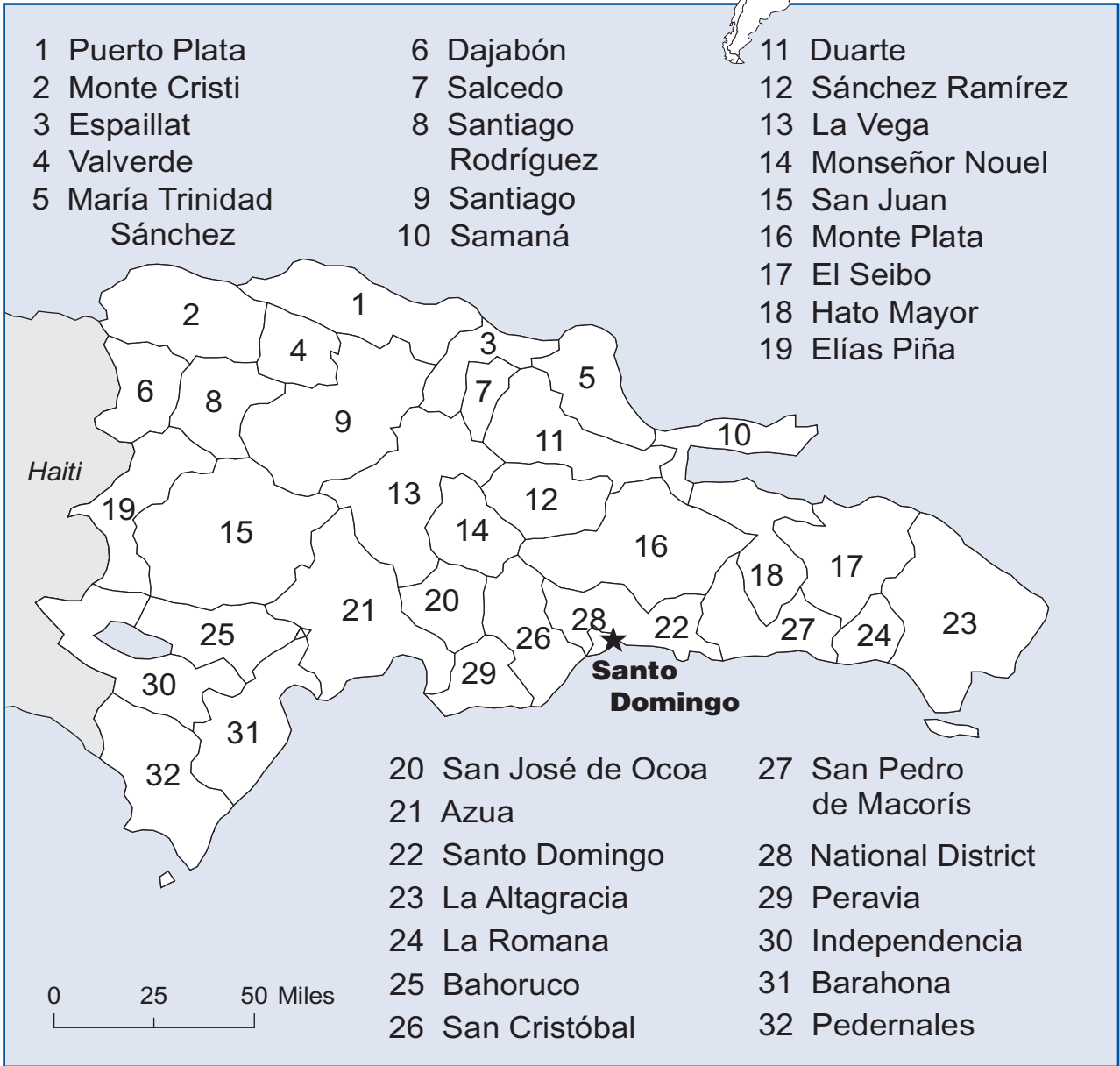


# DOMINICAN REPUBLIC



**Sources:** Second Administrative Level Boundaries Dataset (SALB), a dataset that forms part of the United Nations Geographic Database, available at: [http://www.who.int/whosis/database/gis/salb/salb\\_home.htm](http://www.who.int/whosis/database/gis/salb/salb_home.htm), and the Digital Chart of the World (DCW) located at: <http://www.maproom.psu.edu/dcw>. The boundaries and names shown here are intended for illustration purposes only, and do not imply official endorsement or acceptance by the Pan American Health Organization.

**T**he Dominican Republic takes up two-thirds of the island of Hispaniola and lies between the Caribbean Sea and the Atlantic Ocean. The country has a land area of 48,442 km<sup>2</sup>, an estimated population of 8.9 million (1), and a population density of 176.8 persons per km<sup>2</sup>. It has 31 provinces and the National District.

## GENERAL CONTEXT AND HEALTH DETERMINANTS

### Social, Political, and Economic Determinants

Economic growth in the 1990s, fanned by the increase in free zones and tourism, had little impact in terms of social investment and human development (2), since urban poverty rose from 47.9% in 1992 to 66.5% in 1999 (3), and public investment in education, health, and social welfare remained unchanged at 5% of the gross domestic product (GDP) (2).

The country has high levels of inequity in income distribution. In 2002, the wealthiest 20% obtained 53% of gross income, while the poorest 40% obtained just 14% (4). The 2003 banking fraud caused losses of 20% of GDP, a fiscal deficit, and inflation of 42.7%. As a result, the country faced an economic and social crisis that affected the free zones, tourism, and construction, and the GDP was 0.4%. Between 2002 and 2005, GDP grew from US\$ 21.7 billion to US\$ 29.3 billion. In 2003, public social spending was 6.8% of GDP; public spending on health was 1.9% of GDP in 2002, 1.7% in 2003, and 1.2% in 2004. It has been estimated as 1.9% of GDP for 2006 (2, 5). In 2000, 54% of the population lived in poverty and 28% in extreme poverty. In 2003, these figures rose to 62% and 33%, respectively (6).

Presidential elections were held in May 2004. A new Standby Arrangement was signed with the International Monetary Fund in January 2005 which, coupled with other monetary policy measures, helped to overcome the economic crisis and contributed to GDP growth. The economy was affected by high costs, shortfalls in electric power supplies, and high oil prices.

The Dominican Republic is one of the seven pilot countries in the United Nations Millennium Project. The Presidential Commission on the Millennium Goals and Sustainable Development identified the interventions needed and the estimated cost of attaining the Millennium Development Goals (MDGs). That exercise became the foundation for the development of national and provincial plans, and for the mobilization, redirection, and rationalization of resources.

Between 2003 and 2004, unemployment rose from 17% of the economically active population to 18.4%, falling to 17.9% in 2005 (7). That year, women earned 30% less than men on average, and

in some cases as much as 41% less, particularly in the free zones and in the tourism sector (7), even though women had higher levels of education (8). GDP grew by 9.3%, although the few jobs created were of poor quality, offered no social protection, and paid low wages (5).

