

COLOMBIA



- 1 Atlántico
- 2 Magdalena
- 3 Cesar
- 4 Sucre
- 5 Córdoba
- 6 Bolívar
- 7 Antioquia
- 8 Santander
- 9 Caldas
- 10 Risaralda
- 11 Cundinamarca
- 12 Quindio
- 13 Tolima

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, 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.

Colombia has a land area of 1,141,910 km² with a topographic profile defined by three branchings of the Andes mountain range. It has 1,098 municipalities, which are divided into 32 departments, 4 districts (the Capital District of Bogotá, Barranquilla, Cartagena, and Santa Marta), and the San Andrés and Providencia Archipelago. A 2005 population census registered 41,242,948 inhabitants (1). Bogotá, with 6,776,009 people, is the most populated city and, together with Barranquilla, Cali, and Medellín, accounts for 29.5% of the country's inhabitants. The population is predominantly urban (72% live in administrative centers) (2), and the population density stands at 36.2 inhabitants per km² (1).

GENERAL CONTEXT AND HEALTH DETERMINANTS

Social, Political, and Economic Determinants

Colombia is currently overcoming the economic crisis that characterized the end of the 1990s and beginning of the new century. In recent years, the country has shown clear signs of growth in its gross domestic product (GDP); in 1999, the GDP stood at -4.3% and by 2005 it had risen to 5.1% (3). Between 2002 and 2005, poverty decreased from 57% to 49% for the population segment living below the poverty line and from 20.7% to 14.7% for the population segment living below the indigence line (4). The Human Development Index rose slightly over 7% between 1991 and 2003 (from 0.728 to 0.781), putting Colombia in 77th place among 177 countries (5). Still, the inequality in income distribution has become more obvious: the GDP per capita in 2004 was estimated at US\$ 2,004.80, according to purchasing power parity (6). The national Gini coefficient increased from 0.544 in 1996 to 0.563 in 2003. Inequality between rural and urban areas continues to persist: in urban settings, indexes come close to those of countries classified as highly developed, whereas they fall to mid-level ranges for rural areas. Inequality among departments is also seen to range from one extreme to the other: Chocó is the least developed region, whereas the Capital District of Bogotá is the most developed. The departments of Chocó (with its large population of African origin) and Cauca and Nariño (with significant indigenous populations) have shown the least human development over the last 14 years (5). The leading strategies in the fight against poverty highlight the importance of providing opportunities to the poor to secure housing and land, an adequate education, and access to credit, as well as of strengthening the Social Protection System, which aims to reduce the population's vulnerability in the areas of health, labor and labor-related risks, and pensions (7).

Another important aspect of current Colombian reality is the internal armed conflict that has afflicted the country for four decades. After the failure of the negotiation strategy of past governments—which had its salient expression in the “distention zone” assigned by President Andrés Pastrana's government (1998–2002) to the Revolutionary Armed Forces of Colombia (FARC)—the current government of President Álvaro Uribe Vélez has carried out a “democratic security” policy based on armed confrontation of the insurgents (Plan Colombia and Plan Patriota). This strategy has brought about a withdrawal of guerrilla groups and stepped-up road travel security, resulting in an 82% decrease in the number of massacres, a 68% reduction in the number of terrorist acts, and an 81.9% decline in the number of kidnappings between 2000 and 2005. As a result, there is a significant difference in today's security situation as compared to that of 2002, when the first term of the Uribe administration began (8). In 2004, the demobilization of the paramilitary United Self-Defense Forces of Colombia (AUC) began; by mid-2006, the demobilization was nearly complete with the withdrawal of about 30,000 troops who began a “reinsertion” process in accordance with the provisions of the Justice and Peace Law approved by the Colombian Congress in 2005.

The most important political topic has been the reelection on the first round of voting of President Uribe for the 2006–2010 period, made possible through constitutional reforms passed in 2005 allowing incumbents to seek a second term. The coalition of parties supporting Uribe also obtained a clear majority in both the Senate and House of Representatives.

