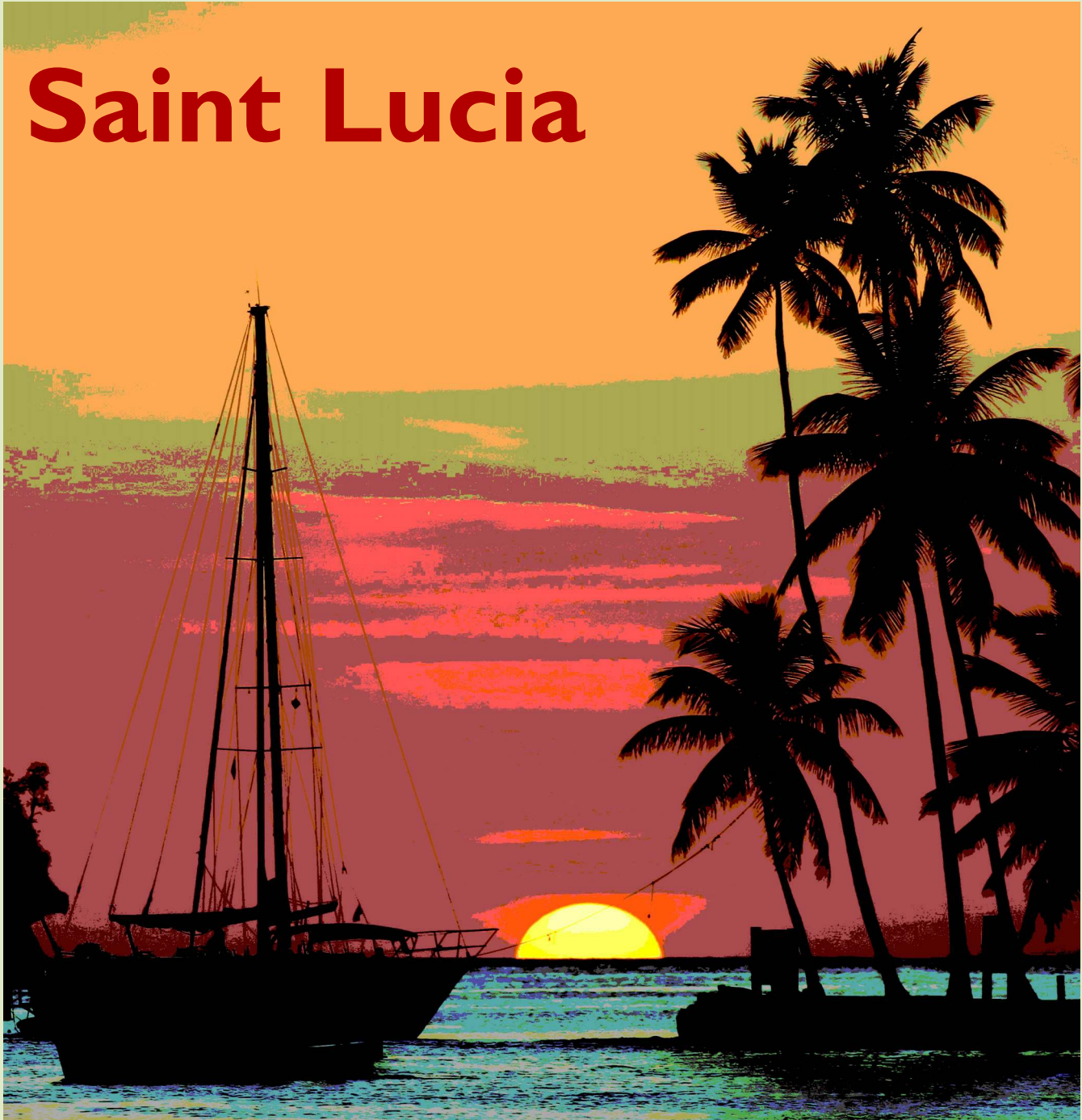
Between 2005 and 2010, the steady decline in the number of qualified nurses continued, with figures falling from 38 nurses per 10,000 population in 2005 to 32 in 2010. This downward trend is due largely to emigration.

Although efforts have been under way to increase knowledge production in the health sector, there is no official public health research agenda.

The primary health care approach in governance and health system development must be strengthened to meet the population's needs and demands in health. Health promotion strategies must also be strengthened.

Maintaining and improving health system performance requires continued universal coverage and access, adequate financing, and quality improvement in the health system, as well as maximum use of preventive and primary care services and efforts to ensure the highest degree of satisfaction among users and health care providers.

# Saint Lucia



Saint Lucia is an island nation in the Caribbean Sea, located between the islands of Martinique and Saint Vincent and the Grenadines. The island has a land mass of 616 km<sup>2</sup> with very mountainous terrain. The most striking natural landmarks are Mount Gimie and the Pitons, which are twin peaks outside the town of Soufrière. Saint Lucia gained its independence from the United Kingdom in 1979 and is a member of the Commonwealth of Nations and the Organization of Eastern Caribbean States (OECS). The government is a parliamentary democracy, based on the Westminster model. The capital city is Castries, and there are 11 administrative districts.



Despite its small population (166,000 in 2010) and size, Saint Lucia has experienced considerable economic success. Between 2005 and 2010, its gross domestic product (GDP) at constant prices soared from US\$ 496,481,000 to US\$ 907,296,280. Tourism is the sector that contributed the most to this boom, with hotel revenues accounting for US\$ 67.3 million in 2005 and US\$ 75 million in 2010. The agricultural sector contributed US\$ 16.7 million in 2005 and US\$ 31.5 million in 2010.

Although the global economic crisis had an impact, the country's economic situation improved thanks to a policy designed to achieve growth, promote social solidarity, and create the capacity to recover from external shocks that was adopted in 2010 in the wake of Hurricane Tomás. Poverty increased from 25.1% to 28.8% between 1995 and 2006, but extreme poverty decreased from 7.1% to 1.6% during the same period.

Significant among the health achievements in the period 2006–2010 were the strategies adopted for implementing surveillance, prevention, and control of chronic, noncommunicable diseases, which constitute a major public health problem in Saint Lucia.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

The period 1995–2006 saw a steady decline in economic inequalities, reflected by the reduction in the Gini coefficient from 0.50 to 0.42 between the beginning and end of the period. Young adults with children aged 0 to 14 years accounted for 39% of the population living below the poverty line, while people over the age of 65 accounted for 7%. In 2006, 28.8% of the country was living in poverty, which was concentrated in the rural population, where figures exceeded 35%.

In 2010, 92% of young children attended day-care and preschool centers and 96.7% of children aged 5–11 were enrolled in primary school. High school enrollment stood at 95.8%. More women than men had university education (5.7% vs. 4.4%).

In 2010, the workforce reached the figure of 68,000. That year, unemployment was 20.6% (24.2% in men and 28.2% in women). Unemployment in young people aged 15–29 climbed from 24.1% in 2001 to 33% in 2010. In 2007, since the average age of farmers was 55, the Government instituted the practice of hiring unemployed

### Selected basic indicators, Saint Lucia, 2006–2010.

Indicator	Value
Population 2010 (thousands)	165.6
Poverty rate (%) (2006)	28.8
Literacy rate (%)	...
Life expectancy at birth (years) (2010)	76.7
General mortality rate (per 1,000 population) (2008)	5.6
Infant mortality rate (per 1,000 live births) (2008)	13.9
Maternal mortality rate (per 100,000 live births)	...
Physicians per 1,000 population (2009)	0.8
Hospital beds per 1,000 population (2009)	1.5
DPT3 immunization coverage (%) (2010)	97
Births attended by trained personnel (%) (2008)	100.0

young people and acquiring arable land to lease to them. Crop production increased from 63,495 to 80,259 metric tons between 2005 and 2009, which led to a reduction in food imports.

The country is on the way to achieving the 2015 Millennium Development Goals in universal primary education and infant mortality. Poverty has fallen and education has become more accessible. Access to improved water and sanitation and efforts to achieve nutritional and food security are beginning to materialize.

### THE ENVIRONMENT AND HUMAN SECURITY

The population has access to drinking water of satisfactory quality: 80% receives its water through household connections, 8.5% through outdoor connections, 4.4% from public standpipes, and 7.1% from sources such as tanker trucks and private cisterns. The majority (92.5%) has access to some type of sanitation facility, whether a sewerage system (6.6%), septic tank (62.8%), or pit latrine (23.1%). Two sanitary landfills receive waste from 88% of households; the remaining households dispose of waste by composting, dumping, or burning it. In 2010, treatment plants were installed in communities where the water supply had been contaminated.

The issues of climate change, energy security, and sustainable development occupy an important place on the policy agenda. In 2009, three photovoltaic units and a wind turbine were installed to generate power. The country eliminated imports of products containing chlorofluorocarbons earlier than expected.

### Saint Lucia's Hemodialysis Program

*In response to the need to make health care more accessible and reduce mortality associated with end-stage renal failure, in 2010 the Government opened a hemodialysis center at St. Jude Hospital in Vieux Fort.*

*Two facilities, Victoria Hospital and St. Jude Hospital, will be able to provide dialysis for 48 patients per day, at an annual cost of around US\$ 1.2 million. This service will be available to all and subsidized by the Government (at 70% of the market price), so that patients pay only US\$ 55 per session.*

*In 2007, 85 people received dialysis. The majority of them were between the ages of 41 and 60.*

*Etiological analysis of the 105 cases of stage 4 and 5 renal failure in 2007 revealed that 98 cases (93.3%) were due to noncommunicable diseases.*

In 2008, the first stage of a survey on the foodborne disease burden (especially diarrheal diseases) was completed, with the purpose of identifying the causative factors and microorganisms involved. The results will be used to develop protocols for treating people sickened by these diseases.

### HEALTH CONDITIONS AND TRENDS

Infant mortality fell from 25.8 to 13.9 deaths per 1,000 live births in the period 2006–2008. There were 33 stillborn infants in 2005, 50 in 2006, and this figure dropped to 10 in 2009. The percentage of low-birth-weight babies was 10.9% in 2010.

Total mortality declined between 2006 (6.2 per 1,000 population) and 2008 (5.6 per 1,000). In 2007, the number of

deaths (952) and mortality rate (5.6 per 1,000 population) reached their lowest values. Noncommunicable diseases were responsible for 71% of all deaths from defined causes in 2008.

The number of workplace accidents fell from 158 in 2006 to 84 in 2010; the greatest number of accidents occurred in the 30–39-year age group.

No cases of vaccine-preventable diseases were reported in the period 2006–2010.

In 2010 a program for the surveillance of non-communicable diseases was launched that improved coding capacity.

A shelter for abused children with a comprehensive family program, a new residence for older persons, and a national center for mental well-being were built.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

In order to achieve equity in the delivery and use of services, work has been done on developing a universal coverage model to provide access to key health promotion, disease prevention, treatment, and rehabilitation interventions. The focus on noncommunicable diseases presents a challenge, as health promotion efforts must be more visible and comprehensive.

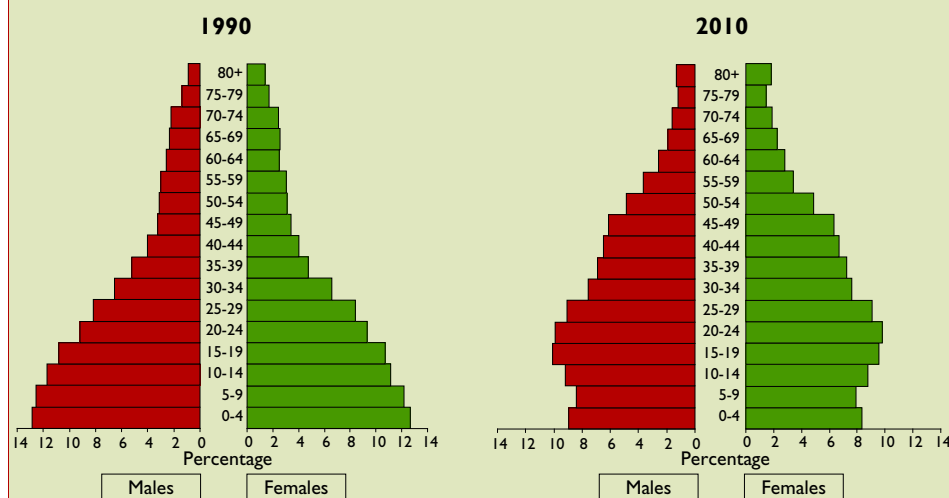
The Accelerated Health System Project was designed to support implementation of the National Strategic Plan for Health. It addresses aspects of restructuring the Ministry of Health, revitalizing the primary care system, making more dynamic use of health promotion strategies, and creating an information system for evidence-based planning

Between 2006 and 2010, the health infrastructure was bolstered, new programs were launched, access to services was facilitated, and broad vaccination coverage was achieved, all of which contributed to a reduction in maternal and child mortality.

The health services are financed through a pooled fund (public budget), donations, direct payments, and insurance plans. Public health expenditure increased from US\$ 19.9 million in the period 2005–2006 to US\$ 26.7 million in 2010.

In 2010, the National Insurance Scheme had 49,000 subscribers (72.6% of the workforce). This enterprise receives

Population structure, by age and sex, Saint Lucia, 1990 and 2010.



premiums from economically active people, to whom it provides health, disability, maternity, and workplace accident insurance, as well as death benefits. The company pays a premium to the Ministry of Health to cover hospitalization expenses.

The health system has three tiers: primary, secondary, and tertiary care. Each year, 80,000 people receive primary care services, and 9,000 access secondary care and hospital services. The public system covers 50% of primary care and 90% of secondary care at three hospitals: Victoria (160 beds), St. Jude's (currently 70 beds, with 90 planned), and Tapion (private, 30 beds). There is universal coverage of delivery care by trained personnel; some 13% to 15% of births are by cesarean section.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

In 2010, 86.4% of households had television, 75% access to cable TV, and 38.6% to a computer, although only 26.5% had an Internet connection.

The health information system has been under implementation since 2006. This system includes the National Drug Information Network, the Environmental Statistics Information System, the National Health Information System, an electronic health registry, and a patient registry system.

### MAIN CHALLENGES AND PROSPECTS

The country is prone to natural disasters, chief among them hurricanes. In 2010, Hurricane Tomás killed 7 people and injured 36. The total damages and losses came to US\$ 336.2 million.

Between 1996 and 2007, the land area devoted to agriculture shrank from 51,326 to 30,204 acres, a decline attributed to a lack of interest and of access to arable lands.