Between 1996 and 2002, the percentage of people without elementary education fell from 20% to 10%, and the percentage of those with secondary and university education rose from 25% to 30%. Illiteracy among persons 10 years old and older declined from 15% to 13%, with women scoring better (12%) than men (13%), and rural areas scoring worse (19%) than urban areas (9.5%). Among children who enter first grade, 50% complete just four years of primary school, 22% complete eight years, and 10% complete secondary school (2). Teenage pregnancies are a contributing factor to school dropout rates; 19% of teenage girls have children and 23% have been pregnant at some point (8).

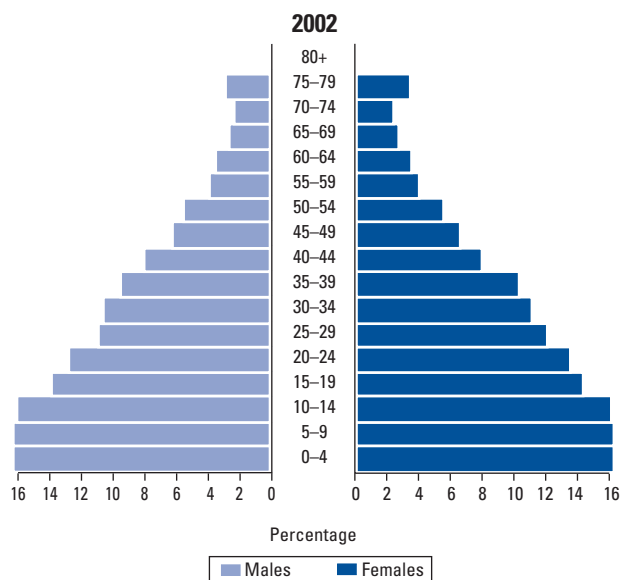
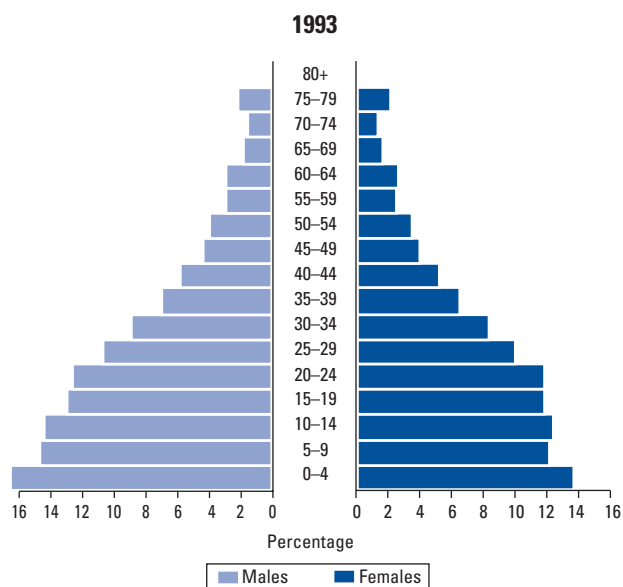
The percentage of the population with an average daily food intake of  $\leq 1,900$  kcal (undernourished) fell from 27% in 1990–1992 to 25% in 1999–2001. If this trend continues, the Millennium Development Goal of reducing the percentage of persons who suffer from hunger by half between 1990 and 2015 can be attained.

Between 2002 and 2005, the number of tourists rose from 2,308,869 to 3,088,247. In 2005, the National Health and Tourism Commission was established, which prepared a national plan to enable the country to continue being a healthy tourist destination.

### Demographics, Mortality, and Morbidity

The country is in a stage of demographic transition. Between 1993 and 2002, the reduction in mortality, birth, and fertility rates led to changes in the population's age structure, with growth in the urban population (from 35% to 63.6%) also being a contributing factor (Figure 1).

The annual growth rate in 2005 was 1.8%. Between 2000 and 2005, the general fertility rate fell from 2.8 births per woman to 2.7; the gross birth rate declined from 24.5 per 1,000 population to 23.3 per 1,000; the gross mortality rate dropped from 5.9 per 1,000 population to 5.7; and life expectancy from birth rose from 68.6 years (70.8 for women and 66.5 for men) to 70 years (72.4 for women and 67.8 for men) (9).

**FIGURE 1. Population structure, by age and sex, Dominican Republic, 1993 and 2002.**

The pace of emigration picked up between 1992 and 2002. Estimates place the number of Dominicans who live abroad at between 1 million and 1.5 million and the number of foreigners in the country at 1.2 million. There is a tendency toward the feminization of emigration; most emigrants come from urban areas (2).

Table 1 shows selected indicators of mortality. Underreporting was estimated at 52.5% in 2000 and at 50% in 2005 which,

**TABLE 1. Estimated mortality rates, general, maternal, and for selected age groups, Dominican Republic, for years and periods between 1992 and 2005.**

	Year or period	Rate
Maternal mortality (per 100,000 live births)	1992–2002	178 <sup>a,b</sup>
	2005	120 <sup>c</sup>
Infant mortality (per 1,000 live births)	2002	31 <sup>b</sup>
	2005	32 <sup>c</sup>
Neonatal mortality (per 1,000 live births)	1997–2002	22 <sup>a,b</sup>
Postnatal mortality (per 1,000 live births)	1997–2002	10 <sup>a,b</sup>
Mortality in children under 5 years old	1997–2002	38 <sup>a,b</sup>
General mortality (per 1,000 population)	1995–2000	5.9 <sup>a,d</sup>
	2000–2005	5.7 <sup>a,d</sup>

<sup>a</sup>Average for the period.

<sup>b</sup>ENDESA, 2002.

<sup>c</sup>DIGEPI, 2005.

<sup>d</sup>ONAPLAN, 1999.

coupled with problems in filling out death certificates, affects the quality of the data.

Diseases of the circulatory system continue to be the leading cause of death in both sexes. External causes continue to rank second among men, with a proportional increase. Deaths from malignant neoplasms increased proportionally in both sexes. In 2002, external causes and communicable diseases had the largest impact on premature deaths (Table 2). The highest percentage of potential years of life lost in persons under 70 years old corresponded to external causes (24%).

## HEALTH OF POPULATION GROUPS

### Children under 5 Years Old

Infant mortality tended to decline, mainly driven by a drop in postneonatal deaths. The trend in neonatal mortality remained unchanged and is related to the poor quality of care during delivery and the perinatal period. The mortality rate among children under 5 years old tended to fall.

In 2002, reported infant mortality accounted for 9.9% of all deaths. Among children under 1 year old, the risk of dying fell from 45 per 1,000 live births in 1987–1992 to 38 per 1,000 in 1992–1997, and to 31 per 1,000 in 1997–2002. In 2002, the neonatal mortality rate was estimated at 22 deaths per 1,000 live births. In 2005, the leading causes of death in newborns were neonatal sepsis, respiratory distress syndrome, and prematurity, while the main causes of postneonatal death were septicemia, diarrhea and gastroenteritis, and pneumonia.