Over the past two years, the Government has incorporated the Millennium Development Goals (MDGs) into its political agenda and assigned MDGs oversight to the National Planning Department, which coordinates the activities of various governmental entities—including the Ministries of National Education; Social

Protection; Foreign Affairs; the Environment, Housing, and Territorial Development; and the National Administrative Department of Statistics—with those of various United Nations cooperation agencies. As a result of this initiative, in March of 2005 the CONPES 91 document was issued defining the targets set and strategies to be used to achieve each of the eight MDGs, as well as the budget allocations that will support this process. The MDGs are considered to be the foundation for the Uribe administration's social policies, and the General Health and Social Security System (SGSSS) will play a leading role in helping to secure gains in the social development arena. With the aim of upgrading the SGSSS coverage and quality, two legislative reform initiatives have been brought before Congress, seeking to promote the inclusion of currently uninsured low income population sectors; improve efficiency in the provision of public services, including health; and increase capacity-building and accountability at the regional (territorial) levels.

Between 2001 and 2005, unemployment and underemployment decreased from 17% to 13.2% and from 31.7% to 28.2%, respectively (9). In 2003, the illiteracy rate was 7.6% for the population over age 15; in rural areas this rate was more than double (15.4%). Of the children who entered primary school in 1995, only 33% are expected to complete the 10th grade (10). The probabilities for entering the educational system and remaining in it are lowest for the poor population and residents of remote rural areas. In 2000, the average number of years of schooling for the population over age 15 was 7.3 (with similar figures for both men and women) (6). The quality of basic education is deficient, particularly in rural areas. Slightly over one-third of schoolteachers hold no formal diploma (11). Since 1991, the country has been undergoing an educational reform process initiated by the enactment of a new Constitution, which made education compulsory between the ages of 5 and 15 including, as a minimum, one year of preschool and nine of the 11 years of basic education. According to the 2005 National Survey on Health and Nutrition, 59.4% of the population belonging to the poorest socioeconomic level reported not having adequate access to sufficient, safe, and nutritious foods, in contrast to 16.4% of the population at higher economic levels.

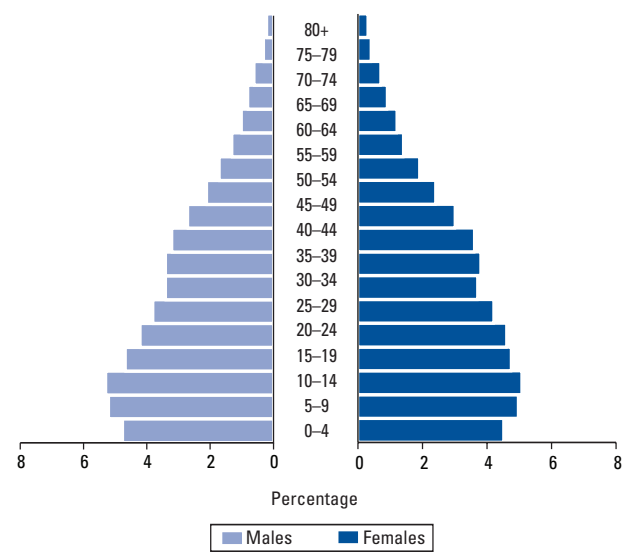
In spite of women's wide participation in society as a whole, their inclusion in the political sphere continues to be disproportionately low in comparison with men. A provision in the 1991 Constitution allowing for the popular election of departmental governors has had minimal impact on this gender disparity: only seven women have served as governors since the reform was introduced. For the 2004–2007 period, of Colombia's 1,098 municipalities, only 9 had achieved equal numbers of female and male political representation; in 73 municipalities, women held 30%–49% of local government positions, and in 184 municipalities, women occupied only 1%–9% of these positions. At the national level, 12 women currently are serving in the Senate (12%) and 17 in the House of Representatives (10.2%).

Demographics, Mortality, and Morbidity

Like other countries of the Region of the Americas, Colombia is undergoing demographic changes typical of societies in transition. Its population is aging, and life expectancy at birth is continuing an upward trend, increasing from 72.17 during the 2000–2005 period to a projected 73.23 for the 2005–2010 period (76.67 for women and 70.34 for men). The crude birth rate decreased from 22.31 per 1,000 population during the 2000–2005 period to a projected 20.57 for the 2005–2010 period (6, 12). Demographic data show a decrease in the proportion of the population aged 15–35 years as a result of migration and violence and an increase in the proportion of the population older than age 60 (Figure 1). External migration has affected the overall national population structure. In recent years, it is estimated that 10% of the Colombian population has left the country, a phenomenon which on the one hand has led to a weakening of social structures to protect adolescents and youth and, on the other hand, has had a positive economic impact (it is estimated that remittances from Colombian emigrants accounted for 3.9% of the GDP in 2003) (13).