Three cases of maternal death were reported between 2006 and 2007. In 2009, births among adolescents accounted for 15.7% of total births. Although the health care network provides high prenatal care and delivery coverage, reproductive health education and safe motherhood strategies need to be strengthened.

Leptospirosis cases jumped from 4 to 17 between 2009 and 2010, and one male died of the disease. Schistosomiasis incidence ranged from 5 to 10 cases between 2006 and 2010.

Between 2010 and 2011, 9,313 people with disabilities were reported; 31.6% of them had visual impairments, 12.1% hearing impairments, and 56.2% another type of physical disability.

Between 2006 and 2010, 256 new cases of HIV were reported, 158 of them in the 25–49-year age group. A strategic plan was drafted to reduce the spread of HIV/AIDS in the population and mitigate its impact. Three groups are considered at risk: men who have sex with men, sex workers, and pregnant women.

There were 72 cases of tuberculosis between 2006 and 2010. In 2009, mortality from this disease stood at 2.9 per 100,000 population; prevalence was 27 per 100,000, and incidence 14 per 100,000. In 2010, 9 new smear-positive cases were reported.

A total of 2,185 traffic accidents were reported, in which 118 people lost their lives. Between 2005 and 2007, 112 murders were committed, and between 2005 and 2008, there were 21 suicide attempts. Between 2009 and 2010 (within a 12-month period) 153 murders, 220 kidnappings, 124 shooting incidents, and 120 cases of rape were reported.

The health sector continues to suffer from a shortage of health professionals, particularly for nursing and specialized services, and at referral hospitals and community health services.

Obtaining timely, relevant information is still an obstacle to improving and expanding the health information system.

# Saint Vincent and the Grenadines



Saint Vincent and the Grenadines is a Lesser Antilles nation in the Eastern Caribbean. It consists of 32 islands, islets, and cays covering an area of 345 km<sup>2</sup>. The country gained its independence from the United Kingdom in 1979, becoming part of the Commonwealth of Nations. Queen Elizabeth II is the Head of State, represented in the country by the Governor-General. Saint Vincent and the Grenadines has a parliamentary government based on the Westminster model. Its capital is Kingstown, and the country is divided politically and administratively into six parishes. Five parishes are on the island of Saint Vincent and the sixth is made up of islands of the Grenadines.

Saint Vincent and the Grenadines, with a gross national income (GNI) per capita of US\$ 5,130 in 2009, has an economy based on agriculture, construction, and other activities. In 2010, economic activity fell by 1.8% following the contraction of 2007–2009. This downturn is attributed to the global financial crisis and has in turn led to a decline in several of the country's leading economic sectors (e.g., agriculture, construction, and transportation).

The country's main health achievements during the period 2006–2010 include a new salt water treatment system and the construction of a modern, well-equipped hospital, along with the opening of polyclinics.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Despite the economic crisis and consequent liquidity problems during the 2006–2010 period, the government managed to lower poverty rates and increase access to education. It launched several social security programs that improved the socioeconomic situation of families and individuals alike. Funding was approved and allocated for social policies targeting vulnerable populations, including the poor, the elderly, the unemployed, people with HIV/AIDS, and women and children at risk.

Eradicating poverty was a priority in 2006–2010. The Gini coefficient of income fell from 0.56 in 1996 to 0.4 in 2007/2008, and the population living in poverty, from 37.5% to 30.2% over the same period.

In 2009, the government introduced a universal education policy. Higher education enrollment rose from 1,289 in 2006 to 1,867 in 2010. In 2010, during the Tenth Regional Conference on Women of Latin America and the Caribbean, the country became a signatory to the Quito Consensus, with the goal of increasing gender equality and promoting the empowerment of women.

### THE ENVIRONMENT AND HUMAN SECURITY

Almost the entire population of the country (98%) had access to safe drinking water in 2010. Moreover, 11.6% had household connections to the public sewerage system, while 56.6% had a septic tank, and 30.3%, a pit latrine. Between 2006 and 2010, a desalination plant was built to

#### Selected basic indicators, Saint Vincent and the Grenadines, 2008–2010.

Indicator	Value
Population 2009 (thousands)	101.0
Poverty rate (%) (2008)	30.2
Literacy rate (%) (2010)	84
Life expectancy at birth (years) (2010)	73.9
General mortality rate (per 1,000 population) (2009)	7.7
Infant mortality rate (per 1,000 live births) (2010)	16.8
Maternal mortality rate (per 100,000 live births)	...
Physicians per 1,000 population (2009)	0.6
Hospital beds per 1,000 population (2010)	2.6
DPT3 immunization coverage (2010)	100.0
Births attended by trained personnel (%) (2010)	98.3

provide drinking water to Bequia, one of the islands in the Grenadines.

The government completed a greenhouse gas inventory and conducted vulnerability and adaptation assessments of the coastal area and the tourism, agriculture, water, and health sectors.

As part of its obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer, the government is implementing an environmental management plan designed to gradually eliminate hydrochlorofluorocarbons from Saint Vincent and the Grenadines.

In 2006, the government enacted a law making seat belt use mandatory for all drivers and front-seat passengers, and helmet use mandatory for all motorcyclists.

### HEALTH CONDITIONS AND TRENDS

In 2010, diphtheria, pertussis, and tetanus (DPT) and polio vaccination coverage was 100%; measles, mumps, and rubella (MMR) coverage was 99.7%; and tuberculosis coverage (BCG) was 91.0%. The only vaccine-preventable disease reported during the period was chickenpox, with annual case numbers falling from 1,619 in 2001–2005 to just 620 in 2006–2010.

Overall, infectious and communicable diseases declined. In 2006, only two cases of dengue were reported; in the period 2007–2009, 10 to 20 cases were reported annually, and in 2010 there were 218 confirmed cases. Two imported cases of malaria were

### Better Access to Health Care with the Creation of Polyclinics

The Stubbs Health Centre was upgraded and reopened in 2010 as a polyclinic, the first of its kind in Saint Vincent. It is located in a district accessible to several communities on the windward side of the island.

The polyclinic provides routine prenatal care, postnatal care, infant care, family planning services, and specialized care in general medicine, pediatrics, psychiatry, and dentistry. It also operates as a maternity center and offers HIV counseling and testing and some other diagnostic services.

The polyclinic will serve as a coordinating center to promote well-being, increase health promotion, and support the fight against HIV and noncommunicable diseases.

Two more polyclinics will be built, one in the community of Mesopotamia in central Saint Vincent and the other in the town of Clare Valley on the leeward side of the island.

also reported during the period, one in 2008 and the other in 2010.

HIV prevalence remained relatively low (around 1% of the population) in 2006–2010. A 37% reduction in reported cases of HIV was observed between 2005 and 2008, along with a 40% reduction in AIDS-related deaths.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The National Insurance Services provided social security to all citizens who were subscribers in Saint Vincent and

the Grenadines. This contributory system provides subsidies to cover disease, pregnancy, disability, unemployment, funeral expenses, and survivors' benefits.

Health care in the public sector is financed through a pooled national fund and a fee-for-services system. Health expenditure represents 3% to 4% of the gross domestic product (GDP).

During the period 2006–2010, 250 nurses were licensed by the General Nursing Council, a 58.8% increase over the previous five-year period.

Primary health care is provided at 39 health centers in the country's nine health districts. Secondary care is provided mainly at the Milton Cato Memorial Hospital. The breakdown of causes for hospitalization in 2006–2010 was as follows: obstetric (32%), medical (28.7%), surgical (23.6%), and pediatric (15.3%).

The Mental Health Rehabilitation Program continued to pursue the goal of integrating mental health services into primary health care.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

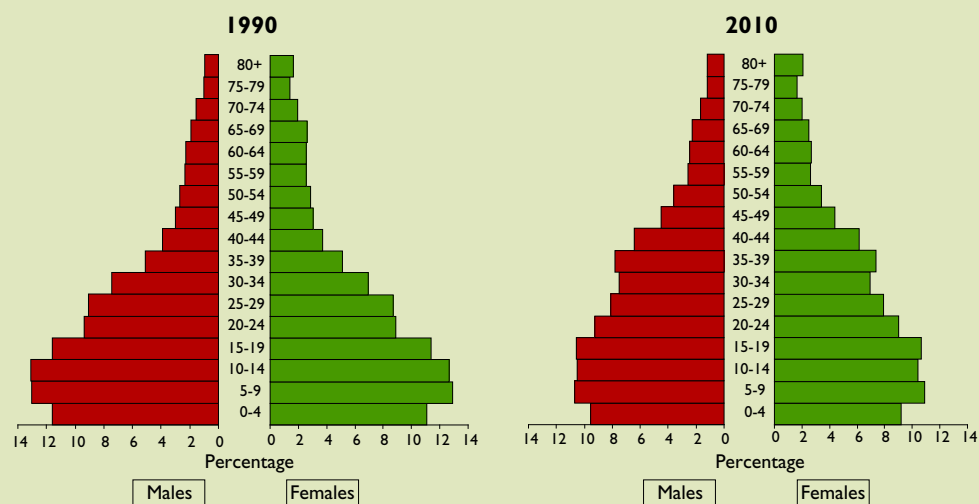
In 2006, work began on a system to create networks that would link hospitals and health centers to the Health Information Unit.

### MAIN CHALLENGES AND PROSPECTS

The country is located in the path of seasonal hurricanes. Hurricane Dean (2007) inflicted damages that cost over US\$ 800,000 and Hurricane Omar (2008), US\$ 2.07 million. Hurricane Tomás (2010) resulted in one death and material damage of US\$ 50.7 million.

Maternal and child health was a priority in the period 2006–2010. Twenty percent of mothers are adolescents under the age of 19. The leading causes of maternal morbidity were gestational diabetes, hypertension, urinary tract infection, kidney infection, and Rh incompatibility.

Population structure, by age and sex, Saint Vincent and the Grenadines, 1990 and 2010.



The incidence of leptospirosis jumped from 49 to 90 cases per 100,000 population. In 2010, the incidence of tuberculosis was 14.9 per 100,000 population. Twenty cases of pandemic flu caused by the influenza A(H1N1) virus were reported in 2009.

Chronic, noncommunicable diseases increased between 2006 and 2009, and were responsible for 74% of all deaths. Malignant neoplasms were the leading cause of death in men, with the most frequent type being prostate cancer (54%), followed by skin cancer (10%). Breast cancer was the leading cause of death in women (49%), followed by cervical cancer (15%) and skin cancer (15%).

Between 2006 and 2009, ischemic heart disease was responsible for 14.5% of the deaths from chronic, noncommunicable diseases. Other major causes of death were hypertension, injuries, and violence.

In 2010, the most common causes of hospitalization for mental disorders were schizophrenia (63% of the total), psychoactive substance use with schizophrenia (20.8%), and drug-induced psychosis (16.2%).

Consultations for noncommunicable diseases rose by 10.4%, with hypertension, diabetes-associated hypertension, and diabetes the main reasons.

Between 2008 and 2010, 86% of children had normal weight-for-age, 10% were obese, and 4% suffered from moderate malnutrition.

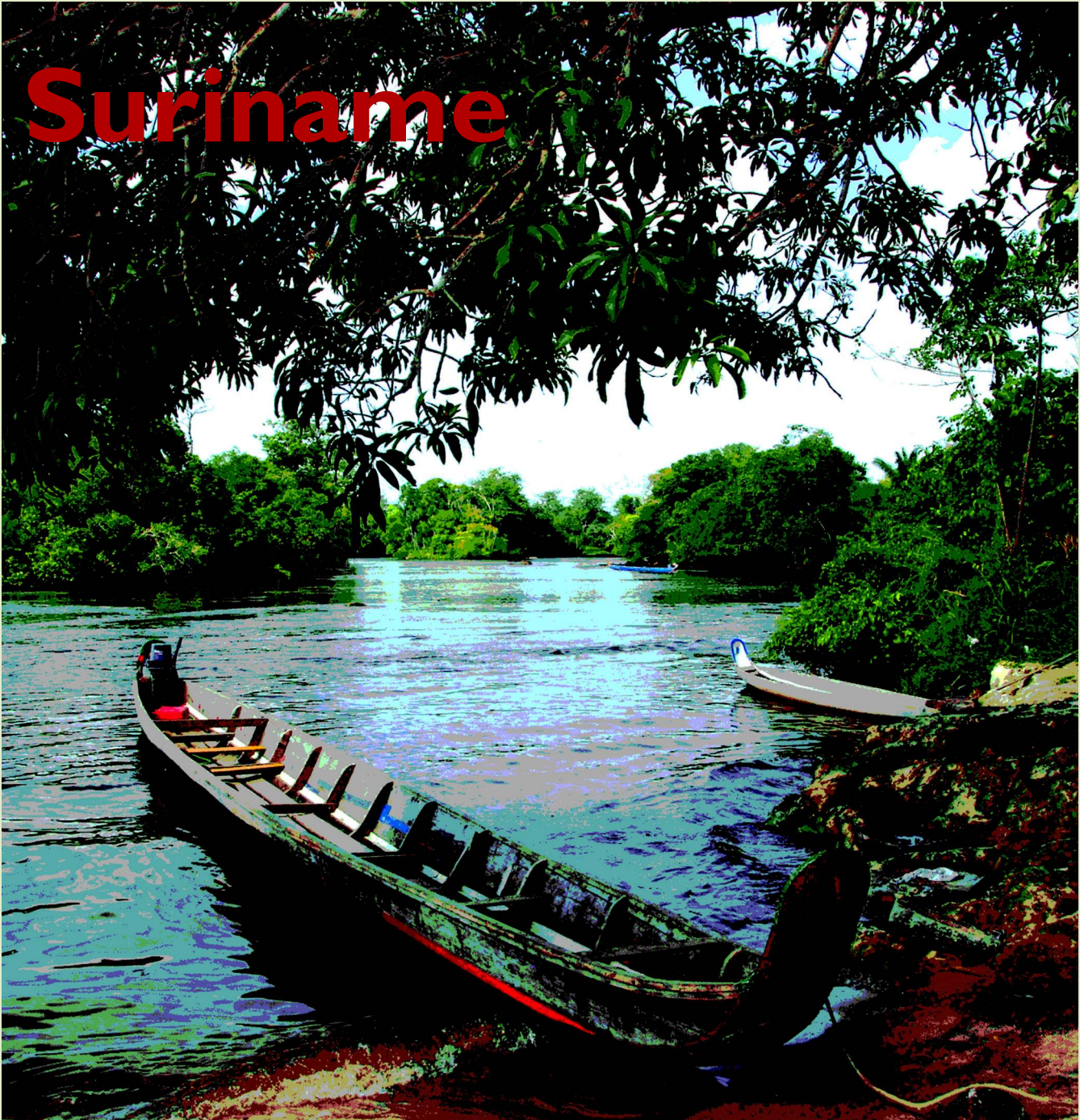
In 2010, 2,332 disabled people were identified with the following types of disabilities: physical and motor (34%); cognitive (22.6%); mental (16.9%); visual (11.8%); multiple disabilities (9.5%); and hearing (5.2%).