**TABLE 2. Mortality by broad groups of causes and percentage of total deaths by cause, by sex, Dominican Republic, 1990 and 2002.**

	Men		Women	
	1990	2002	1990	2002
1	Diseases of the circulatory system (27%)	Diseases of the circulatory system (29%)	Diseases of the circulatory system (33%)	Diseases of the circulatory system (35%)
2	External causes (17%)	External causes (21%)	Communicable diseases (17%)	Malignant neoplasms (16%)
3	Communicable diseases (16%)	Malignant neoplasms (14%)	Malignant neoplasms (11%)	Communicable diseases (12%)
4	Malignant neoplasms (9%)	Communicable diseases (11%)	External causes (6%)	Conditions originating in the perinatal period (8%)
5	Conditions originating in the perinatal period (5%)	Conditions originating in the perinatal period (7%)	Conditions originating in the perinatal period (5.5%)	External causes (7%)
6	Other diseases (25%)	Other diseases (18%)	Other diseases (28%)	Other diseases (23%)

Mortality in children 1–4 years old was 1.6% in 2002 and the risk of dying fell from 14 per 1,000 in 1987–1992 to 11 per 1,000 in 1992–1997, and to 7 per 1,000 in 1997–2002.

Breast-feeding is becoming increasingly less common. Only about 3.8% of children 4–5 months old are breast-fed exclusively (8) and 46% of newborns are given other food before being breast-fed.

### Children 5–14 Years Old

In 1990–2002, mortality in children 5–14 years old declined; this age group represented 2.8% of deaths in 1986 and 1.6% in 2002.

Between 1993 and 2002, stunting among schoolchildren 6–9 years old dropped from 19% to 8%, with a larger decline in rural areas (11%) than in urban ones (8%). No up-to-date data are available on micronutrient deficiencies. The prevalence of goiter in schoolchildren was 5.3% and, based on urinary excretion of iodine, 74% of the school-age population (6–9 years old) was at risk. In 2002, urinary excretion of iodine fell to 34.3%. In its most recent assessment (1997), the Oral Health Program reported a decayed, missing, and filled (DMF) teeth index of 5.0 (10).

In 2002, 18% of children and adolescents 5–17 years old worked (27% of boys, 9% of girls), with the percentage being higher in rural areas (20%) than in urban ones (17%); 90% began working before age 15 and they mainly worked in service industries (11).

### Adolescents 15–19 Years Old

In 2002, the percentage of teenage (15–19 years old) pregnancies was 23% (28% in rural areas and 21% in urban areas). Among pregnant teenagers, 64% had no education. One out of every five women who died from causes related to pregnancy or

delivery was an adolescent, and the obstetrical risk among girls 15–19 years old was much higher than that for women 20–34 years old. In 2002, the fertility rate among urban adolescents was 104 per 1,000 girls; in rural areas, the rate was 145 per 1,000. Of adolescent pregnancies, 43% were unwanted (8).

According to a survey, some 25% of students 13–15 years old had used tobacco at some point (24.4%) in 2004. The prevalence of use (within 30 days prior to the survey) was 18%. Prevalence was higher among boys (21.5%) than among girls (14.2%). Fewer than 10% of youths use tobacco in the form of cigarettes; 12.3% use other forms, such as chewing tobacco, snuff, cigars, cigarillos, and pipes (12).

### Adults

Absolute and proportional mortality in this group declined. In 2002, external causes were the leading cause of death in the group (44.2%), followed by communicable diseases (21.6%), mainly AIDS and tuberculosis.

Among women 15–49 years old, AIDS was the main cause diagnosed, accounting for 18.3% of deaths; traffic accidents ranked second; and undetermined events third. Among men 15–49 years old, the largest number of reported deaths were caused by traffic accidents and by undetermined events. AIDS ranked third.

In 2002, the general fertility rate was 3.0 births per woman (2.8 in urban areas and 3.3 in rural areas). Between 22% and 25% of women in the different age groups had their first child before they were 18 and between 40% and 45% did before they were 20; 75% had had at least one child by the time they were 25 (8). In 2002, 70% of married women used some form of contraception.

The maternal mortality rate did not decrease, which is related to the quality of medical care. The leading causes of maternal mortality are toxemia, hemorrhages, and abortion.

### Older Adults (60 Years Old and Older)

The population older than 60 years old represents 6.1% of the country's total population and is increasing (13). Diseases of the circulatory system were the leading cause of death in this group, followed by malignant neoplasms, communicable diseases, and external causes. Between 70% and 80% of older adults live in urban areas; fewer than 10% live alone.

### Workers

Occupational accidents climbed from 3,313 in 2004 to 3,717 in 2005 (54% in the National District, 23% in Santo Domingo West, and 3% in La Romana). Of all occupational accidents, 6.3% occurred in the services sector, 21.7% in manufacturing, 17.5% in industry, 13.1% in commerce, and 11.2% in construction; 79.4% of accidents occurred in the workplace, while 20.6% were traffic accidents that took place going to or from work.

### Persons with Disabilities

In 2002, 4.2% of the population had some kind of disability; 51% were men and 60.5% lived in urban areas. The most frequent disabilities were motor limitations (24%), blindness (14%), and mental retardation (12%) (14).

## HEALTH CONDITIONS AND PROBLEMS

### COMMUNICABLE DISEASES

#### Vector-borne Diseases

**Malaria** mainly affects rural and suburban populations in provinces classified as having a high risk of transmission. The native parasite species is *Plasmodium falciparum*, which is sensitive to chloroquine. Outbreaks are associated with internal and external migration of temporary agricultural and construction workers; with the occurrence of natural phenomena that cause heavy rainfall, mainly hurricanes; and with limited response capacity at the local level. Between 2000 and 2004, the number of malaria cases averaged 1,490 a year, increasing to 2,354 in 2004 (incidence rate of 27.5 per 100,000 population). In 2005, there were 3,837 cases reported (64% in men); 10–49-year-olds were the most heavily affected (73.8% of cases); and 75% of cases were reported in rural areas.

**Dengue fever** is endemic, and all four serotypes circulated between 1997 and 2004. In 2003, 6,268 probable cases were reported (nearly double the 2002 figure), 2,478 in 2004, and 2,949 in 2005. This last figure represented an incidence of 29 per 100,000 population. Seropositivity to the dengue virus among probable cases was 45%. Of the dengue cases, 82% were reported as hemorrhagic dengue, causing 18 deaths, for a case fatality rate of 21.9%. The virus was not isolated in 2005.

#### Vaccine-preventable Diseases

In 1998–2001, there was an outbreak of **measles**, which required the activation of control activities; no cases have been reported since 2002.

In October 2000, there was an outbreak of **poliomyelitis** caused by virus 1 derived from the oral poliomyelitis vaccine (OPV) (14 cases), which mainly occurred in the country's central portion. The outbreak's possible cause was the circulation of the vaccine-derived virus in populations with low coverage or an immunodeficient patient. No cases of poliomyelitis have occurred since 2002. The pentavalent vaccine was introduced in 2001 and the triple viral vaccine (MMR) in 2004, which provides coverage for the 10 most importance vaccine-preventable diseases.

In 2005, vaccination campaigns were conducted against **tuberculosis**, **hepatitis B**, and poliomyelitis, with coverage of 100%, 92.5%, and 85.8%, respectively.