Internal migration is determined to a great extent by the circumstances of displacement. The violence spawned by illegally armed groups, common delinquency, and narcotics trafficking has created a generalized feeling of insecurity in the country. This, in turn, has impacted on overall health conditions and access to health services and has led to a sizable migration of Colombians to bordering countries, whether motivated by strong

FIGURE 1. Population structure, by age and sex, Colombia, 2005.



Source: Departamento Administrativo Nacional de Estadísticas, preliminary data, 2005 census.

TABLE 1. Leading causes of death, Colombia, 1990.

	Number of deaths
Assaults (homicides)	24,033
Ischemic heart disease	15,853
Cerebrovascular diseases	9,459
Heart failure	6,052
Pneumonia	5,198
Hypertensive disease	4,794
Diseases of the respiratory system	4,748
Motor transport accidents	4,410
Malignant neoplasms of the stomach	3,605
Other accidents, including late effects	3,570

Source: Departamento Administrativo Nacional de Estadísticas, Vital Statistics Group.

TABLE 2. Leading causes of death, Colombia, 2003.

	Number of deaths
Assaults (homicides)	25,612
Ischemic heart disease	23,532
Cerebrovascular diseases	13,949
Chronic diseases of the respiratory system	10,090
Diabetes mellitus	7,576
Motor transport accidents	6,447
Hypertensive disease	5,576
Pneumonia	5,374
Malignant neoplasms of the stomach	4,406
Malignant neoplasms of the trachea, bronchus, and lung	3,324

Source: Departamento Administrativo Nacional de Estadísticas, Vital Statistics Group.

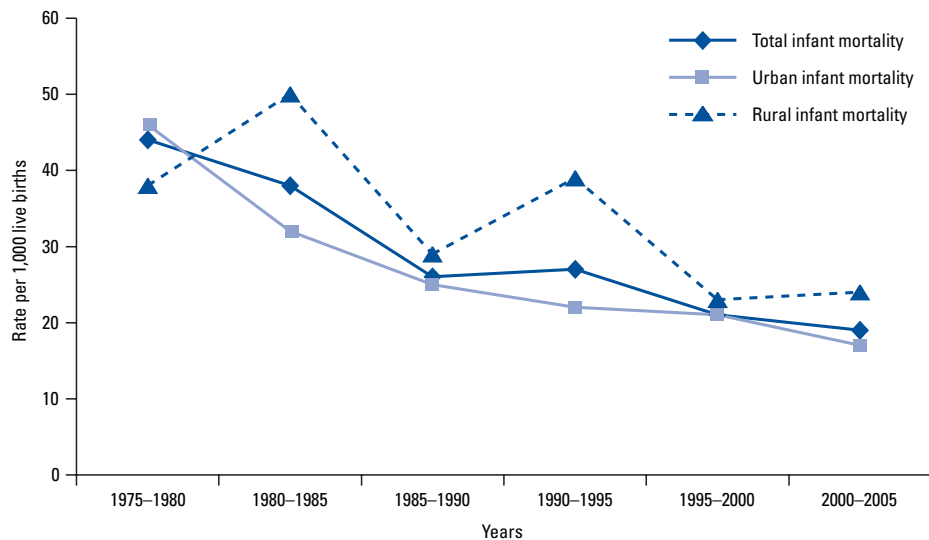
family ties or economic reasons. According to the United Nations High Commissioner for Refugees, approximately 36,000 Colombians requested asylum in Ecuador between 2001 and 2005, an issue of permanent discussion at all bilateral meetings dealing with health agreements and related topics. The effects of forced displacement on the civilian population reached a crisis point in 2002, when nearly 900 of the country's 1,098 municipalities reported being affected by forced migration to and/or from their territories. In 2003, the Government reported a 48% decrease in the registry of the displaced population as compared to the previous year, a trend which continued in 2004 and 2005. During the past decade, the total number of the displaced population has reached 1,796,508. The departments recording the most intense forced emigration are Antioquia, Bolívar, Cesar, Chocó, Magdalena, and Putumayo. The departments receiving the highest numbers of displaced persons are Antioquia, Bogotá, Bolívar, Magdalena, Sucre, and Valle del Cauca.