In the period 2009–2010, 1,080 traffic accidents were recorded, with eight deaths.

The country has no specialists in cardiology, oncology, or endocrinology. People who needed urgent care in disasters were referred to another Caribbean island (especially Barbados).

Among the challenges the country must consider for the future are the population's vulnerability to economic crises, the aging of the population, adolescent psychoactive substance use, and growing violence and crime. It is essential to strengthen health promotion among young people, encouraging the adoption of healthy lifestyles and practices, and to carry out interventions to reverse negative trends. This will require effort on the part of the private and public sectors, together with steadfast political will and economic commitment.

# Suriname



Suriname is located along the northeastern coast of South America is bordered to its north by the Atlantic Ocean and to its east, south, and west by French Guiana, Brazil, and Guyana, respectively. It has a surface area of 163,820 km<sup>2</sup>, with a small coastal plain, where most of the population lives, and a large interior tropical rainforest. Its political system is a democracy, in which the National Assembly exercises legislative authority and chooses the president, who heads the executive branch. The capital is Paramaribo. The country is divided into 10 political/administrative districts, which in turn are divided into a total of 62 resorts (*ressorten*).



Suriname is a South American country whose official language is Dutch, although 15 other languages are spoken. There are a variety of ethnic groups: Hindustanis, of Indian ancestry (27.4%); Creoles, a mixture of white and black races (17.7%); Maroons, descendants of African slaves (14.7%); Javanese, of Indonesian ancestry (14.6%); mixed (12.5%); Amerindians (3.7%); descendants of Chinese (1.8%); whites (0.8%); and other ethnic groups (0.5%).

Its income has increased to a per capita gross national income of US\$ 6,300, helped by industrial activity, mining, trade, and unstructured gold mining.

In 2006, total health expenditures were US\$ 163.5 million, representing 8.5% of the gross domestic product (GDP). As a percentage of total health expenditures, public spending was 42.6% and private spending was 53.8%, with 3.6% other. The per capita health expenditure was US\$ 324.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Overall unemployment fell from 12% in 2006 to 9% in 2009. The country's 2004 census had found an unemployment rate of 8.4% in urban areas but of 16.7% in rural interior areas.

Education is compulsory for children from ages 7 to 12 years. In 2006, the level of enrollment in preschool education (from ages 3 to 5 years) was 49.4% in urban communities, 29.5% in rural coastal areas, and 7.3% in the rural interior. In the same year, it was 63.1% for children of high-income homes and 17.4% for those in poor families. In 2008, 92% of children 6 years old attended first grade. In urban and rural coastal areas, 4% of registered children did not attend, versus 14% in interior rural areas. Also in 2008, the rates of primary study completion reached 39.1% for men and 53% for women. In interior rural areas, 30% of the teaching staff is not qualified.

In 2008–2009, 49% of the young persons between the ages of 12 and 17 were registered in secondary education, although with gender disparities (44% of boys and 54% of girls) and also ones of place of residence (only 3% in the rural interior).

### THE ENVIRONMENT AND HUMAN SECURITY

In 2010, 93% of the population had access to improved drinking water sources: 97.1% in urban areas, 97.9% in

#### Selected basic indicators, Suriname, 2008–2010.

Indicator	Value
Population 2009 (millions)	0.5
Poverty rate (%)	...
Literacy rate (%) (2008)	94.6
Life expectancy at birth (years) (2010)	70.4
General mortality rate (per 1,000 population) (2009)	6.3
Infant mortality rate (per 1,000 live births) (2009)	20.3
Maternal mortality rate (per 100,000 live births) (2009)	122.5
Physicians per 1,000 population (2000–2010)	0.5
Hospital beds per 1,000 population (2010)	2.6
DPT3 immunization coverage (%) (2010)	96.0
Births attended by trained personnel (%) (2010)	90.0

coastal rural areas, and 44.8% in interior rural areas. Furthermore, 84% overall had access to improved sanitation facilities: 90% in urban and coastal areas and 33% in interior rural areas.

The Office of Public Health and the Ministry of Agriculture, Livestock, and Fishing train people who handle food and also periodically inspect establishments that produce and sell food.

### HEALTH CONDITIONS AND TRENDS

Maternal mortality fell from 153 deaths per 100,000 live births in 2000 to 122.5 per 100,000 live births in 2009. Given the small number of births each year, the absolute number of maternal deaths is also small.

In 2009, there were nine deaths in children under age 5, with a crude mortality rate of 1.8 per 100,000 population, down from 3.2 per 100,000 in 2005. Infant mortality has remained stable: 20.2 per 1,000 live births in 2000 and 20.3 in 2009.

The country has moved forward considerably in the fight against communicable diseases, eliminating many of them or bringing them close to levels of elimination.

Dengue affects coastal areas and is the predominant vector-borne disease. The changes in incidence have been attributed to climate characteristics and increased areas with environments that are favorable for *Aedes aegypti*.

The Millennium Development Goal (MDG) 6 target for malaria was achieved, with the coastal area free of the disease, and the remaining transmission is connected to gold mining in the interior.

The incidence of Chagas' disease is low, and the Ministry of Health plans to establish a diagnostic screening system for all blood donations. There have been no

### Suriname's Changing Interior

Suriname's interior is home to indigenous tribal communities and a population descended from runaway slaves. The area had been isolated only, accessible by air or waterways, but now, with high prices for gold and technological changes in its mining, the region is a "labor magnet." Among those arriving have been many workers who enter the country illegally and migrate to the area in search of employment and income.

As men leave their home communities in search of gold, the social structure changes drastically. Women remain alone with their children and the land, with few income options other than subsistence farming. And, as the mobility of men increases, the acceptance of multiple sex partners grows, increasing the incidence of HIV and other sexually-transmitted infections. Health conditions for sex workers and miners are poor. Nor do they have social protections.

The unregulated and non-industrial mining of gold damages the environment, contaminates the watershed, and deforests the region. Without regulations for redevelopment, the abandoned mine sites continue to damage the environment.

reported cases of yellow fever, and residents of rural areas bordering French Guiana and Brazil have been vaccinated.

Basic vaccines are administered to infants and children under age 5, schoolchildren, and pregnant women. Despite public awareness of the benefits of vaccination, some foci of low coverage still persist.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Leadership and governance of the sector are the responsibility of the Ministry of Health, which pro-

motes health-related aspects in public policies and advocates for their application. The Office of Public Health of the Ministry prepares disease prevention and control programs, which are carried out by the services networks.

Health coverage is achieved through various insurance plans. The main ones are the State Health Insurance Fund, which covers civil servants and family dependents (21% of the population); programs administered by the Ministry of Social Affairs (24%); company health insurance plans (10%); and sales to the public by insurance companies.

There is consensus on strengthening disease prevention and health promotion, as well as on considering action on social determinants in primary care.

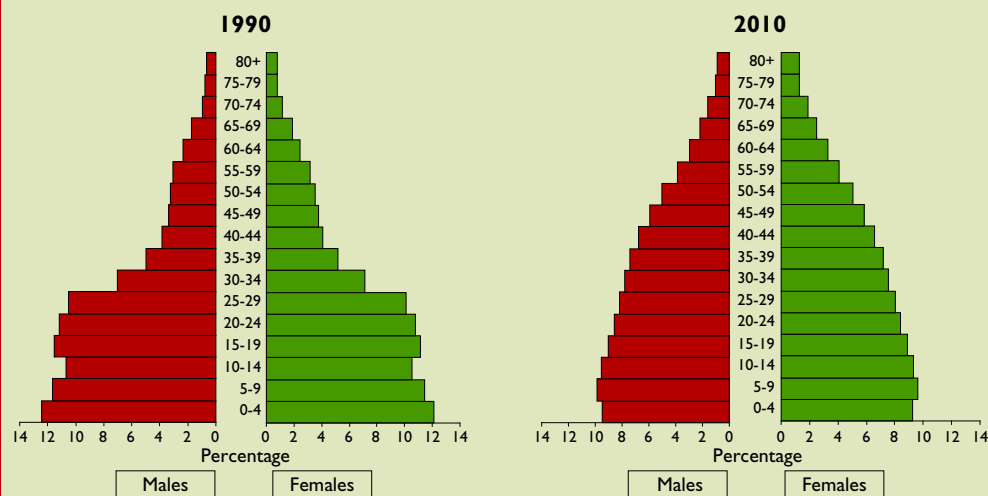
There are three health care networks: the Medical Mission, Regional Health Services, and the services of large companies. These have different forms of financing, membership, and approach. Each network specializes in different population segments, according to geographical location, employment, income level, ability to pay, and social position.

The established assistance capacity includes 56 Medical Mission dispensaries and health posts, 43 Regional Health Services establishments, 146 private physician's offices, 5 hospitals (2 private and 3 public), 1 psychiatric hospital, 40 dental care units, 3 private laboratories, and laboratories in each hospital.

Under a 2007 agreement, a Cuban medical brigade is working in Suriname, in collaboration with the Medical Mission and the Regional Health Services. The 200 professionals in the brigade include nurses, general practitioners, anesthesiologists, pediatricians, pharmacologists, and epidemiologists.

Cancer health care services have been expanded. Previously, there were no secondary and tertiary oncology services in the country. Patients sought these services in the Netherlands (paying out-of-pocket or with private insurance) or in Colombia (through an agreement between governments). Since 2011, a new facility has been providing palliative and therapeutic cancer care, thereby beginning to strengthen early detection and to increase the proportion of patients who receive treatment.

Population structure, by age and sex, Suriname, 1990 and 2010.



The Ministry of Health, the Pharmaceutical Inspectorate, and the Office of Public Health are responsible for pharmaceutical policies, standards, inspection, surveillance, and program preparation. Drugs on the Essential Medicines List are provided to patients on a fixed copayment basis.

### **KNOWLEDGE, TECHNOLOGY, AND INFORMATION**

While some progress has been made in health system information technologies, there have been no significant achievements. First, organizational and institutional communication in the health sector must improve. That will make it possible to standardize the information systems of the various service providers and to functionally integrate, for example, electronic medical records.

### **MAIN CHALLENGES AND PROSPECTS**

In 2009, occupational accidents caused 1% of deaths. However, few occupational or work-related illnesses are diagnosed and reported and, as a result, the nature and magnitude of the problem are unclear.

Some districts collect 70% of the solid waste that is produced. Others collect less than 30%, which is mainly placed in open-air dumps.

While pesticide imports per capita are high, there is little control of their use. In the mining sector, especially in small-scale gold mining, there is concern about mercury exposure. In May 2006 floods affected 30,000 km<sup>2</sup>, with 157 villages, and thousands of people lost their homes and livelihoods. The damage reached US\$ 41 million. The need for urban planning and for flood preparation are huge challenges yet to be resolved.

Climate change is a concern, due to the vulnerability of the coastal region and changing rainfall patterns. Both of those factors can affect the environment and the health of those who live along the coast (who comprise 80% of the population).

The burden of noncommunicable diseases and their related risk factors has increased. Noncommunicable diseases accounted for 60.5% of the 3,035 deaths in 2009. Cardiovascular diseases caused 26.9% of total deaths; external causes, 13.9%; neoplasms, 11.6%; and diabetes, 5.7%. Meanwhile, the leading causes of death from communicable diseases were HIV/AIDS (3.5%), acute respiratory infections (2.9%), and septicemia (1.4%).

In 2009, the prevalence of HIV was 1.1% in adults from 15 to 49 years. The crude death rate for HIV/AIDS in 2009 was 20.2 per 100,000 (21.5 in men and 18.9 in women). As the epidemic grew, tuberculosis cases increased from 82 (20 per 100,000) in 1990 to 177 (34 per 100,000) in 2009.

The Government is preparing a health insurance plan to reduce inequalities in access. The plan, however, faces challenges in covering sparsely populated and scattered areas and in overcoming a fragmented system. There is also a need to examine the relationship that service delivery has with the health and well-being of older adults.

Health spending is concentrated on hospitals, and primary care receives the smallest allocations. Furthermore, the growing participation of the private sector generates concern over increased out-of-pocket expenses.

A shortage of health care workers and specialists persists. Geographical distribution is unequal. Specialized physicians and nurses are concentrated in the capital and too few in number in rural areas and the interior of the country. Staff attrition through emigration is significant, with the mainland Netherlands being the preferred destination.