The incidence of invasive infections caused by *Haemophilus influenzae* type b (Hib) fell after the pentavalent vaccine was introduced. Cases of meningeal tuberculosis, **neonatal tetanus**, **whooping cough**, and **diphtheria** have been reported in the infant population, and **tetanus** cases have been reported in adults. During 2004–2005, there was a major outbreak of **diphtheria** in children under 15 years old. In 2004, seven cases of rubella were reported in the country.

#### Intestinal Infectious Diseases

Diarrheal diseases are a significant public health problem, mainly in children under 5 years old; between 2,000 and 5,000 cases a week are reported each year. In 2002, according to the National Demographic and Health Survey (ENDESA), 14% of children under 5 had suffered from diarrhea two weeks before the survey, with the hardest hit groups being children between 6 and 23 months old (24%) and infants under 6 months old (12.7%). In 1997–2002, mortality from this cause in children under 5 declined, dropping from 58 to 38 per 1,000 live births.

#### Chronic Communicable Diseases

**Tuberculosis** is a priority public health problem. The estimated incidence rate is among the highest in the Region, with close to 85 new cases per 100,000 population (7,000 new cases every year); 3,500 of those cases are pulmonary, confirmed by positive bacilloscopy (BK+) (15). Some cases were resistant to first-line antituberculous drugs. The incidence rate varied from 57 per 100,000 population to 54 per 100,000 between 2003 and 2004 and climbed to 58.4 per 100,000 in 2005. The cure rate rose from 46% in 2000 to 85% in 2005, thanks to an increased reliance on the use of the Directly Observed Treatment, Short-course (DOTS) strategy. Tuberculosis is the leading opportunistic infection in people with HIV (close to 12.2%) and in 2005, 8.6% of TB cases were HIV positive.

**Leprosy** remains at under 1 case per 10,000 population. In 2002–2004, the annual incidence was 0.2 per 10,000 population and in 2005 it was 0.17, although there are still 13 municipalities

whose rates remain higher than 1 per 10,000. Yuma, Bayaguana, Barahona, and Oviedo are among the municipalities with the highest rates. Between 2002 and 2004, 30 cases were reported in Santo Domingo, 13 in the National District, 15 in San Pedro de Macorís, 12 in Barahona, and 10 in Monte Plata (13).

### Acute Respiratory Infections

In 2005, acute respiratory infections were the main cause of outpatient consultation by the general public; in 2001–2002, they were among the five leading causes of death. Every year, between 6,000 and 10,000 cases are reported each week. In 2002, acute respiratory infections accounted for 80% of morbidity among the population. In children 1–4 years old, acute respiratory infections were the leading cause of illness and reason for medical care in health establishments. According to the 2002 National Demographic and Health Survey, 19.6% of children under 5 years old had suffered from coughing accompanied by breathing difficulties in the two weeks prior to the survey. Of those children, 60% received medical care, with the figure declining with an increase in the child's age and the mother's level of education.

The probable cases of **meningococcal disease** reported in 1995–2002 averaged 132 a year and the incidence rate ranged from 0.5 to 2.9 per 100,000 people. During 2002–2004, there was a reduction in the number of cases reported (55% of the number expected). During 2005, 39 probable cases were reported.

### HIV/AIDS and Other Sexually Transmitted Infections

HIV/AIDS is one of the leading causes of death in the population 15–49 years old. An estimated 88,000 people are infected with HIV, including adults and children. The disease's transmission is linked to tourism, the existence of free zones, the high migratory flow, port establishments, and poverty. The main form of transmission is heterosexual sex. Among 15–29-year-olds, seroprevalence is higher among women than men. According to the 2002 National Demographic and Health Survey, more than 50% of women do not think they are at risk of contracting the infection and 9% of sexually active women suffered from sexually transmitted infections in 2001. In 2002, HIV prevalence was 1% (1.1% for men and 0.9% for women) and in the substandard *bateyes* neighborhoods (the poorest areas in the country) it was 5% (4.7% for men and 5.2% for women). In 2003, an estimated 23,000 women 15–49 years old were HIV positive (16). The prevalence among pregnant women was 1.4% in 2004 and 2.3% in 2005.

In 2004, **hepatitis B** had a seroprevalence of 1.5% and **syphilis**, of 1%. The prevalence was higher in 15–29-year-olds, among the rural population, and among women with five-to-eight years of schooling.

### Zoonoses

In 2005, there were 707 cases of **leptospirosis** reported; samples were taken in 588 cases and 50 were confirmed in the laboratory. The provinces that reported the largest number of probable

cases were Santiago (42%), the National District (14%), Espaillat (13.3%), Puerto Plata (6.8%), and Santo Domingo (4.4%). The *L. pomona* serotype was most frequently found, affecting mainly men 20–39 years old who worked in agriculture. There were 21 deaths in the provinces of Puerto Plata and Santiago Rodríguez.

Between 2002 and 2004, there were four cases of human **rabies**, and it is believed that one of them was caused by an insectivorous bat (there are no hematophagus bats). The country has been free from human rabies since 2005; rabies in animals occurred in the Dajabón zone bordering Haiti and in the country's eastern part, mainly in San Pedro de Macorís, where there are large wild populations of mongooses, which are the second most important animal population after dogs implicated in rabies transmission. The country is free from **avian influenza, foot-and-mouth disease, bovine spongiform encephalopathy, anthrax, and African swine fever**.

In November 2002, 152 blood samples were taken from live migratory birds and resident birds in the Los Haitises (61) and Bahoruco (91) National Parks, which were studied at the United States Centers for Disease Control and Prevention (CDC) in Atlanta. Nine were positive for **flavivirus**, and **West Nile virus** antibodies were identified in two of the samples from Los Haitises. The virus was not isolated in the birds' tissue cultures, which indicates that the transmission occurred while they were alive.

## NONCOMMUNICABLE DISEASES

### Metabolic and Nutritional Diseases

Between 1996 and 2002, chronic malnutrition among children under 5 years old fell from 11% to 9%; the highest rate was among 12–23-month-olds, and was higher for boys (10%) than girls (8%) (8). The figure for acute malnutrition was 2% and for global malnutrition, 5%.

Among children with no schooling, 15% presented with chronic malnutrition, as did 13% of children whose mothers did not complete primary school. In urban areas, 8% of children presented with chronic malnutrition and 4% presented with global malnutrition. In rural areas, the figures were 11% and 7%, respectively. According to the 2002 national census, the height-for-age deficit, or chronic malnutrition, among schoolchildren 6–9 years old nationwide was 8%, which is lower than the level reported in 1993 (19%). The highest levels were reported in the provinces of Elías Piña (15.7%), La Vega (12.7%), and Bahoruco (11.2%). The provinces with the lowest levels of chronic malnutrition were La Altagracia (2.8%) and Santiago, La Romana, and San Pedro de Macorís (4%) (17). The prevalence of obesity among people over age 50 was 30%.

### Cardiovascular Diseases

Diseases of the circulatory system accounted for more than 10% of medical consultations and more than 6% of emergency cases in the country's health establishments. Close to 80% of

nonobstetric hospital admissions among adults are for cardiovascular problems (18). A study on cardiovascular risk factors conducted on 6,400 persons between 1996 and 1998 and adjusted to the 2004 classifications indicated a prevalence of obesity of 16.4%, and diastolic hypertension of 21.8% (33% in women, 36.7% in men, and 30% in people over 50). According to the study, 65% of people with hypertension were not receiving treatment, 55% had a family history of hypertension, 9.1% had hypercholesterolemia, and 24% had a cholesterol count higher than 200 mg/dl. The study also showed that 20% smoked at the time of the study and 22% had stopped smoking.