The indigenous population represents less than 2% of the national total (785,000 persons); some 500,000 individuals of African descent reside in communities along the Pacific coast; the *raizales* (native islanders of San Andrés and Providencia) number

around 25,000 and those of Gypsy descent fewer than 2,000. Half of Colombia's 81 indigenous groups number fewer than 1,000 persons each, and 22 of these groups have fewer than 500 members each. Generally speaking, these ethnic minorities are characterized by high poverty rates and markedly inadequate basic sanitation services; they also experience higher degrees of marginalization, violence, and health problems than other population groups.

Between 1990 and 2003, assaults (homicides), ischemic heart diseases, and cerebrovascular diseases retained their positions as the first, second, and third leading causes of mortality, respectively (Tables 1 and 2).

From 1998 to 2002, no changes were observed in the structure of mortality by broad groups of causes. In 2002, diseases of the circulatory system were in first place (117.7 per 100,000 population), followed by external causes (110.7), neoplasms (67.3), and communicable diseases (28.6). The first three groups of causes increased in frequency in relation to 1998 (circulatory, 105.1; external, 105.1; and neoplasms, 62.1), while there was a decrease in the frequency of communicable diseases (30.0). These rates varied among regions, with Vaupés maintaining its high profile as regards infectious diseases (2.46 times the national rate), exter-

FIGURE 2. Infant mortality, Colombia, 1975–2005.

Source: Profamilia: Encuesta de Demografía y Salud, 1980–2005.

nal causes predominating in Caquetá (2.39 times the national rate), Tolima showing high rates of diseases of the circulatory system (1.51 times the national rate), and Risaralda presenting a high frequency of tumor-associated causes (1.34 times the national rate) (6). In relation to age and gender, communicable diseases appeared among the first five causes of death only in the male and female population under age 5. Above that age, both sexes showed a progressive increase in causes associated with transport accidents, homicides, intentional self-harm, malignant neoplasms, and diseases of the circulatory system. In the population aged 45 and older, diabetes mellitus replaced external causes as one of the leading five causes of death (6). Under-registration of deaths was estimated at 17.5%.

HEALTH OF POPULATION GROUPS

Children under 5 Years Old

In 2005, this age group represented 10.3% of the total population (1). Data from the 2005 National Demographic and Health Survey reveal that, during the 2000–2005 period, the infant mortality rate was 19 per 1,000 live births (17 per 1,000 in urban areas and 24 per 1,000 in rural areas) (Figure 2). Departments with the highest infant mortality rate in 2005 were Chocó and Cauca (54 per 1,000 each) and La Guajira (33 per 1,000), while the lowest rates were recorded in Atlántico (14 per 1,000) and Santander (19 per 1,000) (14). The infant mortality rate among women without formal schooling was 43 per 1,000 live births, compared to 14 per 1,000 live births for women with higher levels of educa-

tion. The neonatal mortality rate fell from 23 per 1,000 live births in 1980–1985 to 12 per 1,000 live births in 2005, a 48% decrease. Postneonatal mortality fell from 18 to 6 per 1,000 live births during this same period, representing a 66% reduction. Mortality during the first five years of life diminished by 60% during 1980–1985, falling from 51 to 22 per 1,000 live births.

The 2005 National Survey on Health and Nutrition found that 6% of newborns had low birthweight. In Colombia, no statistics are kept on late fetal mortality, thus preventing calculation of perinatal mortality (according to the National Administrative Department of Statistics, early neonatal mortality was 8 per 1,000 live births in 2002). The principal cause of neonatal death was hypoxia, which accounted for 60% of all deaths, followed by obstetrical trauma and prematurity. The following leading causes of death were reported for children under age 1: respiratory illnesses specific to the perinatal period (396 for females and 306 for males per 100,000 population, respectively); congenital malformations and chromosomal abnormalities (246 and 230, respectively); other disorders originating in the perinatal period (116 and 90, respectively); and acute respiratory infections (101 and 84, respectively). Among boys and girls 1–4 years of age, the major causes of mortality were acute respiratory infections (8.5 and 8.2 per 100,000 population, respectively), nutritional deficiencies and anemias (6.1 and 8.2, respectively), accidental drowning and submersion (8.4 and 4.6, respectively), and intestinal infectious diseases (6.0 and 6.1, respectively). Exclusive breast-feeding rose from an average of 0.5 months to an average of 2.2 months between 2000 and 2005. Prevalence of exclusive maternal lactation at six months was 47%, and mean duration of lactation was 14.9 months (15).