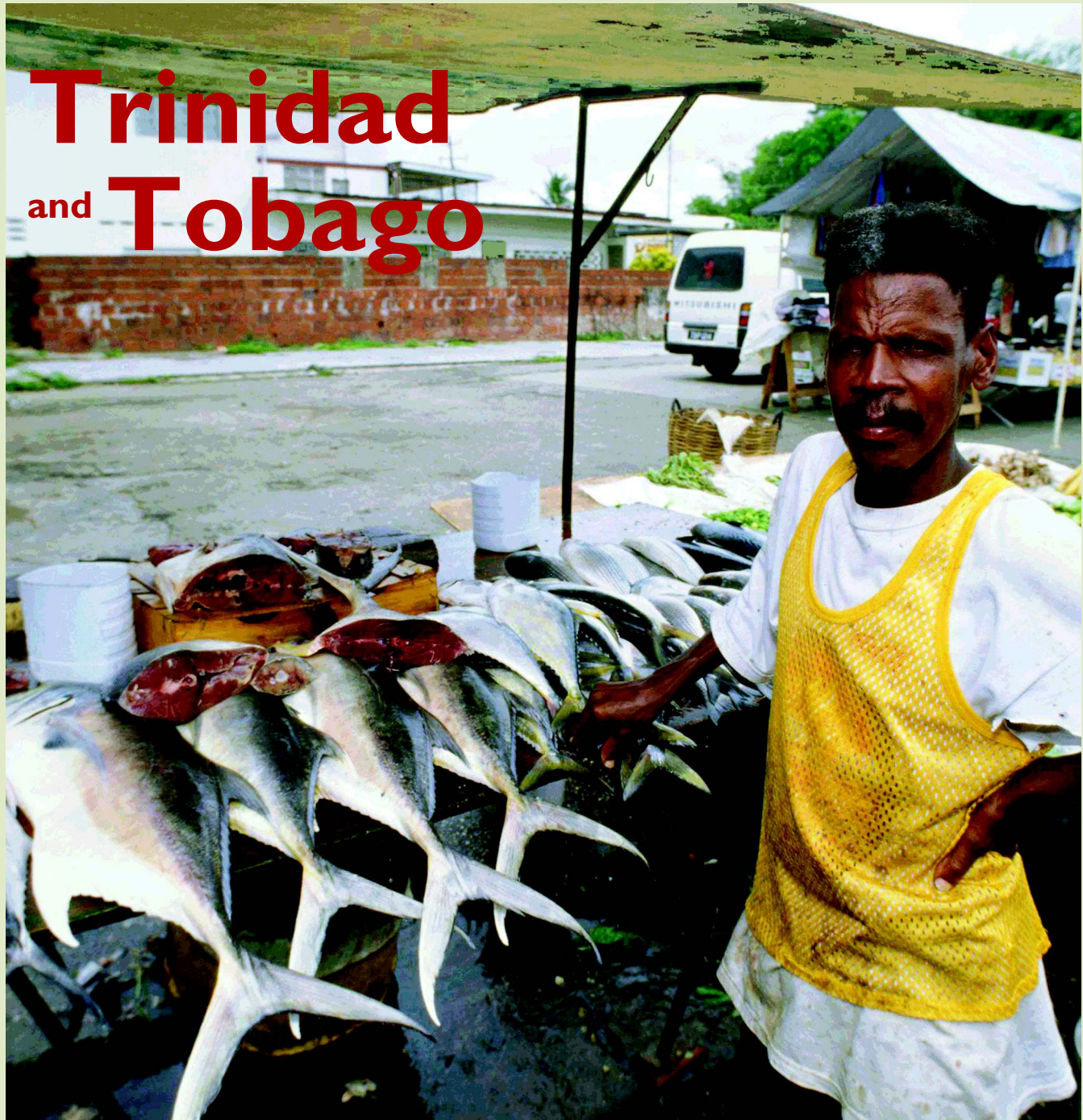
There is no monitoring of patient satisfaction with services, although two of five hospitals have suggestion boxes. Patient safety programs are incipient, and the Academic Hospital is still working on hospital safety protocols.

For those who live in the interior, access to specialized care is limited, so they must travel to the capital. Emergency care is a special problem, particularly obstetric and neonatal attention, which involves expensive air transport that is unavailable at night.

Health legislation has not identified information and communications technologies as a priority for the Ministry of Health. Without a mandate, challenges related to standardizing service provider systems and electronic medical records will persist.

Information systems need to go beyond information management based on vertical programs against diseases. Data on comprehensive approaches to health services delivery, disease prevention, and the health of the population must be compiled and disseminated. This will help to link health-related issues to the environment and will increase knowledge of basic health determinants and equity in health.

Improving health equity continues to be a great challenge, despite the partial reduction in inequalities that has been achieved through better availability, access, and relevance of services.



Trinidad and Tobago is located near the northern coast of Venezuela. It covers an area of 5,128 km<sup>2</sup> (4,828 km<sup>2</sup> for Trinidad and 300 km<sup>2</sup> for Tobago). The country obtained its independence from the United Kingdom in 1962. It is an independent republic within the Commonwealth of Nations. The system of government is parliamentary, based on the Westminster model. The capital is Port-of-Spain. The island of Trinidad is divided into 14 corporate regions (5 of which correspond to municipalities), while the island of Tobago has its own local government structure.

Trinidad and Tobago has a relatively stable economy, with a per capita gross domestic product of US\$ 21,200 in 2009. The country continues to rely largely on the energy sector (oil and natural gas).

From 2000 to 2007, there was good economic growth (above 8%), followed by contractions in 2007–2008 that were related to the global economic crisis. The growth rate was 3.5% in 2009, and it was 2% in 2010.

The country is undergoing a demographic and epidemiological transition, with a decrease in communicable diseases and an increase in chronic, noncommunicable diseases.

There has been ongoing progress in health, as indicated by the reduction in general and maternal mortality, and the incidence of communicable diseases.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Unemployment in 2009 was 5.3% (4.6% for men and 6.3% for women). Despite the fact that the country has had a relatively stable economy, there are pockets of poverty. According to the 2005 Living Conditions Survey, 16.7% of the population was poor and 1.2% indigent.

The Government provides free education at the primary, secondary, and tertiary level. Access to education and enrollment has been high, with indices above 97% reported for primary schooling and over 75% for secondary schooling. More women than men are studying at the university level. The index of adult literacy in 2009 was 99%.

### THE ENVIRONMENT AND HUMAN SECURITY

In 2006, 96.4% of the population had access to an improved water supply. Just over 75% had a water tap at home, 7.1% received piped water in their yard, 5.9% had access to a community tap, and 1.9% depended on water delivered by trucks. Because of the country's natural conditions and the degradation of watershed basins, most areas have an unreliable running water supply. More than

### Selected basic indicators, Trinidad and Tobago, 2005–2010.

Indicator	Value
Population 2010 (millions)	1.32
Poverty rate (%) (2005)	16.7
Literacy rate (%) (2010)	99.0
Life expectancy at birth (years) (2009)	70.3
General mortality rate (per 1,000 population) (2010)	8.2
Infant mortality rate (per 1,000 live births) (2009)	13.2
Maternal mortality rate (per 100,000 live births) (2009)	16.1
Physicians per 1,000 population (2008)	1.3
Hospital beds per 1,000 population (2008)	2.5
DPT3 immunization coverage (%) (2009)	94.0
Births attended by trained personnel (%) (2006)	99.7

half of the households have their own water storage tanks. Improved sanitation facilities are available to 98.7% of the population.

The country's energy industry produces high levels of greenhouse gases. However, the impact at the national level is unclear, and there are no data or studies available on the possible health effects.

### HEALTH CONDITIONS AND TRENDS

Trinidad and Tobago has had no cases of indigenous malaria reported since 1965. In 2010, one imported case was reported.

In 2006 there were 12 maternal deaths, but only 3 in 2009 (16.1 deaths per 100,000 live births). In 2006, infant mortality was 13.1 deaths per 1,000 live births, and 13.2 in 2009.

Population structure, by age and sex, Trinidad and Tobago, 1990 and 2010.



### Trinidad and Tobago Health and International Cooperation

*The Ministry of Health has assigned high priority to the coordination and satisfactory management of international collaboration, and it has created an international cooperation unit for this purpose. The unit functions as a liaison for various stakeholders in international policy issues involved in health sector management.*

*International funding has been mainly directed toward the programs and projects combating HIV/AIDS and toward the health sector reform program.*

*PAHO/WHO cooperation has focused on the prevention and control of noncommunicable chronic diseases, promotion of healthy lifestyles, quality of care, family and community health, strengthening health systems, prevention and control of communicable diseases, and establishment of a health information system.*

*The UN Volunteers program, which is administered by the United Nations Development Program, also contributes to the health sector, including helping establish a country-specific development information database.*

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Ministry of Health has identified the need to strengthen planning for effective human resource management. In 2010 a project was initiated to formulate a strategic plan for human resources.

In response to the health problems of the elderly and the expenditures to meet their needs, the government adopted a series of measures. One was the formulation of a national policy on aging. Another was the establishment of a Division of Aging within the Ministry of Social Development.

In recent years, Trinidad and Tobago has been investing noticeably larger amounts in health, as shown by various indicators. As a proportion of general government expenditures, spending on the health area grew from 6.3% in 2006 to 8.1% in 2009. Over that same 2006–2009 period, spending by the Ministry of Health rose by some 50%, and with an additional increase in 2010. Further, the private sector has made similar increases in its expenditures on health since 2006.

Medications are free at all public health facilities. In addition, since 2005 the Chronic Disease Assistance Programme (CDAP) has provided to citizens, at no cost, prescription drugs as well as other pharmaceutical products used in the treatment of 12 chronic disorders.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

In 2010, a project was launched to establish an Observatory of Human Resources for Health, as an instrument for guiding necessary strategic planning of human resources for health.

The United Nations Volunteers program has supported the creation of a country-specific database on development information.

### MAIN CHALLENGES AND PROSPECTS

One of the country's current environmental challenges is water pollution caused by agrochemical products, industrial and hazardous waste, and untreated wastewater. Additional environmental problems include oil-polluted beaches, deforestation, and soil erosion.

Pollution and watershed destruction have contributed to the poor reliability of water supply service. Rapid industrialization and urbanization, in addition to increasing levels of personal and domestic consumption, have substantially increased the quantity of solid waste. Of special relevance to the health sector is the fact that there is no national policy or program on solid waste management to address the growing volume of waste, including biomedical and other hazardous wastes.

The country is at risk of natural disasters, such as floods, earthquakes, and hurricanes. Between 2006 and 2010 there were no such events that impacted health, however. With climate change, the frequency of flooding in the country has increased.

Dengue continues to be a cyclical endemic concern, with confirmed outbreaks in 2002, 2005, and 2008.

In Trinidad and Tobago, the HIV/AIDS epidemic is generalized. It was one of the 10 leading causes of death between 1997 and 2007. In 2009 the national incidence of HIV was 1.5%. Records from the beginning of the epidemic in 1983 through December 2008 show a cumulative total of 20,176 HIV cases. The incidence of tuberculosis increased from 1997 to 2007, and it reached 24.1 cases per 100,000 population in 2008.

Both for infants and for children under 5 years old, infectious diseases and acute respiratory infections continue to be the leading causes of morbidity. In 2009, around 6% of children under 5 years old were underweight.

Taken together, chronic, noncommunicable diseases are the leading cause of death, and they contribute appreciably to morbidity and to spending on health. The

Ministry of Health has reported that 60% of all deaths are due to chronic, noncommunicable diseases. These diseases have an impact on mortality and morbidity, and they reduce people's quality of life over extended periods of time.

Criminal violence and domestic violence present a growing social and health problem. Crime has had a notable impact on mortality, morbidity, and hospitalizations. Between 2006 and 2008, reports of serious crimes grew from 19,565 to 20,566, murders increased by 47%, and thefts rose by 35%.

Despite its low estimated level, the true maternal mortality rate is unclear, since various national and international methods yield different figures. A national study on maternal mortality was set to begin in 2011.

Obesity is on the rise, thus posing a public health concern. Several surveys have shown that obesity is increasing among primary and secondary schoolchildren.

The shortage of trained health professionals in the country is a persistent problem. In 2009, the human resources in the health sector were insufficient to meet the population's needs. There were some 3,000 unfilled positions (medical and paramedical) throughout the public health sector; of that total number, 80% were positions for nurses and 13% were positions for physicians.

It is projected that the large number of vacancies will increase, given the aging of the nursing population, the high levels of emigration of medical personnel, and the internal migration of public health workers to private medical and paramedical institutions. There is still no plan for health personnel that will successfully attract a sufficient number of competent professionals in the future.

The Ministry of Health's capacity to develop its policy, planning, and regulatory mandates has been partially strengthened. However, more than 15 years after the health sector reform process was launched, the Ministry of Health still does not totally fulfill its leadership role, and the country's five Regional Health Authority units have been unable to deliver all the health services the population needs.

The high incidence and prevalence of chronic, noncommunicable diseases and their risk factors is one of the most pressing problems for Trinidad and Tobago. Regional and local strategies have been designed to effectively address their prevention and to promote healthy lifestyles. However, appropriate data compilation and assessment is needed to evaluate the impact of these interventions, establish appropriate strategies, and forge strong partnerships into the future.

# Turks and Caicos Islands



The Turks and Caicos Islands is one of the United Kingdom's Overseas Territories. The territory is located in the North Atlantic, immediately southeast of the Bahamas and 145 km north of Hispaniola. The territory is an archipelago, with 7 large inhabited islands, 33 uninhabited islands, and many small cays. The government system is parliamentary, based on the Westminster model. The Governor represents the Queen of England, heads the government, chairs the cabinet, and supervises the legislative council. The capital is Cockburn Town. The territory's political-administrative divisions consist of six districts (two in the Turks Islands group and four in the Caicos Islands group).



The economy of the Turks and Caicos Islands is based mainly on tourism, offshore financial services, and fishing. The territory had a per capita gross domestic product (GDP) of US\$ 22,412 in 2009. Economic conditions deteriorated slightly between 2008 and 2009, in part due to the global recession, which affected tourism and trade worldwide.

The country's growth and population structure reflect the importance of immigration, especially in the reproductive-age group, who contribute to the economy but also generate new demands for health services.

Health care is provided through a series of public health clinics located on all the main (inhabited) islands, two hospitals (run by the Government of the Turks and Caicos Islands), and private clinics, which provide services for a fee.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

The per capita GDP rose 11.6% from 2006 to 2008, going from US\$ 21,742 to US\$ 24,273. However, the figure for 2009 was 7.7% lower, at US\$ 22,412. Unemployment fell from 31.1% in 2006 to 26.1% in 2008.

There has been substantial immigration by refugees and job seekers coming from neighboring Haiti and the Dominican Republic. Reflecting the effect of that immigration flow, non-nationals made up 67% of the territory's resident population in 2008.

### THE ENVIRONMENT AND HUMAN SECURITY

Annual precipitation in the Turks and Caicos Islands is too low to meet the population's needs for water, so a substantial portion of the drinking water distributed and consumed on the most populated islands is produced through reverse osmosis. More than two-thirds of households collect rainwater for personal use.

Domestic wastewater is collected mainly in septic tanks and catchment basins, with a relatively limited use of pit latrines. There are 75 wastewater treatment plants serving the hotel industry.

In 2008, the Turks and Caicos Islands was affected by two disastrous storms (Tropical Storm Hanna and Hurricane Ike). After Hurricane Ike, public services such as electricity and water were knocked out for an extended period. Some 95% of the buildings were damaged, with

### Selected basic indicators, Turks and Caicos Islands, 2008–2010.

Indicator	Value
Population 2010 (thousands)	34.5
Poverty rate (%)	...
Literacy rate (%)	...
Life expectancy at birth (years) (2010)	75.6
General mortality rate (per 1,000 population) (2008)	1.5
Infant mortality rate (per 1,000 live births)	...
Maternal mortality rate (per 100,000 live births)	...
Physicians per 1,000 population (2009)	1.1
Hospital beds per 1,000 population (2009)	1.4
DPT3 immunization coverage (%) (2009)	100
Births attended by trained personnel (%) (2009)	100

the islands of Grand Turk, Salt Cay, and South Caicos hit especially hard. More than 700 people lost their homes. Damages were estimated at US\$ 213.6 million, with a per capita impact of US\$ 6,120.