### Malignant Neoplasms

Reported mortality from this cause increased in 2004 (15). **Breast cancer** ranked first in frequency (25.9%), followed by **cancer of the cervix** (21.2%) and prostate cancer (7%).

## OTHER HEALTH PROBLEMS OR ISSUES

### Disasters

The country's location exposes it to tropical storms and cyclones. Floods are the most frequent natural disaster, and they occur year round. The most vulnerable regions lie close to watersheds of the Yaque del Norte, Yaque del Sur, Yuna, and Soco rivers, and the riverbanks in the cities of Santo Domingo and Santiago. The country suffered from the effects of hurricanes David (1979), George (1998), and Jeanne (2004). Severe earthquakes have occurred in some parts of the country, as well as drought caused by poor watershed management, deforestation, and global climate change. Close to 70% of the population lives in high-risk areas vulnerable to emergencies and disasters.

Acute respiratory infections and acute diarrheic diseases are some of the illnesses associated with natural disasters. Injuries are also an important cause of morbidity during disasters, as are malaria and dengue fever.

### Violence

According to the 2002 National Demographic and Health Survey, 9.5% of women 15–49 years old stated that they had suffered from physical violence. The figure was higher for women 20–29 years old (11.7%).

### Environmental Pollution

Water pollution from untreated liquid waste, growing difficulties in the adequate management and treatment of the increasing quantity of solid waste, and the degradation of air quality due to particulate-matter pollution are the main environmental problems, and they are linked to urban and industrial growth. Agricultural-chemical contamination is a serious problem in areas where production is intensive. Between 1994 and 2005, carbon dioxide emissions increased from 15,000 tons to 16,649 tons.

## RESPONSE OF THE HEALTH SECTOR

### Health Policies and Plans

Two important laws were passed in 2001, mapping out a new direction for the national health system: the General Health Act (Law 42-01) and the Social Security Act (Law 87-01). The General Health Act separated the system's service delivery, leadership, and financing functions and created the National Health Council as the national body coordinating health matters. The act laid the groundwork for regulating public health and health-risk matters and charged the Secretariat of Public Health and Social Welfare with formulating the national 10-year health plans and performing essential public health functions. Law 87-01 created the Dominican Social Security System and established the sources and mechanisms for financing the national health system's assistance. The Dominican Social Security System is funded by prepaid, mandatory contributions, based on ability to pay and employment status; it guarantees public insurance for the poor and indigent population. Law 87-01 introduced family health insurance, which is mandatory and universal and entails a basic health plan for the three established regimes: contributive, subsidized contributive, and subsidized. In 2003, the Labor Risk Administration was created to prevent and cover occupational accidents and work-related diseases. By December 2005, the Labor Risk Administration had registered 30,531 companies and enrolled 1,218,737 workers (19).

### Health Strategies and Programs

The national health system encompasses two subsystems: the individual care subsystem and the collective health subsystem, both operating under the direction of the Secretariat of Public Health and Social Welfare. The individual care subsystem is composed of public and private health service providers, with each sector organized into primary, secondary, and tertiary care levels. Public services are organized into Regional Health Services. These function as autonomous entities, have their own legal status, are duly accredited as health care providers with the Dominican Social Security System are financed by the National Health Insurance, and deliver health care under the basic health plan. The collective health subsystem includes a series of public health programs and programmatic networks aimed at health promotion and the prevention and control of priority health problems; their management is deconcentrated to provincial health directorates that are financed by the Government. The programs to prevent and control priority problems need to be reformed and financed: many operate with international donations and loans and receive Government funding in national emergencies, which limits their sustainability and effectiveness. Most programs of the Secretariat of Public Health and Social Welfare have had a vertical, centralized structure. Measures to decentralize and bolster the response capability of the provincial health direc-

torates are being carried out, as a way to enable them to better manage programs in their geographic areas.

### Organization of the Health System

In November 2002, family health insurance under the subsidized insurance regime was introduced in Region IV, in the country's southeastern portion, which entailed one of the largest transfers of funds and responsibilities to the local level. The subsidized regime has been extended to Regions III, IV, and V, with approximately 400,000 members in these four regions (4.3% of the total population). The introduction of family health insurance for the contributive regime (including public and private employees and their dependents) has been postponed nine times in the last five years by the National Social Security Council, preventing the estimated 30% of the population eligible for this regime from gaining access to the basic health plan. Implementation of family health insurance is being studied at the highest political level.

After the Secretariat of Public Health and Social Welfare was reorganized, that agency was charged with delivering collective health services through the general preventive programs established by the new legal framework. It will gradually shed the service delivery function, but not before organizing and empowering the regional health services so that they can link health care establishments and levels into a network and assure that persons can receive comprehensive and continuous care. The source of financing will be the per capita contributions paid by the Dominican Social Security System, through management contracts between public suppliers and the National Health Insurance.

The Secretariat of Public Health and Social Welfare chairs the National Health Council, the National Social Security Council, the National Health Insurance Council, the Presidential HIV/AIDS Commission, and the Executive Commission for Health Sector Reform, which are strategic venues for consolidating various leadership aspects (management and regulation, financial modeling, oversight of insurance, and harmonization of service delivery) and for directing efforts in accordance with national health priorities and objectives.

The National Health Council is chaired by the Secretariat of Public Health and Social Welfare (the highest national health authority) and encompasses the President's Technical Secretariat, the Secretariat of Labor, the Secretariat of Education, the Dominican Social Security Administration or the body in charge of social security (the National Social Security Council), the Military Medical and Health Corps of the Armed Forces and the National Police Force, the Dominican College of Physicians, the Association of Private Clinics and Hospitals, the Autonomous University of Santo Domingo, the Dominican Municipal League, the drinking water and sewerage sector, duly-accredited nongovernmental organizations working in the field of health, the Secretariat of the Environment and Natural Resources, the National Higher Education Council, and any other institution that

the Secretariat of Public Health and Social Welfare or the National Health Council may invite temporarily.

The Dominican Social Security System is organized according to a separation of functions: the Government is responsible for direction, regulation, financing, and supervision, while the functions of insurance, risk management, and service delivery are the responsibility of duly-accredited public or private entities, or joint entities.

The National Social Security Council is composed of the Secretary of Labor, who chairs it, the Secretary of Public Health and Social Welfare, the Vice-President, the Director General of Social Security, the Director of the National Relief and Housing Administration, the Governor of the Central Bank, a representative of the Dominican College of Physicians, and representatives of other health professionals and technicians, employers, and employees.

The health sector is mixed in nature, with participation by public and private institutions and nongovernmental organizations. The Secretariat of Public Health and Social Welfare is still the main provider of public services and is organized along central, regional, and provincial levels. The central level encompasses the Secretary's Office, which is supported by five under-secretariats: Administration, Collective Health, Individual Care, Technical (in charge of institutional planning, health accounts, information systems, etc.), and Social Welfare. At the provincial level, the Secretariat has 30 provincial health directorates (one per province). The province of Santo Domingo and the National District are organized into eight health area directorates that have a decentralized leadership function.