Children 5–9 Years Old

This age group represented 10.8% of the population, according to data recorded by the National Administrative Department of Statistics for 2002. During that year, 1,449 deaths were registered in this group, for a rate of 30.6 per 100,000 population (60% males and 40% females); this represented a slight increase over 2000, when there were 1,443 deaths (16). Leading causes of mortality were motor vehicle accidents, followed by acute respiratory infections and diseases of the blood (malignant neoplasms of lymphoid, hematopoietic, and related tissue). In this age group, 13% of children showed growth retardation and 5% presented low-weight-for-height proportions. Data from the 2005 National Survey on Health and Nutrition showed that growth retardation is most frequent among boys in rural areas (15).

Adolescents 10–14 and 15–19 Years Old

According to the National Administrative Department of Statistics, the 10–14-year-old age group made up 10.3% of the total population. For that same year, 1,694 deaths were registered (a rate of 35.8 per 100,000 population ages 10–14 years old); 71% of the deaths occurred among males and 29% among females. The majority of deaths were due to external causes, including homicides and transport accidents (17).

The 15–19-year-old age group represented 9.4% of the total population, according to 2002 National Administrative Department of Statistics data. Deaths registered that year numbered 6,738 (156.5 per 100,000 population), a 28% decrease from 2000 figures. Of these, 67% were violent deaths, the majority caused by firearms; for each female mortality, there were six male mortalities. The specific fertility rate among adolescents aged 15–19 was 90 per 1,000 population in 2005 (18). The proportion of adolescent pregnancies rose from 19% to 21% between 2000 and 2005. The number of adolescents aged 15–19 who have had one or more pregnancies has nearly doubled over the past 15 years, increasing from 10% in 1990 to 19.7% in 2005. In a 2002 survey conducted among displaced populations, it was found that 30% of females aged 13–19 had been pregnant at some time, 23% had given birth, and 7% were pregnant with their first child at the time of the interview (19). The adolescent fertility rate was found to be higher than the national average among marginalized populations, with two out of every three females already having given birth by age 19.

Adults 20–59 Years Old

This age group made up 52.2% of the total population in 2002, according to the National Administrative Department of Statistics. The total fertility rate for the 2002–2005 period was 2.4 children per woman (14), representing a decrease since the 1960s, when the rate was 7 children per woman. In urban areas, the fertility rate was 2.1 children, and in rural zones it was 3.4. From

2000 to 2005, the interval between births increased from 37 to 42 months. The median age at first childbirth was 22, and the median age for women's first sexual experience was 18.3 years. In 2005, women without formal schooling had an average of 4.5 children, and women with higher education had 1.4 children. The rate of contraceptive use among women without formal education was 67%, and in women with secondary-level education it was 79%.

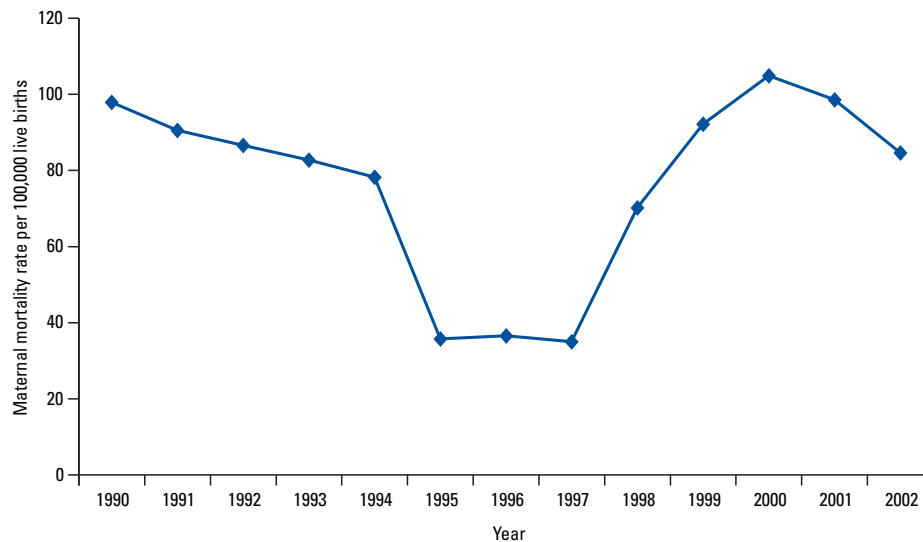
According to the National Administrative Department of Statistics, maternal mortality in 2002 was estimated at 84.6 per 100,000 live births, a decrease from 2000, when it stood at 104.9 per 100,000 live births (Figure 3). There were significant differences by region, area of origin, age groups, levels of schooling, and individual circumstances, such as displacement. The maternal mortality rate varied from 315.7 per 100,000 live births in Chocó to 35 per 100,000 live births in Risaralda; 90% of these deaths were due to preventable causes, such as pregnancy-induced hypertension, postpartum hemorrhage, and abortion (7). Of the total deaths, 84% occurred in health institutions and 88% had received medical care (7). It is estimated that one of three pregnancies ends in abortion and that almost 60% of the abortions seen at governmental institutions have been induced (20). In 2006, the Constitutional Court decriminalized abortion whenever the mother's or the fetus' life is at risk, or in cases of rape.