### HEALTH CONDITIONS AND TRENDS

Life expectancy rose between 2001 and 2008. For men, it went from 71.2 to 73.1 years, and for women, it climbed from 75.5 to 77.8 years.

During the 2006–2010 period, at-risk pregnancies declined. Over that same 2006–2010 timeframe, there were 21 deaths in the age group of 0 to 4 years old. Of these 21, 17 were in children under 1 year old, and 4 were among those from 1 to 4 years old.

Mortality from AIDS has fallen. Antiretroviral treatment was introduced in 2005; in 2010, 23.4% of the people known to be living with HIV were being treated with antiretroviral medications.

The crude mortality rate ranged from a high of 3.3 deaths per 1,000 population in 2007 to a low of 1.5 per 1,000 in 2008, an artifact of small populations.

During the 2006–2010 period, the leading causes of death were chronic, noncommunicable disorders (hypertension, diabetes, heart diseases, and injuries) and HIV/AIDS.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The health sector reform taking place in the territory has influenced the way in which most services (some primary and secondary care, and all tertiary care) are provided to

the legal residents of the Turks and Caicos Islands. This includes services at two new hospital facilities, which are managed partly by the Government of the Turks and Caicos Islands and which are financed by the Government and by contributions from employees and private-sector employers, via the recently established National Health Insurance Plan (NHIP). The intent of the reform is to ensure equitable access to health for all legal residents of the territory.

The Government of the Turks and Caicos Islands implemented the National Health Insurance Plan in 2009, to provide all registrants with access to health care. Contributions to the Plan are a fixed percentage of income for employees. There are special rates for employers, self-employed individuals, and small businesses. Exemptions or dispensations are also considered for indigent and dependent persons and other special populations. Nominal copayments are transacted at each point of service, including at private pharmacies.

Population growth has led to increased health costs, which went from US\$ 27.2 million in 2006 to US\$ 70.4 million in 2008 (30% of government spending). More than half of the 2008 health spending was allocated to the Treatment Abroad Programme. Those costs for services that are not available locally climbed steeply between 2006 and 2008, from US\$ 12.6 million to US\$ 40.1 million.

The numbers of clinical personnel positions have increased in response to the larger population. There are 10.8 physicians, 30.3 nurses, and 1.8 dentists per 10,000 population. These ratios are relatively similar to those of other Caribbean countries, but the number of personnel is still insufficient to provide care for the entire population

### The Turks and Caicos Islands Restructures Its Health Services to Meet Demand

*The Turks and Caicos Islands has restructured its health services to meet the increasing demand for additional and more expensive services for the rapidly growing population.*

*The introduction of the National Health Insurance Plan (NHIP) is part of this effort. The plan is financed in part by government contributions and in part by employer and employee contributions. The self-employed also contribute to it.*

*Another strategy involved commissioning InterHealth Canada, a global health care management firm, to handle operations of the new hospital centers on Grand Turk and Providenciales in 2010.*

*These new establishments provide improved emergency and hospitalization care, imaging and lab support, and specialized services in general surgery, as well as in pediatrics, obstetrics/gynecology, internal medicine, and traumatology. Visiting specialists will include neurologists, otorhinolaryngologists, and gastroenterologists. These services should reduce the need for residents to travel abroad to access this care and will decrease expenses associated with the Treatment Abroad Programme.*

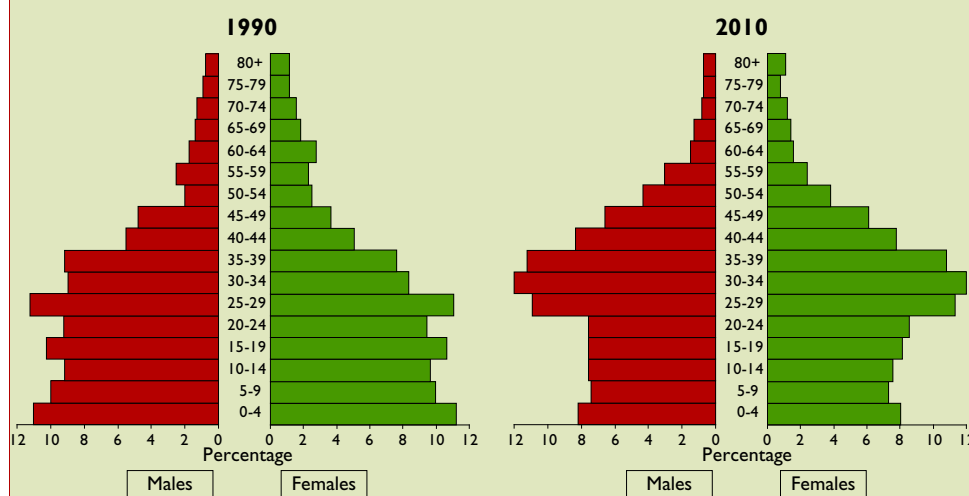
*The clients of these services are the people enrolled in the National Health Insurance Plan.*

scattered across the various islands. Turnover is high among contracted health personnel, with most of those persons leaving the territory after a two- or three-year stay. In response, the Government has introduced incentives to encourage its citizens to return to work in the public sector. These inducements have included scholarships for tertiary and other specialized training.

In 2006, the Government undertook a Health Care Renewal Strategy (HCRS). The aims were to extend State-

funded health care to all residents of the Turks and Caicos Islands and carry out the recommendations of the Health Sector Development Strategy, which was developed in 2000 with the support of the Department for International Development (DFID) of the United Kingdom. The goal is to provide more cost-effective service by reducing unnecessary expenses and containing health care costs, while improving cost recovery and generating alternative or supplementary financing, but without sacrificing quality of care.

Population structure, by age and sex, Turks and Caicos Islands, 1990 and 2010.



The two new hospital centers, which are on the islands of Grand Turk and Providenciales, offer a comprehensive range of care. This helps reduce the need for patients to travel overseas to have access to such services, which in turn reduces the expenses incurred by the Treatment Abroad Programme.

### **KNOWLEDGE, TECHNOLOGY, AND INFORMATION**

The Ministry of Health's National Epidemiology and Research Unit (NERU) was created as an independent unit to support and improve the delivery of health services. With that objective, NERU is in charge of bolstering disease surveillance; strengthening the capacity of the Ministry to respond more effectively to disease outbreaks; and leading and conducting surveillance activities and research to generate health information that will be the basis for health policy and decision-making, and evidence-based health interventions.

NERU prepares and disseminates epidemiological and surveillance reports and conducts essential research projects, especially in the area of child health. The research findings are disseminated at the local and regional levels, and there are also plans to hold an annual data dissemination workshop and conference to bring together local stakeholders with regional and international colleagues and partners to facilitate and encourage the sharing and exchange of knowledge. The findings would be used to support evidence-based health decision-making in the Turks and Caicos Islands.

### **MAIN CHALLENGES AND PROSPECTS**

The flow of immigrants from neighboring countries who come in search of political asylum or better living

conditions is a priority challenge for the territory, because of the impact on population growth. The influx of people in their reproductive years (25 to 44) caused the dependency ratio to drop from 48% in 2001 to 32.5% in 2008.

The influx of immigrants, either as workers or illegal foreigners, has shifted the health scenario, creating greater demands for health services, especially maternal and reproductive health and pediatric care.

Solid waste management is another priority challenge throughout the territory. Currently plans are being carried out to address this issue, starting with Grand Turk and Providenciales.

The Turks and Caicos Islands is vulnerable to tropical storms, such as Tropical Storm Hanna and Hurricane Ike in 2008. These events have an inevitable effect on the territory's health and economy, as dwellings and other buildings are left destroyed in their aftermath. To face this challenge, in 2009 the National Health Emergency Management Unit was established. Its main goal is to coordinate the activities planned for preparedness, monitoring, mitigation, and response to threats and disasters that can impact public health.

The incidence of cancer rose from 15 cases in 2000 to 26 cases in 2008. The most common types were prostate, breast, uterus, cervix, and colorectal.

A review carried out in 2008 found that injuries were the most frequent reason for emergency room visits (18.8%).

Chronic, noncommunicable diseases pose a major health challenge. Hypertension and diabetes were the most common noncommunicable diseases in 2010, with rates of 34.2 and 11 per 10,000 population, respectively, after steady increases from 2001 through 2009. About half the cases of both diseases occurred in people 45–64 years old.

# United States of America



The contiguous United States—the “lower 48” states and the District of Columbia—occupies the center of North America, bordered on the north by Canada, on the south by Mexico, on the east by the Atlantic Ocean, and on the west by the Pacific Ocean. In addition are the states of Alaska (west of Canada) and Hawaii (in the middle of the Pacific Ocean), along with several other territories in the Caribbean Sea and the Pacific. Its total land area is 9,826,675 km<sup>2</sup>. It is a federal republic. The national capital is Washington, D.C., and its political subdivisions include the 50 states and the District of Columbia.

With a gross national per capita income of US\$ 46,790 in 2008, the United States is one of the world's most affluent countries. However, it has undergone a serious economic crisis since that year (precipitating the current international crisis), which has caused, among other things, unemployment, lowered family income, and increasing inequality between the wealthiest stratum and the middle class. These changes have intensified debate on how to address as fairly as possible health problems, education, human security, and the lives of people in an aging and more ethnically diverse population.

The United States' health system is quite developed and expensive, and the level of health is relatively good. However, it faces important challenges with regard to serving people's needs, especially low-income people who lack health insurance and cannot pay for health care.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

The gender-based income gap continues to narrow. Between 2005 and 2006, women's income rose from 62% to 81% of men's income.

The government, by opportunely providing major monetary support to the financial and production sectors, and strengthening government programs during the economic crisis that began in 2008, contributed to averting more serious consequences for the economy, employment, and the living conditions of lower-income individuals and families.

### THE ENVIRONMENT AND HUMAN SECURITY

The Environmental Protection Agency has calculated that, thanks to regulations implemented under the Clean Air Act of 1970, 160,000 deaths and 100,000 hospital visits were prevented in 2010 alone.

### HEALTH CONDITIONS AND TRENDS

In 2007, maternal mortality was 12.7 deaths per 100,000 live births and infant mortality was 6.75 deaths per 1,000 live births. The United States has reduced vaccine-preventable disease considerably by means of childhood immunization.

#### Selected basic indicators, United States of America, 2006–2010.

Indicator	Value
Population 2010 (millions)	308.7
Poverty rate (%) (2009)	13.4
Literacy rate (%)	...
Life expectancy at birth (years) (2010)	78.3
General mortality rate (age-adjusted rate, per 1,000 population) (2007)	7.6
Infant mortality rate (per 1,000 live births) (2007)	6.8
Maternal mortality rate (per 100,000 live births) (2007)	12.7
Physicians per 1,000 population (2009)	2.6
Hospital beds per 1,000 population (2008)	3.1
DPT3 immunization coverage (%) (2008)	96.0
Births attended by trained personnel (%) (2006)	99.5

In 2008, there were nearly 491,000 people infected with HIV in the United States. The incidence of HIV infection has been relatively stable, with approximately 50,000 new infections every year. In 2008, more than 75% of adult and adolescent HIV carriers were men. An estimated 18% of men and 32% of women who contracted HIV in 2008 did so through intravenous drug use. A reduction in pediatric HIV is associated with more HIV screening tests in young pregnant women and the use of antiretroviral drugs to prevent HIV transmission from mother to child.

Tuberculosis infection has continued to decline. In 2010, 11,182 cases were recorded (3.6 per 100,000 population). Tuberculosis infection was 11 times greater among foreign-born people than among the native-born.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The health laws and policies proposed between 2006 and 2010 were aimed at reducing health costs, increasing the number of people with health insurance, growing the number of health care personnel, strengthening nutritional programs, facilitating the acquisition of prescription drugs, developing technology and health-related research, building infrastructure, and helping military veterans adapt to civilian life.

The American Recovery and Reinvestment Act of 2009 (ARRA) strengthens existing programs such as the National School Lunch Program (NSLP); the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); Congregate Nutrition Services,

### The Patient Protection and Affordable Care Act (PPACA) of 2010

The nation faces important challenges on health care costs and how to divide functions between the Government and the private sector. Some 50 million people do not have health insurance, especially those with lower incomes and worse health. The Government has contributed significant funds to strengthen and expand health management, strengthen the health infrastructure, and train health workers.

An important step toward meeting these challenges was the passage in 2010 of the Patient Protection and Affordable Care Act (PPACA). This law tries to make quality health care available to all U.S. citizens and reduce the growth of health costs.

Among other provisions, the PPACA provides that people with preexisting conditions cannot be excluded from health insurance coverage. It makes it easier to obtain prescription drugs, supports improvements in the quality and efficiency of health care, provides substantial financing to extend health insurance to more people, and requires that everyone have health insurance. The law will take effect gradually in the coming years.

which provides food and other nutrition services to the elderly in group settings; Home-Delivered Nutrition Services; and the Food Distribution Program on Indian Reservations (FDPIR). The Food and Nutrition Act of 2008 strives to use food surpluses effectively and improve nutrition in low-income homes.

Health expenditures surpassed US\$ 2.3 trillion in 2008, 73% more than in 2000, when the figure was US\$ 1.4 trillion. In 2008, per capita health expenditure was US\$ 7,681 and represented 16.2% of the gross domestic product (GDP).

Health insurance determines whether people will have access to health services. In 2007–2009, 61% of the adult population under 65 years old had private health insurance, 54% of people under age 18 had private health insurance, and 40% had some form of public insurance administered by the federal and state governments. The majority of people over age 65 also have some form of health insurance, including Medicaid (insurance for the poor) or Medicare (insurance for people over age 65).

In 2008, the health care sector was composed of 596,000 facilities, which varied in size, personnel characteristics, and structure. Outpatient health care services employed 43% of health personnel and accounted for 87% of facilities, while hospitals employed 35% of health personnel and represented 1% of facilities.

### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The government has made important investments in information technology to consolidate health data among institutions. One goal of this effort is to increase efficiency and lower the cost of Medicare and Medicaid services.