Although provincial health directorates have mixed functions, they operate as central agencies responsible for providing leadership, participate in the administration of health services, and act as deconcentrated bodies in charge of local management of the health sector. Provincial health directorates are responsible for installing health facilities; evaluating quality, access, and performance of public and private service providers; and providing oversight of local insurance coverage and harmonization of delivery. They are required to ensure that these processes abide by the principles of equity, comprehensiveness of care, and universal access.

The organization of the local-level health service delivery network is the responsibility of each of the nine regional health directorates, which are responsible for the management and coordination of establishments providing different levels of care, that are formed into networks in each region, in the so-called regional health services. The Secretariat of Public Health has a network of 1,037 establishments that include 6 specialized hospitals, 8 regional hospitals, 107 municipal hospitals, 22 provincial hospitals, 615 rural clinics, 90 health posts, 30 health centers, and 159 physicians' offices (20). The Dominican Social Security Institute has a network of 210 establishments: 20 hospitals (3 national and specialized hospitals, 2 regional hospitals, and 15 general hospitals), 30 polyclinics, and 160 physicians' offices.



The Essential Medications Program and Logistics Support Center (PROMESE/CAL), which reports to the nation's President, also is one of the public health sector institutions.

### Public Health Services

Programs for the prevention and control of communicable diseases that could feasibly be eradicated or controlled are the most highly structured. The programs for the eradication of diseases (immunizations and leprosy) are managed by the Secretariat of Public Health and Social Welfare and the Dr. Humberto Bogaert Díaz Dermatological and Skin Surgery Institute (a semiprivate institution). Disease control programs are administered by the Secretariat and include the programs to combat tuberculosis, HIV/AIDS, rabies, malaria, and dengue fever. All programs are being strengthened to boost their local level response capacity.

The programs for immunizations and for the prevention and control of tuberculosis, HIV, and dengue fever are progressing and being strengthened and are incorporating social communications and mobilization. Within the context of MDG objectives to strengthen health programs and improve the population's health indicators, in 2005 the Secretariat of Public Health and Social Welfare launched the Zero Tolerance Mobilization strategy intended to enlist civil society's participation in the Secretariat's efforts to reduce avoidable maternal mortality and mortality in children under 5, the number of cases of tuberculosis not being treated under the DOTS strategy, human rabies cases, deaths from malaria and malaria outbreaks in priority population groups and territories, deaths from dengue fever, and avoidable vertical transmission of HIV.

In 2005, the Government invested 2% of the national budget (7% of social spending) in seven food assistance programs. It has implemented programs for distributing vitamin A, folic acid, iron, and calcium supplements to pregnant women, women who have recently given birth, children under 2 years old, and school-aged children. It also has established programs for fortifying salt with iodine, sugar with vitamin A, and wheat flour with iron and folic acid.

The Directorate General of Epidemiology is responsible for epidemiological and health surveillance. It is supported by the Dr. Defilló National Laboratory in conducting serological diagnosis of dengue fever and HIV infection, tuberculosis cultures, and sensitivity tests; by the Central Veterinary Laboratory in the viral isolation and diagnosis of zoonoses; by the Robert Reid Hospital for conducting bacterial cultures and antibiotic sensitivity tests; and by the laboratory of the Center for the Control of Tropical Diseases for malaria.

In 2000, 48.3% of the population had water supply service. There are shortcomings in the treatment and disinfection of the water supply and in the operation and maintenance of the systems, particularly in rural areas—52% of liquid waste is not

treated before being disposed of in bodies of water. This figure must be improved to attain target 10 of goal 7 of the MDGs (21).

In 2003–2005, the country played an increasingly active role in the creation and consolidation of the Central American and Dominican Republic Forum on Potable Water and Sanitation, which was developed under the framework of the Central American and Dominican Republic Meeting on Health (RESSCAD), a forum for coordinating member country primary care institutions. A reform project was presented to the Congressional Standing Committee on the Environment and Natural Resources to improve institutional organization in the water and sanitation sector.

Municipal solid waste management was deficient in 2002, since necessary technical and financial resources were unavailable. In 57% of municipalities, solid waste is disposed of in rivers and open-air dumps. Hazardous waste management, including biomedical waste (22), is not handled separately from municipal waste.

In 2003, an evaluation was performed in the country as part of the regional Latin American and Caribbean initiative for solid waste management. It generated policy and strategy proposals to strengthen the sector, some of which have been implemented in the cities of Santo Domingo and Santiago.

The Secretariat of Public Health, in coordination with the Directorate General of Quality Standards and Systems, prepared standards for food protection and control and established a Codex Alimentarius National Commission. There have been 37 technical committees established on food, pesticides, fertilizers, and veterinary waste, and 79 standards have been published related to food, which have been registered or adapted to Codex standards. In 2003, a national committee was established to apply the Agreement on Sanitary and Phytosanitary Measures and the Agreement on Technical Barriers to Trade of the World Trade Organization (WTO). Proposals to update agricultural health laws were prepared to facilitate compliance with those agreements.

The National Public Health Laboratory, the Central Veterinary Laboratory, and the Biotechnology and Industrial Innovation Institute Laboratory are the government laboratories responsible for supporting food surveillance and control. A national network of food laboratories and a quality assurance system are being established to obtain accreditation from a pertinent national or international organization.

The country is governed by national quarantine inspection rules and international rules of the World Organization for Animal Health (OIE), the International Plant Protection Convention, and the European Good Agricultural Practices (EUREGAP) standards in specific cases of exports of bananas and other products (23).

The National Emergency Commission and the Emergency Operations Center execute, with some limitations, the natural disaster prevention and mitigation plan; risk zones have been identified.

In cooperation with the Secretariat of Public Health's National Emergencies and Disasters Directorate, contingency plans for hospitals were developed in 11 municipalities in Cibao's central,

north-central, and northeastern regions, which establish these hospitals' emergency plans. The Emergency Operations Center developed a training and education plan so that instructors in the supply system and hospital personnel can prepare hospital emergency plans. An interagency emergency and disaster plan was designed, coordinated by the Center and UNDP; the plan includes a health, water, and sanitation component. The country participated in the proposal for the strategic Central American disaster response and prevention plan for the drinking water and sanitation sector. This initiative led to the establishment of a water and sanitation sector group as a specialized unit within the Emergency Operations Center. A national plan was drawn up to reduce vulnerability to disasters.

Coordination of avian influenza surveillance and control has begun, particularly along the border. A National Avian Influenza Commission has been established and a national plan to combat the disease is being prepared.

### Individual Care Services

In 2005, 86% of the Secretariat of Public Health and Social Welfare's 1,294 establishments and the Dominican Social Security Institute's 153 establishments provided primary level care. In emergency services in public hospitals, care is provided under different arrangements. The most common is the "doctor-on-call" service, with each doctor working a 24-hour shift; this arrangement does not involve additional payment for the medical professional. There is a public psychiatric hospital that has 62% of the 245 available psychiatric beds (28% in general hospitals and 10% in private health centers). The country has 117 psychiatrists (1.4 per 100,000 people) and 240 psychologists (2.9 per 100,000 people), mostly in the private sector.