Older Adults 60 Years Old and Older

In 2003, this age group represented 7.6% of the total population, according to the National Administrative Department of Statistics. Morbidity from nutritional diseases was the second most important cause and, as in the case of the population under age 10, these provoked a higher frequency of deaths due to anemia and nutritional deficiencies (42%). In this age group, the leading causes of death are cardio- and cerebrovascular diseases, diabetes, gastrointestinal diseases, obesity, cancer, and osteoporosis (21). During 2005, financial subsidies were received by 173,822 older adults and 41,123 more benefited from supplementary nutrition through the Juan Luis Londoño de la Cuesta Program (22).

The Family

In Colombia, nuclear families are the most common family type (53.4%), followed by extended families (33.6%). Persons living alone make up 7.7% of total households, and blended families make up 5.4% (23). Household size diminished from 4.1 children in 1998 to 2.6 in 2002, but families living in poverty have an average of 4.7 children. Despite the predominance of male-headed households, the proportion of those headed by females is increasing: in 1995, according to the National Administrative Department of Statistics, 24% of households were headed by females, and in 2000 this figure rose to 28%.

FIGURE 3. Maternal mortality rates, Colombia, 1990–2002.

Source: Departamento Administrativo Nacional de Estadísticas, Vital Statistics Group.

The national rate for reported incidences of domestic violence was 184 per 100,000 population. National Demographic and Health Survey data for 2005 showed that psychological violence affecting women rose from 46% in 1995 to 50% in 2000. Physical abuse by male partners fell from 41% in 2000 to 39% in 2005. In the same year, about one-fifth of abused women visited a health center to seek information; there are no data that allow comparison with 2000. Between 2001 and 2003, the rate of working children (5–17 years old) decreased from 12.8% to 10.4%. In rural zones, the rate was twice as high (16.1%) as in urban areas (8%) (24).

Workers

The rate of occupational illnesses reported in 2004 was 1.4 cases per 10,000 workers. These were most numerous in the departments of Antioquia, Cundinamarca, and Valle del Cauca, especially in the manufacturing sector. The three leading causes of illness were carpal tunnel syndrome (20%), neurosensory hypoacusia (19%), and lumbosacral spine disorders (18%) (25).

The mortality rate registered for 2003 reached 18.29 per 100,000 unionized workers, with an increasing trend in the fishing industry and decreasing trend in the other industries. According to reports issued by private-sector occupational risk management organizations, 96% of workplace accidents were caused by circumstances related to social violence, principally in such economic subsectors as private security, law enforcement, and transport; 3% were caused by traffic accidents, and 1% were due to professional reasons.