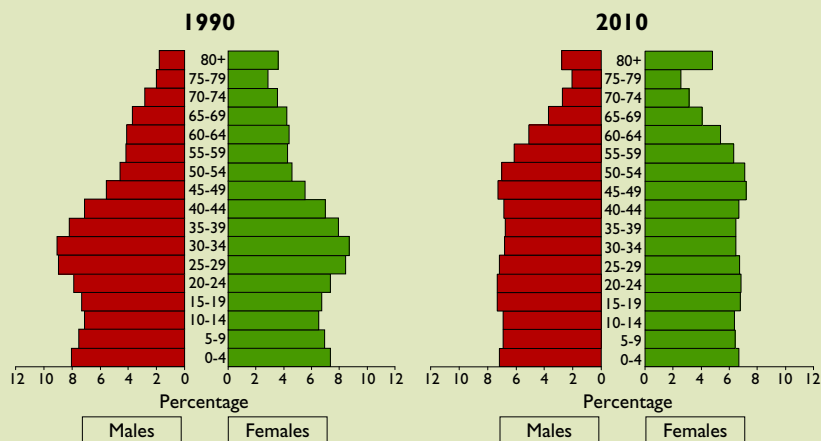
Research in rehabilitation and electronic support technologies will enhance the ability of the elderly and the disabled to manage their own care. These support devices include computers, ergonomic equipment, reclining armchairs, adjustable-height beds, stair chairlifts, hearing aids, and help-summoning devices.

### MAIN CHALLENGES AND PROSPECTS

The economic crisis that began in 2008 contributed to increasing social inequalities. The average poverty rate between 2007 and 2009 was 13.4%. The rate varied by geography—ranging from 21% in Mississippi to 6.9% in New Hampshire, and 13% in urban and 15% in rural areas—and by racial and ethnic group (22% for African-Americans, 21.3% for Hispanics, and 8.4% for Caucasians).

In 2007, the level of schooling was high. However, high school dropout rates among people from 16 to 24 years old varied by ethnic group and race (6.1% for Caucasians, 11.5% for African-Americans, and 19.9% for Hispanics). Among foreign-born Hispanics, 34% had dropped out of school.

Population structure, by age and sex, United States of America, 1990 and 2010.



In 2010, 4,690 workers died from work-related accidents and every year approximately 49,000 deaths are attributed to work-related illnesses.

In 2008, there were 10.2 million motor vehicle accidents, causing 39,000 deaths. In 2007, poisoning caused 40,100 deaths (22% of total deaths from external causes). Gunshot wounds caused 31,347 deaths, or 17.7% of total trauma deaths in 2007. In 2009, 3.6 million children were abused or did not receive adequate care. In 2010, 35.6% of women reported that they had been victims of physical violence or harassment by an intimate companion at some point in their lives.

In 2005, four important hurricanes affected the United States; the most devastating was Katrina, which caused 1,836 confirmed deaths and some US\$ 81.2 billion in economic losses. In 2010, major floods in northeastern and southeastern states caused significant losses.

In 2009, dengue in Florida was reported for the first time in 75 years, and since then more than 90 cases of local transmission have been reported in that state. West Nile virus has become endemic throughout the continental United States; 1,021 cases were reported in 2010. The average annual number of reported malaria cases between 2006 and 2009 was 1,500.

The Centers for Disease Control and Prevention (CDC) calculates that between April 2009 and April 2010 there were 61 million influenza A(H1N1) cases, causing 12,470 deaths.

In 2007, there were 2,423,712 deaths (for a crude mortality rate of 7.6 per 1,000 population). Chronic, noncommunicable diseases are the leading cause, and among them, heart disease ranked first among causes (191 per 100,000 population). Malignant neoplasms (178 per 100,000) were the second leading cause. Malignant neoplasms and heart disease together accounted for almost 50% of total deaths.

In 2010, 25.6 million people 20 years old or older had diabetes mellitus; in people 65 and older the rate was 27%. Approximately 68 million (31%) adults (18 years old or older) were experiencing hypertension in 2005–2008; 70% were receiving treatment and in 46% the condition was controlled.

In 2007–2008, more than two-thirds of the United States adult population was overweight; 34% were obese and 5.7% extremely obese. More than one-fifth of adults (21%) smoked cigarettes in 2009. In 2010, 8.9% of people 12 years old or older had used illegal drugs in the previous month; among adolescents between ages 12 and 17 the rate was 10.1%.

The costs associated with morbidity and mortality from chronic, noncommunicable diseases pose the main health challenge in the United States. In 2007, 80% of deaths were due to noncommunicable diseases. Lack of physical activity and deficient diet have aggravated the overweight and obesity epidemics that affect 67% of adults over 20 years old.

Accidents, negligently inflicted injuries, and violence are important public health problems in all ethnic and racial groups, particularly for the very young and for men. In 2007, accidents and injuries were the leading cause of death of people between 1 and 44 years old. Homicide was among the five leading causes of death of people between 1 and 34 years old.

The country's inequality problems—50 million people do not have health insurance—make it harder to manage health costs and assign health roles to the government and the private sector. Inequities also affect Medicaid and Medicare funding and the special needs of the more than 20 million military veterans.

The government has addressed these issues by mobilizing huge financial resources to strengthen health data systems, optimize Medicare and Medicaid management, bolster the health infrastructure, and train health workers.

As the United States population ages, caring for the elderly will be a growing burden for individuals and the government. By 2015, the shortage of physicians will become more critical owing to the rising number of elderly people enrolling in Medicare and an overall increase in the population accessing health care because of changes in the laws governing health insurance.

One looming problem is the likelihood that the health care work force will be ever more insufficient, and that it will not be adequately organized or trained for addressing an aging population's health needs.

# Uruguay



Uruguay borders on the west with Argentina and on the north and northeast with Brazil; on the east and south it borders the Atlantic Ocean and the Río de la Plata. It has a land area of 176,215 km<sup>2</sup> and a topography of low, rolling hills, vast plains, and a fertile coastline. Its climate is temperate. The government is a representative democracy, with executive, legislative, and judicial branches. The capital is Montevideo, and there are 19 administrative departments and 89 municipalities.



Uruguay is an upper-middle-income country that has enjoyed sustained, economic growth. Its gross domestic product (GDP) grew by 36% between 2004 and 2010. Its population is 98% urban, with 18.6% living below the poverty line. The total fertility rate, 1.99 children per woman, is slightly lower than the replacement level.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

Universal educational coverage has been achieved for children aged 4 and 5, with substantial coverage of children aged 3. Secondary education coverage in 2008 was 70%.

Bridging the digital divide in education by facilitating the use of new information technologies is being accomplished through the distribution of free personal computers with Internet access to all schoolchildren. In 2009, 380,000 computers were distributed. Some 220,000 new households have a computer—half of the poorest quintile of the population—and 2,068 schools have been connected to the Internet.

### THE ENVIRONMENT AND HUMAN SECURITY

Forests cover 3.7% of the nation's land area; the native forest is protected by the Forestry Law, which prohibits logging.

The National Environment Directorate is building capacity for the environmental management of persistent organic pollutants. The country imports 6,000 tons of pesticide annually. The School of Medicine's Department of Toxicology is a PAHO/WHO Collaborating Center in human environmental toxicology.

Progress has been made in occupational health, manifested in policies to ensure healthy work environments and the creation of joint health and safety commissions. The National Emergency System was established for coordination, prevention, and relief in seasonal disasters.

### HEALTH CONDITIONS AND TRENDS

Maternal and child morbidity and communicable disease rates have fallen, leading to an increase in life expectancy. The burden of chronic, noncommunicable diseases has increased. Uruguay has one of the lowest maternal mortality rates in the Region. In 2010, it reported 8.5 maternal deaths per 100,000 live births, with infant mortality standing at 7.7 deaths per 1,000 live births.

#### Selected basic indicators, Uruguay, 2009–2010.

Indicator	Value
Population 2010 (millions)	3.3
Poverty rate (%) (2010)	18.6
Literacy rate (%) (2009)	98.3
Life expectancy at birth (years) (2009)	76.1
General mortality rate (per 1,000 population) (2009)	9.4
Infant mortality rate (per 1,000 live births) (2010)	7.7
Maternal mortality rate (per 100,000 live births) (2010)	8.5
Physicians per 1,000 population (2009)	2.9
Hospital beds per 1,000 population (2010)	1.2
DPT3 immunization coverage (%) (2010)	95.0
Births attended by trained personnel (%) (2010)	99.9

There were no reports of dengue, leishmaniasis, or Chagas' disease. The immunization program is free, compulsory, and successful; no cases of measles or rubella have been reported. Compulsory vaccination has reduced tetanus. Hepatitis B has been reduced by including the vaccine in the immunization schedule. There have been no reports of human or canine rabies. Hantavirus infection is endemic and predominates in men and rural areas; 18 cases were reported in 2010. Leptospirosis and hydatidosis are endemic, work-related, and focally distributed.

HIV/AIDS prevalence is low and concentrated in sex workers, men who have sex with men, and people confined to institutions. AIDS mortality in 2009 was 5.1 deaths per 100,000. During the influenza A(H1N1) pandemic, the national contingency plan ensured adequate surveillance and care.

In 2009, total mortality was 9.6 deaths per 1,000 population. Chronic, noncommunicable diseases were the main cause of death. The principal causes of death by group were: cardiovascular diseases (30.6%), neoplasms (24.8%), respiratory diseases (9.2%), and external causes (6.6%). The management of heart disease has improved through new diagnostic and treatment methods.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

Health expenditure rose by 23.1% in the period 2004–2008, reaching 7.5% of GDP, while per capita health expenditure grew by 22%. Social protection in health increased under the Integrated National Health System (SNIS), which

### Structural Reform of the Health System

In 2008, Uruguay began a structural reform of its health system, designed to move the country toward the adoption of universal health insurance. The reform rests on four pieces of legislation: Law 18131, creating the National Health Fund (FONASA); Law 18161, decentralizing the State Health Services Administration (ASSE); Law 18211, creating the Integrated National Health System (SNIS), charged with organizing and running the public-private health care network; and Law 18335, on the rights and responsibilities of patients and users.

Universality, premiums determined by the subscriber's income, and needs-based services are the core of a reform based on solidarity, with an approach that guarantees respect for rights without restriction.

Separating the Ministry of Health from the main public provider made it possible to differentiate governance from health care delivery functions. The ASSE became a state public enterprise, independent of the Ministry.

Under the new system, service contracts are signed with providers. These contracts promote health services based on primary care and, based on the care priorities set by the Ministry of Health, spell out the guarantees provided under the Comprehensive Health Care Plan and the service goals used in evaluating performance. The management model includes instruments for user participation and input.

expanded coverage to the entire family unit, gradually adding the children and spouses of subscribers. Furthermore, the SNIS coverage became life-long insurance. The fund redistributes financial resources from the population that makes less use of the health services (lower risk) to groups that make more use of them (higher risk).

There is greater equity in expenditure distribution: in 2005, monthly expenditures were US\$ 45 per private

user and only US\$ 14 per public user. In order to rectify this, the public budget was increased from US\$ 190 million annually in 2005 to US\$ 690 million in 2011, resulting in monthly expenditures of US\$ 48 per private user and US\$ 41 monthly per public user. The changes in the health system also gave people greater access to health services by fully or partially eliminating copayments.

Health professionals are concentrated in the major cities. Although the value of a multidisciplinary team is recognized, there is no strategic plan for its organizational and functional integration into the system. In 2010, the Ministry of Health created the Human Resources Division to prioritize the development of human resources for health, with a special focus on education, training, and practice. Initiatives are in place to steer human resources education toward a model based on primary care, which poses a real challenge.

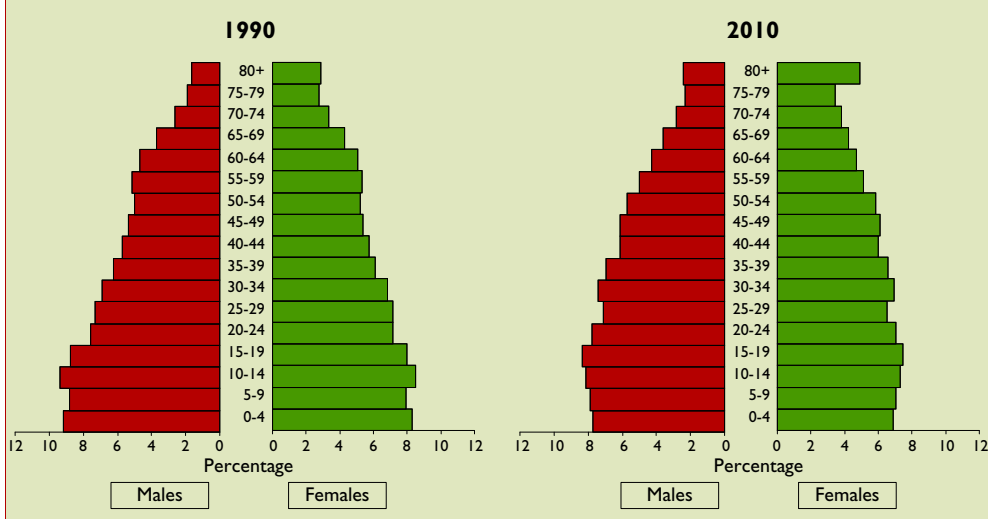
In mental health, national control and surveillance plans have been reformulated, guides issued, and services gradually provided.

Progress has been made in the rational use and correct prescription of medicines, as well as health technology assessment based on cost-effectiveness criteria. Uruguay has 19,791 physicians in the private system and 5,948 in the public system (State Health Services Administration).

As an upper-middle-income country, Uruguay no longer receives international assistance funds. It currently has only two health projects funded with international resources: the Chronic Disease Prevention Project and the recent proposal to the Global Fund to Fight AIDS, Tuberculosis, and Malaria. It has made progress in integrating the surveillance and response systems, as required in the International Health Regulations.

Mechanisms for bilateral information exchange have been set up in border areas, particularly with Brazil.

Population structure, by age and sex, Uruguay, 1990 and 2010.



### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

Health science research is conducted at the University of the Republic's School of Medicine and the National Research and Innovation Agency, whose objectives are to promote science and technology development. The country also has a National Strategic Plan on Science, Technology and Innovation.

## MAIN CHALLENGES AND PROSPECTS

Although Uruguay has made progress in primary education, its secondary education coverage is insufficient to attain the universal coverage required to achieve the Millennium Development Goals. Gender inequities in working conditions persist, creating gaps in access to a paying job (53.7% of women and 74.4% of men). The average compensation per work hour for women is 10 percentage points lower than it is for men. As for women's empowerment and the promotion of gender equality, despite a certain degree of progress, inequities in opportunities and working conditions persist.

Some 30% of agricultural land has been degraded by erosion, 87% of it in regions devoted to fruit and vegetable cultivation. Air pollution is minimal. Acute pesticide poisoning accounts for 16.5% of medical consultations, 76% of them associated with household pesticides. In agriculture, 36% of health problems are caused by insecticides, one-third of them occupational and accidental in origin.

Every year, some 75 cases of rape are reported—the tip of the iceberg of a hushed-up problem. Domestic violence reports rose by over 20% between 2008 and 2010.