The country's health care model leans more toward treating disease than promoting health, and is based on free demand. In 2005, public health establishments had 19,078 available beds (1 per 469 persons). The Secretariat of Public Health has 9,204 professional medical positions (20 per 100,000 population). Primary care units are responsible for providing primary care; the units' interdisciplinary teams consist of a general physician, a nursing assistant, a community health agent, and several health promoters, who are responsible for overseeing the health of approximately 500 families living in the catchment area. The primary care units rely on methods and tools that permit the identification and early capture of people at risk. The community, represented by neighborhood boards and health committees, coordinates activities and participates in local health management.

In 2002, 41.3% of the population visited a Secretariat of Public Health hospital for a first consultation, 11.5% visited an outpatient center (health post or rural clinic), 5.8% used Dominican Social Security Institute services, and 1.1% used a military hospital (8, 24). Among the poorest quintile, 68.3% used Secretariat of Public Health facilities for the first consultation, and 31.7%

used the services of other institutions; 53% used Secretariat establishments for hospitalization services. Use of Secretariat of Public Health services rose to 72% in the poorest quintile. Private clinics received 35% of the total population and 19% of the poorest-quintile population. Private sector health care service provision was concentrated in urban areas and was based on direct payment and prepaid medical plans known as the "igualas médicas," some of which combine medical care and insurance. In 2002, 21.1% of the population had insurance coverage (6.5% in the poorest quintile); insurance coverage in the wealthiest quintile was 44.1%.

Blood donation, processing, storage, and use are regulated by law. There is a national policy and a national commission drawn from the different sectors involved and users' representatives. A proposal has been made to centralize blood processing and donations. There are standards for the evaluation and selection of blood donors, rules for hygiene and security in blood banks and transfusion services, and a manual of procedures. According to the catalogue of establishments inventoried in 2005 in the geographic information system for the health sector, the organization of blood banks and storage centers, the dispensing of blood derivatives, and the quality of blood screening are flawed, and this issue must become a priority on the political agenda.

Of all schizophrenia patients, 50% remain in the community, with little opportunity to receive specialized care. Community mental health services are scarce and existing centers are located in urban areas. Standards for the national mental health program were updated and a mental health act has been enacted and is in the process of being regulated.

### Health Promotion

In 2003–2005, the country progressed in developing health promotion policies legitimized by various laws, including policies on AIDS, on the control of drugs and controlled substances, on the environment and natural resources, and on banning smoking in enclosed spaces. Strategies for healthy municipalities and communities and health promoting schools have been implemented in five municipalities; the health promoting schools program promotes the prevention of pregnancies and HIV/AIDS among teenagers.

The Zero Tolerance Mobilization strategy is intended to mobilize public awareness to transform the population's health status. The strategy emphasizes health promotion, disease prevention, and control of priority health problems through social and intersectoral participation throughout all national health system levels. The new Dominican Social Security System allows users and society to participate in decision making. Users and different civil-society sectors are represented on the National Social Security Council and the National Health Council. The municipal selection and certification committees are required to validate information for enrolling in the subsidized family health insurance

regime. While health committees and neighborhood boards continue to exist, their participation in local management remains limited. Intersectoral participation is promoted for disease prevention and control of priority health problems.

### Health Supplies

In June 2005, the basic table of essential drugs for national use included 468 drugs and 871 pharmaceutical formulations. There are approximately 23,000 legally registered pharmaceutical specialties and 4,812 pharmaceutical establishments devoted to the manufacture or sale of drugs, 105 of which are production laboratories, 1,305 are distributors, 3,300 are private outpatient pharmacies, 51 are public hospital pharmacies, and 417 are low-cost drugstores (25). Exports of nationally produced pharmaceuticals grew by 50%. Approximately 99% of the raw material used to produce medications is imported.

There are four public warehouses for the deposit and distribution of drugs, including the Essential Drugs Program's warehouse (PROMESE/CAL). No inventory is available of private-sector or nongovernmental organization drug stocks. The public sector's drug purchasing system is centralized and is carried out through PROMESE/CAL. According to a cost analysis conducted in 2000 for the current purchasing and supply system, PROMESE/CAL supplied between 45% and 65% of the cost of medications and health materials used by hospitals and subcenters and procured them at prices that were, on average, 250% lower than the cost of purchasing the same products directly. At the end of 2000, a decree was promulgated transforming PROMESE/CAL into a center to provide logistical support for specific functions to procure medications for the health system, and it took over the low-cost drugstores. The Government signed an agreement to formalize its participation in PAHO's Regional Revolving Fund for Strategic Public Health Supplies, which will allow it to participate in joint procurements of essential drugs in the Region and will improve access to essential drugs and strategic inputs for health.

The Drug Regulatory Authority oversees the application of the country's 2005 pharmaceutical policy. The price of pharmaceuticals can be freely determined, with Government oversight. There are vast differences between the prices charged by private pharmacies and international reference prices (26).

### Human Resources

In 2005, the country had 18,450 physicians (20 per 10,000 population), 3,603 professional nurses (3.9 per 10,000), 15,511 nursing assistants or nursing technicians (15.7 per 10,000), 2,946 bioanalysts (3.2 per 10,000), 8,320 dentists (9 per 10,000), and 3,940 pharmacists (4.3 per 10,000). Between 1994 and 2004, the number of Secretariat of Public Health physicians grew from 5,626 to 9,204, the number of nurses and nursing assistants from 8,600 to 11,333, dentists from 376 to 1,431, and pharmacists from 372 to

527. Only the public subsector produces information on the geographic distribution of human resources. In 2002, the numbers ranged from 5.6 physicians per 10,000 population in the province of Azua to 38.5 in the National District (27).

Requirements for the certification of universities, higher education institutions, schools, academic departments, and undergraduate and graduate programs are set by the Higher Education, Science, and Technology System. The Department of Higher Education, Science, and Technology oversees higher education, approving the establishment of schools and study programs and sanctioning their extension to other cities. There are 18 universities offering health-related degrees. There are 9 medical schools, 11 nursing schools, 6 bioanalysis programs, 11 dental schools, and 4 pharmacy schools. Enrollment in health programs rose from 30,360 in 2003 to 40,479 in 2005. In 2003, 78% of students were women; in 2005, 76% were women. Medicine had the largest number of students (24,186 in 2005) and has grown faster than other programs. There are more than 40 postgraduate programs for specialties and subspecialties. There are residency programs in 15 teaching hospitals, and programs that offer master's degrees in public health, bioethics, and health management, as well as specialized studies in health reform and social security, and in maternal and child health and adolescent health. There are active professional associations and organizations of health workers, consisting of professional colleges and associations, and unions.

### Research and Technological Development in Health

The Department of Higher Education, Science, and Technology is in charge of health research and technology and has a program for competitively allocating nonreimbursable resources to finance science and technology research and innovation projects in universities and legally recognized, eligible research centers. By law, the Department's budget includes a National Science and Technology Innovation and Development Fund designed to promote scientific and technological research.