Among people of African descent (10% of the total population), secondary and tertiary school enrollment is lower and poverty levels higher than in the rest of the population; working conditions for this group are also difficult.

The National Road Safety Unit, which regulates and coordinates prevention and control activities, is being strengthened. Traffic accidents are considered a public health problem.

The country has made progress in reducing maternal mortality, but the Millennium Development Goal is still far off. Since 2008, the health system has given priority to the early diagnosis and treatment of syphilis and HIV/AIDS; there is universal access to antiretroviral therapy and 83% coverage. The authorities expect to reduce drug costs, facilitate access by the vulnerable population, and ensure timely diagnosis.

Chronic, noncommunicable diseases are the main cause of disease and death. The National Noncommunicable Disease Risk Factor Survey (2006) found that 30.4% of the population suffered from hypertension, 56.6% were overweight or obese, 29.2% had high cholesterol, and 5.5% had diabetes. Only 2.7% of the population is not exposed to risk factors (56.8% have three or more). There is little monitoring and follow-up of people with hypertension. Some 85% of the

population does not eat enough fruit and vegetables. Smoking prevalence fell to 24% in 2009. Alcohol abuse is more common in men (17.4%) than women (7.9%). Around 35% of the population leads a sedentary lifestyle.

In men, the main causes of cancer mortality are lung cancer (45.32%), prostate cancer (22.13%), and colorectal cancer (11.37%), while in women, they are breast cancer (22.74%), colorectal cancer (12.65%), and lung cancer (6.43%).

In 2010, external causes (traffic accidents, suicides, and homicides) were responsible for 60% of the mortality in adolescents and young people; 8 out of every 10 of the victims were male. The suicide rate has been 17 per 100,000 population for the past five years.

Approximately 210,400 people have a disability. Some 17% of older persons require care to perform their activities of daily living, but only 26% receive it; this is becoming a challenge, given the aging of the population.

The exponential advances and growth of technology pose financial risks in terms of care and financial coverage for catastrophic illness and equitable access to expensive, highly specialized medicines—risks that must be addressed.

Although some health research is conducted, there are gaps in public health knowledge production. It is essential to move forward with the development of a health and management information system capable of shedding light on the national morbidity situation, ensuring that basic data are regularly provided for internal analysis and dissemination to international organizations.

Given Uruguay's current economic development and health situation, major challenges are emerging, such as the aging of the population, the growing population with disabilities, and gender inequity. The high prevalence of chronic, noncommunicable diseases demands a model of care centered on health promotion and disease prevention to reduce or eliminate risk factors and harmful social determinants. This model is being developed and must be consolidated.

The sectoral reform process has enabled Uruguay to reduce the segmentation of its health system to some extent. It must prioritize action to strengthen the network of public providers. As the agency that serves as the model for care and quality, the State Health Services Administration should be at the forefront of the process. Ensuring information systems, adequate staffing, and professional profiles suited to the country's needs is a pressing challenge.

# Venezuela



Venezuela is located in the northern part of South America and covers a land area of 916,446 km<sup>2</sup> that includes islands and cays in the Caribbean Sea. Its continental territory borders on the Caribbean Sea to the north, Colombia to the west, Brazil to the south, and Guyana to the east. The country has a diverse geography and extensive biodiversity and natural resources. It is vulnerable to natural disasters, particularly flooding and forest fires. The country is a decentralized federation, with political and administrative divisions that include the Capital District (where Caracas, the capital, is located), 23 states, federal dependencies (311 islands and cays), 335 municipalities, and 1,123 parishes.

Venezuela has experienced demographic changes that are typical for societies in transition. The country's population is aging and life expectancy at birth was 74.3 years in 2010 (77.2 years for women and 71.2 for men). The average annual growth rate is 1.7%, the birth rate is 20.6 per 1,000, and the fertility rate is 2.5 children per woman.

The per capita income was US\$ 12,200 in 2010. The average annual growth of the gross domestic product (GDP) from 2006 to 2010 fluctuated at around 3.8%. Social spending as a percentage of GDP was 22% in 2006, dropping to 15.4% in 2010.

Inflation rose from 13.7% in 2006 to 28.6% in 2009. Approximately 64.9% of the population was economically active in 2009, with 92.4% employment; 43.4% worked in the informal sector.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

The Gini coefficient of inequalities in income fell from 0.442 in 2006 to 0.393 in 2009. In 2006, the poorest quintile received 4.7% of national revenue and the richest, 49.4%, while in 2009 the poorest quintile received 6.0% and the richest 45.6%. From 2006 to 2010, the level of poverty, measured by household income, declined slightly from 33.1% to 32.5%. Similarly, the proportion of extremely poor households decreased from 10.2% to 7.1%.

In 2009, public spending on education accounted for 6.4% of the GDP. During the 2009–2010 school year, the net rate of enrollment was 70.8% for preschool children, 92.9% in primary education, and 72.1% in secondary schools and diversified and professional institutions.

A project was launched in 2007 to provide immediate and ongoing care to the indigenous populations in extremely vulnerable situations. Another project was developed to strengthen social participation and empowerment of the indigenous peoples and communities.

Access to food has been prioritized as an inalienable human right. In 2008, 659,419 tons of food were provided for the Mercal Network, maintaining the inventories needed to achieve coverage and conserve strategic reserves. In 2009, 627,761 tons of food were distributed at 16,626 points of sale and 9.38 million Venezuelans saved up to 52% in costs for regulated products and 74% compared with supermarket prices.

### THE ENVIRONMENT AND HUMAN SECURITY

Between 2006 and 2009, drinking water coverage and sewerage service reached 95% and 84% of Venezuelans,

#### Selected basic indicators, Venezuela, 2005–2010.

Indicator	Value
Population 2010 (millions)	28.9
Poverty (%) (2010)	32.5
Literacy (%) (2007)	95.2
Life expectancy at birth (years) (2010)	74.3
General mortality rate (per 1,000 population) (2007)	5.3
Infant mortality rate (per 1,000 live births) (2009)	14.2
Maternal mortality rate (per 100,000 live births) (2009)	62.9
Physicians per 1,000 population (2007)	1.3
Hospital beds per 1,000 population (2009)	1.1
DPT3 immunization coverage (%) (2010)	78.0
Births attended by trained personnel (%) (2005)	95.0

respectively. In 2009, approximately 32% of wastewater was treated.

Venezuela ratified the Stockholm Convention to eliminate persistent organic pollutants (POPs). In 2008, 721 tons of herbicides were applied to crops, as well as 3,770 tons of insecticides and 4,651 tons of fungicides. Some 47 potentially POP-contaminated sites have been identified.

### HEALTH CONDITIONS AND TRENDS

The maternal mortality rate averaged 63.3 deaths per 100,000 live births from 2006 to 2009, decreasing slightly to 62.9 in 2009. The infant mortality rate has continued to decline steadily, reaching 14.2 deaths per 1,000 live births in 2009.

The population at risk for contracting malaria dropped from 23% to 19% between 2006 and 2010. The last confirmed cases of imported measles and indigenous rubella occurred in 2007.

Between 1998 and 2008, the incidence of malnutrition according to weight-for-age in children under 5 years old fell from 5.3% to 3.7%, as a result of the food policies applied beginning in 2003.

In 2010, the youth tobacco survey of 13–15-year-old students in Venezuela showed a significant drop in smoking in this group, from 21.9% in 1999 to 13.2% in 2010.

### HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Ministry of Health implements policies that aim to guarantee, promote, and protect public and collective health, and is responsible for regulation and oversight of the sector.

### Misión Barrio Adentro Programs

In 2006, the new organizational structure of the Ministry of Health was approved, with three Vice-Minister offices: Health Service Networks, Public Health Networks, and Health Resources. The reorganization of the public health system and government care networks has made it possible to institutionalize the Misión Barrio Adentro programs as a strategy to overcome exclusion, in four phases:

- Misión Barrio Adentro I: establishes community primary care clinics, on a national scale. These are the entry portal to the national health system.
- Misión Barrio Adentro II: develops comprehensive diagnostic centers, comprehensive rehabilitation wards, high-tech centers, and community clinics. Their purpose is to strengthen the response capacity of the entire primary care network.
- Misión Barrio Adentro III: builds community hospitals that provide intensive care services, surgery, and urgent care.
- Misión Barrio Adentro IV: expands intensive specialty centers such as the “Gilberto Rodríguez Ochoa” Latin American Children’s Cardiology Hospital.

Public health spending, executed through the Ministry of Health and its dependent institutions, accounted for 1.8% of the GDP in 2007. Private spending was 2.8% of the GDP in 2010. Between 1997 and 2007, funding for public social programs rose significantly (17.4 times), through contributions of extraordinary oil revenues.

The *Misión Barrio Adentro* program, reorganized to strengthen the public health network, has been an effective strategy in addressing the problem of access to services. The

care model of this program reinforces the comprehensive community approach and seeks to ensure continuity of care for the needs and problems of the family unit.

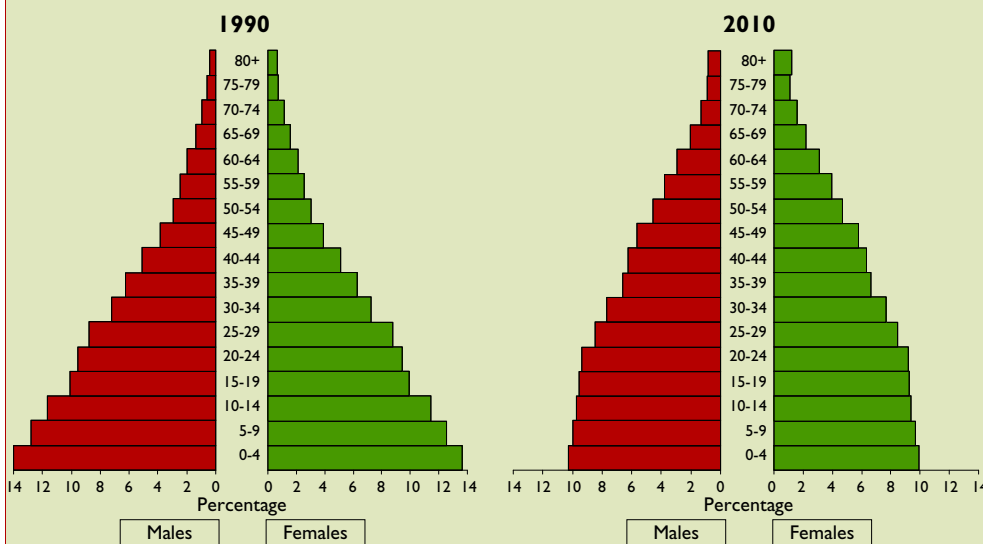
In 2008 a household survey was conducted to determine the population’s degree of satisfaction with the health services. Satisfaction reached 75.4% for walk-in clinics and 71.2% for hospital-based services. The reasons for dissatisfaction included lack of specialists and shortages of medication.

The *Misión Madre* project was initiated in 2006, and was later reviewed, redesigned, and relaunched in 2009 as the *Misión Niño Jesús* (“Christ Child Mission”). The purpose of this project is to strengthen the capacity of institutions for comprehensive maternal and neonatal care.

Two strategies have been developed to strengthen the national public health system: the functional integration of facilities into comprehensive community health areas (ASICs, from its name in Spanish) and increasing professional staff through training programs. ASICs enable the health services system that forms *Misión Barrio Adentro I* and *II* to interact with social networks and other service networks through a single area that forms the basis of the system.

*Misión Barrio Adentro* also included a three-year post-graduate program to train medical specialists in general comprehensive medicine. By 2010 the program produced 984 general practitioners. In addition, 837 community dentists have been trained and a six-year undergraduate training program began for comprehensive community physicians. The program is carried out in primary care centers (*Misión Barrio Adentro I* and *II*) with guidance from the Cuban Medical Mission, and through clinical internships in hospitals, supervised by Venezuelan doctors. In 2010, the first class of comprehensive community physicians (nearly 9,000 students) had completed the program’s fifth year. In all, 20,578 medical students have participated at different levels, demonstrating the advantages of providing training in the same communities from which most of the students came and in which they will work in the future.

Population structure, by age and gender, Venezuela, 1990 and 2010.



### KNOWLEDGE, TECHNOLOGY, AND INFORMATION

The 2005 Organic Science, Technology, and Innovation Law promoted an increase in financing for projects. Investment in science and technology

increased from 1.8% of the GDP in 2006 to 2.7% in 2007, outranking the investments made by countries such as Canada, the United States, Brazil, Spain, and Portugal.

In 2009 the number of personnel working in science and technology rose 47% as compared with 2006. Researchers work in higher education institutions (88.8%) and the government (9.9%); some 22.2% work in medical sciences and 36.2% in social sciences. Many research articles were published in scientific journals: there were 1,400 articles indexed in the Science Citation Index (SCI), 317 in MEDLINE, 38 in the Institute for Information and Documentation on Science and Technology index (ICYT), and 352 in the Latin American and Caribbean Health Sciences Index (LILACS).

In 2009, the Ministry of Science, Technology, and Industry and the Ministry of Telecommunications and Information joined together to support inclusive, large-scale access to information and communication technologies.

## MAIN CHALLENGES AND PROSPECTS

The sustainability of procurement, distribution, and sale of food that is provided through the Mercal network is one of the most important challenges if the population is to be guaranteed access to an improved diet, especially for vulnerable groups.

The country is exposed to several types of natural disasters, which are also influenced by climate change. Between November 2009 and April 2010, the *El Niño* phenomenon caused critically low levels in rivers and reservoirs, resulting in crop losses, shortages of drinking water, and deficits in electricity supply (74% of the country's generated energy comes from hydroelectric power). Some 40,923 hectares of forests burned. In the second half of 2010, the *La Niña* phenomenon caused heavy rainfall across 75% of the country, which resulted in 38 deaths, 31,000 collapsed dwellings, damage to 400 roads, destruction of 39 bridges and 3 reservoirs, and 50,000 hectares of crops lost.

The underreporting of deaths in the country is approximately 10%. In 2006, heart disease was responsible for 24,977 deaths (20.5% of the total) with a rate of 92.4 per 100,000 population. In 2009, the number rose to 27,353 (20.3%), with a rate of 96.4 per 100,000. Cancer is the second leading cause of death: in 2006 18,543 people died from cancer (15.3% of deaths), and in 2009, 20,288 died (15.1%).

In 2009, accidents and acts of violence were the fourth leading cause of death. More men died by violent acts (14 times more than women) and in accidents of all types (3 times more than women). In men 20–59 years old, violence was the leading cause of death, accounting for 36.5% of deaths of men in this age group in 2006 and 38.2% in 2009.