The main holdings of bibliographical information on human and environmental health are found in the universities, health sector NGOs, research institutes, official institutions, international agencies, and the network of hospital libraries. The network is composed of eight teaching hospitals and was developed under an agreement among the Secretariat of Public Health, the Autonomous University of Santo Domingo, the Santo Domingo Technology Institute, PAHO, and the European Union.

In 2002, an agreement was reached to develop the country's Virtual Health Library. Progress made in this initiative has led its consultative committee to consider that it now can safeguard the health sector's intellectual legacy and provide equitable access to that information, as well as publicizing and disseminating health information generated by the different member institutions. Fifteen institutions subscribe to the HINARI program (established by WHO and the main publishing houses from around the

## Community Participation Assures Health

The “Zero Tolerance Mobilization strategy” is designed to harness citizen participation in improving the population’s health. The strategy emphasizes health promotion, disease prevention, and the control of priority health problems. The new Dominican Social Security System also allows users and civil society to participate in decision making. Users and different civil-society sectors are represented on the National Social Security Council and the National Health Council. Intersectoral participation is actively sought in preventing disease and controlling priority health problems.

world), which offers free or virtually free electronic access to many journals in biomedicine and other topics in the field of social science to institutions in developing countries. New collective subscriptions are being arranged for public institutions that report to the Secretariat of Public Health and Social Welfare.

The Information and Knowledge Management Center at the PAHO/WHO Country Office constitutes the technical memory of the country’s public health system and the reference center on this topic. There is a network composed of 12 PALTEX posts located in different regions that provide students and teachers with access to high-quality materials at low cost. The National Commission for the Information and Knowledge Society does important work in implementing the corresponding strategy. It recognized the Virtual Health Library as an example of a portal that includes content that achieves the proposed objectives.

Research conducted on human subjects must be reviewed and approved by a bioethics research committee that is nationally and internationally accredited. The National Bioethics Council created by the Secretariat of Public Health and Social Welfare acts as the regulatory agency for biomedical research in the country.

### Health Sector Expenditures and Financing

In 2003, social spending accounted for 8.1% of GDP; per capita social spending was approximately US\$ 213. In 2002, the public sector spent less than US\$ 3.00 per capita on drugs (less than 9.4% of total spending on health reported that year). Estimates suggest that 21% of spending on health was financed by the public sector and 79% by the private sector, with 27% of this second figure coming directly from families’ pockets (28).

In 2002, a report on national health accounts underlined the small percentage of funds that the public sector destined to health care, compared to the large percentage contributed by families. National per capita spending on health was US\$ 191, with the Secretariat spending US\$ 40 and households spending US\$ 93. If the Dominican Social Security System is to fully develop as an alternative for extending social protection with equity, these proportions must be reversed.

Spending on medications is the largest item in health costs. They are financed under a mixed arrangement. The Government

allocates a budget to SESPAS and PROMESE/CAL to subsidize the medications dispensed in the network of public establishments but there are no mechanisms to ensure that they reach the very poor. The Dominican Social Security System includes drug assistance as part of the pharmaceutical benefits for members under the different regimes. In the subsidized regime, patients receive medications free of charge; in the subsidized contribution regime they pay 30% of the cost and the government pays 70%; and in the contribution regime patients pay 30% of the cost and the supplier pays 70%.

Private suppliers, including pharmacies and providers of medical inputs, are the main beneficiaries in the market for goods and services, since they capture about 61% of national spending on health (29). In the public sector, the Secretariat is the main financial agent, administering 21% of total spending on health; followed by the Dominican Social Security Institute, with 6.4%; private insurance with 14%; and NGOs with 6.4%. Of Government spending, 5% goes towards public health programs; this figure is being increased to cover the Zero Tolerance Mobilization program. To finance the basic family health plan, public spending on health will have to be increased by 2% of GDP, which means that between 3.7% and 4% of GDP will be required to ensure that the plan has universal coverage and to finance the prevention and control activities (30).

### Technical Cooperation and External Financing

International cooperation agencies working in the country include PAHO/WHO, the United Nations Food and Agriculture Organization, the World Food Program, the United Nations Development Program, the United Nations Population Fund, the United Nations Children’s Fund, the Joint United Nations Program on HIV/AIDS, the United Nations International Research and Training Institute for the Advancement of Women, and the International Organization for Migration.

In 2005, the United Nations system prepared a joint analysis of the country (31), considering human rights, equity, gender, the life cycle, and the institutional framework as cross-cutting issues. This work was the result of a participative process of evaluation and analysis intended to define the situation, priorities,

and strategies for technical cooperation with the country during 2007–2011. The budget was distributed along four thematic lines: democratic governance, growth and development with equity, quality social services, and sustainable environmental management; and managing risks in emergencies and disasters.

The World Bank will continue providing support until 2009 through programs to improve the living conditions of vulnerable groups; these programs focus on youths and women and are closely linked to the MDGs (32), which will help the country to develop and achieve social equity.

The Inter-American Development Bank provided US\$ 75 million in financial support for a project to modernize and restructure the health sector, carried out in 1998–2006. The project is closely related to the Government's strategies for the health sector, including decentralization; reorganization of service delivery; the restructuring of the Secretariat of Public Health and Social Welfare and the Dominican Social Security Institute; reform of hospital administration; establishment of integrated information systems; and the design of policies, laws, and regulations to support institutional reform and modernization.

In June 2000, the Government signed the Cotonou Agreement with the European Union to reduce and eradicate poverty by promoting sustainable development. A National Office for European Development Funds was established, which is responsible for defining, administering, evaluating, and monitoring multilateral cooperation programs to execute the resources offered to the country through the agreement.

A Tripartite Committee on International Cooperation was established, composed of the Secretariat of Foreign Affairs, the President's Technical Secretariat, and the National Office for European Development Funds, to coordinate the various sources of cooperation. The European Union supported health sector reform through a program to strengthen the health system which began in 2000 and ended its first stage in 2005 with financial support amounting to a donation of €12 million, plus US\$ 1.5 million arranged by the National Office for European Development Funds. The program to strengthen the health system had three components: institutional strengthening, human resource management, and drugs. The second stage is under way.

In 2002, USAID presented its five-year strategic development plan to advance priorities in the fields of economic growth, democracy and governance, and health. The Agency plans to invest US\$ 100 million over that period. Its contribution to health will be targeted to the prevention and treatment of HIV/AIDS, infant survival, reproductive health/family planning, and health sector reform. The first phase of the project to reform and decentralize the health sector began in 2000 and concluded in 2005; it received a donation of US\$ 13.3 million to support the management of local health services in the eastern region and at the Secretariat of Public Health's central level. A two-year extension of the project was approved in 2005 (29).

The Spanish Cooperation Agency has a master cooperation plan for 2005–2008, which is intended to support compliance with the MDGs (33). Scientific and technical cooperation agreements were signed in June 2005. The agency has supported reform initiatives since 1996 in the fields of justice and municipal development and strengthening.

In 2005, the German Cooperation Agency (GTZ) ended its support in the health area and turned to cooperation in local development, with a contribution of US\$ 3 million until 2012 (34).

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