Diabetes was the sixth leading cause of death; it was responsible for 7,181 deaths (5.9%) in 2006, with a rate of 26.6 per 100,000 population. In 2009, diabetes caused 8,822 deaths (6.5%), a rate of 31.1 per 100,000 population.

The annual average of cases of American cutaneous leishmaniasis between 2006 and 2009 was 2,400, with the highest number in 2006 (9.4 per 100,000 population). Between 2006 and 2010 an average of 650 new cases of leprosy were detected each year. Two epidemic outbreaks of dengue occurred in 2007 and in 2010, with rates of 293.2 and 433.1 per 100,000 population, respectively.

The prevalence of Chagas' disease was 4.31% in 2010; from 2006 to 2010, three outbreaks occurred by oral transmission. Although the prevalence of Chagas' disease is relatively low, pressure from reinfestation and the trend toward domestication of wild species pose new epidemiological challenges.

Two cases of yellow fever were confirmed in 2008. Between 2007 and 2008, an outbreak of mumps occurred, with 125,000 confirmed cases (474 per 100,000 population). Between 2006 and 2010, whooping cough presented a rate of 2.6 per 100,000 population.

In 2006, 1,567 deaths from HIV/AIDS were reported (5.8 per 100,000 population), and 1,733 in 2009 (6.1 per 100,000). In 2010, respiratory symptoms of tuberculosis were reported in 91,589 people and 3,252 new cases were identified with positive sputum-smear microscopy. The same year there were 248 relapses and 1,077 extra-pulmonary cases.

In 2007, 57,646 work-related accidents were reported (0.66% were fatal). In 2006, 2,066 occupational illnesses were diagnosed. These data reveal a problem that has not been fully addressed in terms of general health care.

In view of the pressing need for health workers and the current fragmentation of public institutions providing services, it is anticipated that strategies such as *Misión Barrio Adentro* will continue and expand, and the training of dentists and comprehensive community physicians will gradually help to strengthen the national public health system and its primary care service network.



The United States-Mexico border extends for 3,141 km, stretching from the Gulf of Mexico to the Pacific Ocean. The 1983 La Paz Agreement—signed by the federal governments of both countries to protect, improve, and conserve the environment along the border—defines the “border area” as the land within 100 km on either side of the international boundary. It includes 48 counties in 4 U.S. states and 94 municipalities in 6 Mexican states. The U.S.–Mexico border area represents a binational, geopolitical system based on strong social, economic, cultural, and environmental connections, governed by different laws, policies, and cultures.



The 1983 La Paz Agreement signed by the governments of Mexico and the United States defines the border area; addresses environmental protection, improvement, and conservation issues; and includes several health-based actions and agreements.

The United States–Mexico Border Health Commission limited the border area to the 44 U.S. counties and 80 Mexican municipalities that have most of their population within 100 km of the border. It is an extremely active area with extraordinarily heavy movement back and forth across the international border, which deeply affects the population's health status and quality of life.

## MAIN ACHIEVEMENTS

### HEALTH DETERMINANTS AND INEQUALITIES

In 2009, the per capita gross domestic product (GDP) for the states on the Mexican side of the border area ranged from US\$ 7,501 (Baja California) to US\$ 13,481 (Nuevo León), while for states on the U.S. side, it ranged from US\$ 39,123 (New Mexico) to US\$ 50,871 (California). San Diego, California, which is located in the border area, is one of the richest U.S. cities (annual GDP per capita of US\$ 51,035), while McAllen, Texas, is one of the poorest (US\$ 15,818).

In 2005–2009, the unemployment rate in the U.S. border states (people 16 years old or older outside the workforce) ranged from 6.8% to 7.9%. In 2010, on the Mexican side, the unemployment rate (people 14 years old or older outside the workforce) ranged from 5.9% to 8.7%.

In 2009, the education level on the U.S. side (measured in years of schooling) ranged from 6.8% of the population with fewer than 9 years of education and 22.1% with four-year university degrees in San Diego, California, to 27.6% of the population with fewer than 9 years of schooling and only 10% with university degrees in Brownsville, Texas. Educational attainment is more homogeneous along the Mexican side of the border, albeit lower than along the U.S. side: in 2010, 25% to 30% of the population on the Mexican side had completed 6 years of schooling and nearly 10% had professional degrees.

### THE ENVIRONMENT AND HUMAN SECURITY

Access to drinking water and sanitation services has significantly improved in the urban areas on the Mexican

#### Selected basic indicators, United States–Mexico border, 2010.<sup>a,b</sup>

Indicator	Value	
	Mexico	United States
Population (millions)	7.5	7.4
Poverty rate (%)	...	...
Education (%)	70–75 <sup>c</sup>	72–93 <sup>d</sup>
Life expectancy at birth (years)	76–77	77–81
General mortality rate (per 1,000 population)	4.6–6.3	6.1–7.4
Infant mortality rate (per 1,000 live births)	10.6–13.4	5.1–6.3
Maternal mortality rate (per 100,000 live births)	30–63	8–22
Physicians per 1,000 population	1.5–2.0	2.2–2.6
Hospital beds per 1,000 population	0.6–1.0	1.9–2.5
DPT3 immunization coverage (%)	94–99	84–88
Births attended by trained health personnel (%)	...	...

<sup>a</sup> Ranges show the lowest and highest expression of the indicator for states in the border.

<sup>b</sup> Figures are for 2010 or the most recent available year.

<sup>c</sup> Six years or more of schooling.

<sup>d</sup> Nine years or more of schooling.

side of the border. In 2010, access to drinking water ranged from 78% of all households (Nogales, Sonora) to more than 95% (Tijuana and Mexicali in Baja California, among other cities). Access to sewage services ranged from 84% (Reynosa and Río Bravo in Tamaulipas) to more than 95% (Naco, Nogales, and Agua Prieta in Sonora, among others). More than 98% of households in cities on the U.S. side of the border have access to piped drinking water and treated wastewater services.

California and Arizona have major agricultural industries along the border, and notification systems are in place to monitor pesticide use.

Severe natural disasters affecting the border area in the 2006–2010 period included Hurricane Dolly (2008), which caused US\$ 1.2 billion in losses on the U.S. side, and a 2010 earthquake in the Mexicali Valley. The earthquake destroyed the Mexicali-Tijuana highway, collapsed public buildings and homes, and forced the partial evacuation of 17 hospitals on both sides of the border.

To cope with the violent situation in the Mexican border cities, the federal government launched a violence prevention program in 2010 in Ciudad Juárez called *Todos Somos Juárez, Reconstruyamos la Ciudad* ("We Are All

**Projects to Promote Health Services Along the U.S.–Mexico Border**

The Mexican and U.S. health care systems have put in place various programs and projects to promote health services along the border. For example, Binational Health Week and Border Binational Health Week promote public health care, outreach, and immunization services every October, reaching vulnerable groups throughout the border area.

The *Ventanillas de Salud* program (health stations) at the Mexican consulates in the United States provides clinical and health outreach services to low-income and migrant Hispanic families who are unfamiliar with the U.S. health system. The program started in 2002 in San Diego and Los Angeles and has spread to all 50 Mexican consulates in the United States.

Strategies such as *Healthy Border 2020*, an initiative of the United States–Mexico Border Health Commission, and the *Border 2020 Environmental Program*, administered by Mexico’s Ministry of Environment and Natural Resources (SEMARNAT) and the U.S. Environmental Protection Agency (EPA), will establish important benchmarks to improve health and quality of life along the entire length of the border.

Juárez, Let’s Rebuild the City”), investing more than US\$ 300 million and conducting more than 160 social interventions.

**HEALTH CONDITIONS AND TRENDS**

Infant mortality rates fell steadily from 1958 to 2008 in the U.S. border states. In 2008, rates were 10% to 15%

lower than in 2002, ranging from 5.1 per 1,000 live births (California and New Mexico) to 6.3 per 1,000 live births (Arizona). On the Mexican side, infant mortality in 2008 was approximately double that in the United States (10.6 per 1,000 live births in Nuevo León, and 13.4 in Chihuahua), but below the national average in Mexico.

From 2006 to 2010, the number of cases and deaths related to West Nile virus in the U.S. border states fell by almost half. On the Mexican side only one case was reported in 2010. The Mexican states with the highest risk of dengue are Nuevo León (12,464 cases in 2010, 141 of dengue hemorrhagic fever), Sonora (3,588 and 191), and Tamaulipas (1,361 and 186). Since 2006, all cases of dengue reported on the U.S. side have been imported. In 2007, the incidence of acute hepatitis A on the U.S. side ranged from 0.6 per 100,000 population (New Mexico) to 2.4 per 100,000 population (Arizona), and for hepatitis B, from 0.7 (New Mexico) to 3.1 (Texas). From 2006 to 2010, 13,553 cases of hepatitis A were reported in the six Mexican border states (with the highest levels in Sonora, at 162 per 100,000 population) and 557 cases of hepatitis B (most common in Tamaulipas, with 4 per 100,000 population).

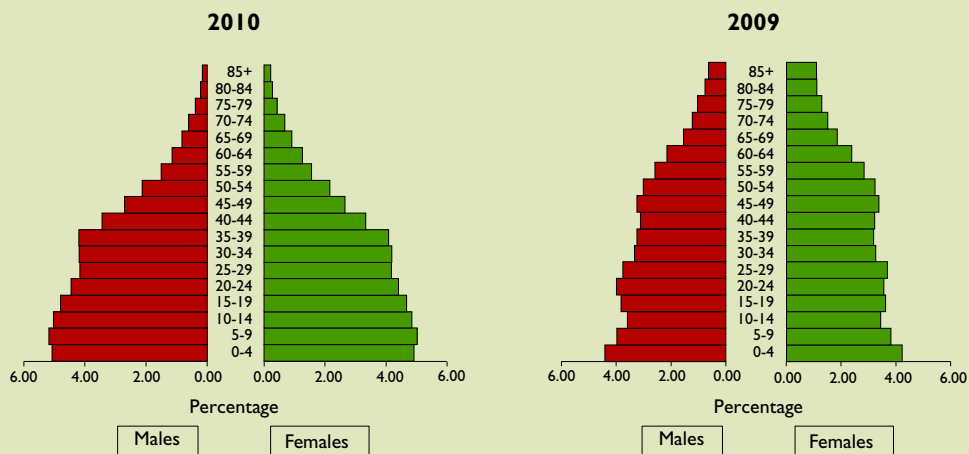
In 2009, the incidence of tuberculosis in California was 6.7 cases per 100,000 population, which was 13% lower than in 2005. Among the Mexican states, Baja California reported 38.3 cases per 100,000 population in 2007.

In 2009, on the U.S. side of the border, the state of California reported the highest number of new cases of HIV (29,939) and AIDS (138,013; 89% were men). In 2007, on the Mexican side, the numbers of new cases of HIV ranged from 12 (Coahuila) to 91 (Tamaulipas). The

new cases of AIDS in 2007 ranged from 5 (Coahuila) to 85 (Baja California), with mortality rates from 3.1 deaths per 100,000 (Coahuila) to 9.5 per 100,000 (Baja California).

Heart disease and malignant neoplasms were the two leading causes of death on both sides. Deaths from heart disease ranged from 163 to 169 per 100,000 on the U.S. side (2007) and from 78 to 112 on the Mexican side (2008). In turn, cancer deaths ranged from 151 to 164 per 100,000 on the U.S.

**Population structure, by age and sex, United States–Mexico border, 2009 for the United States border area and 2010 for Mexico’s border area.**



side (2007) and 53 to 77 on the Mexican side (2008). The third leading cause of death on the Mexican side was diabetes (45–87 per 100,000), while on the U.S. side external causes (injuries and violent acts) ranked third (32–68 deaths per 100,000).

### **HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION**

U.S. health services along the border are mainly provided by nonprofit institutions and private entities. In 2008–2009, private insurance coverage ranged from 44% (New Mexico) to 53% (California). Medicare coverage (public insurance for people over 65 years of age) was 9% to 12%, while Medicaid (for low-income and disabled people) was 15% to 19%. The U.S. indigenous population has coverage through the public Indian Health Service. Reforms made in the 2010 Patient Protection and Affordable Care Act aim at expanding health insurance coverage.

On the Mexican side, the uninsured population in 2009 ranged from 20% (Nuevo León) to 28% (Baja California). In 2002, Popular Insurance (*Seguro Popular*) was established to provide health service coverage through voluntary enrollment for people not affiliated with the country's social security plan. Between 2002 and 2009, more than 2 million Mexican families living in the border area enrolled in this system.

### **KNOWLEDGE, TECHNOLOGY, AND INFORMATION**

The project *Frontera Collaboration* (“Collaboration along the Border”) brings together members of the National Network of Libraries of Medicine of the border states of both countries to promote evidence-based practices for professionals in community health centers and improve their access to information and scientific data.

In the United States important advances have been made in the organization of national health data, particularly in setting standards to harmonize information systems and increase interoperability. In the border area, collaboration in the Early Warning Infectious Disease

Surveillance (EWIDS) project during the 2009 H1N1 flu pandemic enabled the exchange of surveillance data, distribution of laboratory materials, availability of trained technical personnel, and training of public health personnel.

### **MAIN CHALLENGES AND PROSPECTS**

Each side of the border is at a different level of economic development. In addition, considerable economic differences are seen between states and cities on the U.S. border.

The border area has a limited water supply, and it is estimated that water will become increasingly scarce there in the next 50 years due to climate change. Sanitation conditions on the Mexican side have generally improved since 2005, but access to drinking water and sewerage system coverage in rural areas continue to be inadequate.

Health challenges continue along the border due to insufficient vaccination coverage, limited access to health services, a shortage of primary care providers on the U.S. side, the precarious health situation of the indigenous populations, adolescent pregnancy, tuberculosis, and public health emergencies.

Chronic, noncommunicable diseases represent the greatest burden of morbidity and mortality on both sides of the border. Malignant neoplasms continue to be among the most common causes of death in the four U.S. and six Mexican border states. There is a high incidence of breast cancer in California (122 cases per 100,000 population).

In addition, since 2008 violence has increased along the Mexican side of the border, mainly associated with national policies against organized crime and drug trafficking.

The growing investments in physical infrastructure, made as a result of security concerns in the U.S.–Mexico border area, can benefit the health and development of the area. It is also expected that the U.S. health sector reform and the Popular Insurance system in Mexico will help to expand access to health care throughout the border area.

Increased investments in health education, including the establishment of schools of medicine and public health in the border area, will create the necessary opportunities for young professionals to remain and work in the area.