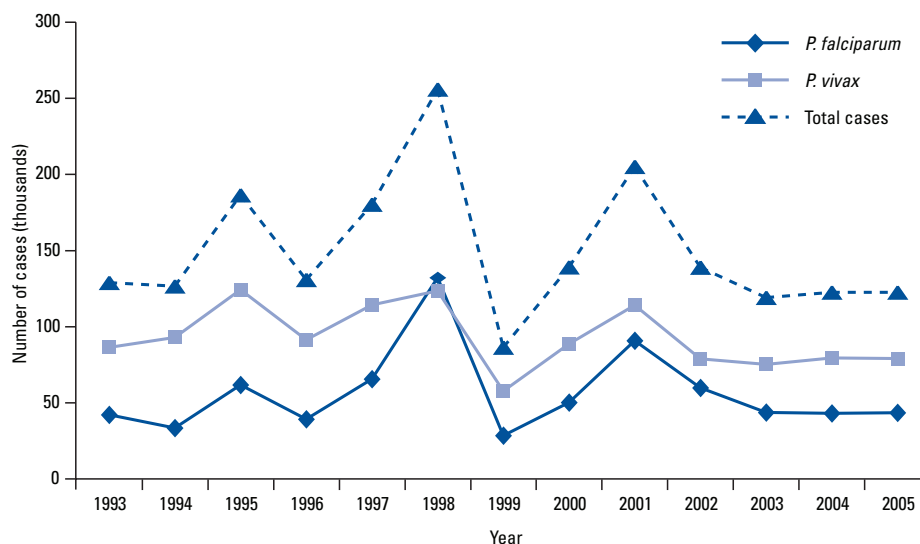
Persons with Disabilities

Preliminary data from the 2005 census reveal that there was a 6.4% prevalence of permanent impairments in the population (6.6% in men and 6.2% in women). Among this group, 71.2% reported having one impairment, 14.5% reported having two, 5.7% reported having three, and 8.7% reported having four or more permanent impairments. The principal impairments were related to eyesight (43.2% despite the use of eyeglasses or contact lenses), the ability to move or walk (29%), hearing (17.3% in spite of wearing special equipment), talking (12.8%), and understanding and learning (11.9%) (26).

The Colombian Insurer's System of Union Information disclosed that in the 2000–2003 period, 255 cases of disability were recorded in the country's five leading economic activities. The number of cases decreased in the community services sector and increased in the manufacturing industry. The most common causes of disability were trauma-related (83%).

Ethnic Groups

In the jungle and plains areas, parasitic and infectious diseases and nutritional deficiencies prevail, whereas in the Andean region periodontal diseases predominate. The Sierra Nevada de Santa Marta region on the Caribbean coast is home to various indigenous groups, including the Arhuacos, Kankuamo, Kogis, Wiwa, and Yupka, where the predominant health concerns are acute diarrheal diseases, acute respiratory infections, malnutrition, and nutritional deficiencies, as well as tuberculosis, periodontal diseases, and skin disorders. The health situation is better among the

FIGURE 4. Malaria cases by *Plasmodium* species, Colombia, 1993–2005.

Source: Ministerio de la Protección Social, Grupo ETV.

Gypsy population, even though cardiovascular and respiratory diseases are present among this group. In the Pacific region, where a large part of the Afro-Colombian population lives, the prevalent diseases are tuberculosis, acute diarrheal diseases, acute respiratory infections, malnutrition, malaria, typhoid fever, yellow fever, cancer, and HIV/AIDS. Factors influencing health problems among ethnic groups are loss of ancestral lands, natural resources destruction, and environmental deterioration; social and cultural changes associated with increased contact and interaction with the external environment; gradual abandonment of traditional medicine; difficulties in accessing health services and scarcity of these services in ethnic territories; and poverty and social and geographical marginalization, along with other cultural barriers (27).

Displaced Populations

More than half of all households in this group are headed by women, illiteracy is three times higher than the national average, living conditions and access to public services are more precarious, and overcrowding is a serious problem. Infectious diseases are treated with the greatest frequency, especially acute respiratory infections and acute diarrheal diseases, which primarily affect children under 5 years old. In infants under 1 year old, the prevalence of acute respiratory infections was 37.5%, compared to 21.8% among the general population. Frequency of acute diarrheal diseases was 81% among displaced populations and 64% in host populations. Thirty-five percent of adolescent women are mothers (twice the national rate). Insurance coverage among the

displaced population was 24%, compared to 34% among the host population (28). With regard to mental health, the sequelae to experiences of violence represent an additional burden for displaced populations already faced with instability and uncertainty. A survey to establish the prevalence of mental disorders in 13 neighborhoods in the cities of Sincelejo and Sucre found a prevalence of 27.6% (29).

HEALTH CONDITIONS AND PROBLEMS

COMMUNICABLE DISEASES

Vector-borne Diseases

Over the past three decades, **malaria** morbidity has shown an increasing trend, with an annual average of 142,297 cases recorded between 2001 and 2005; in 60% of the cases *Plasmodium vivax* was the etiological agent, in 38% it was *P. falciparum*, and 2% of the cases were mixed infections (Figure 4). In 2005, the annual parasite index (API) was 14.5 per 1,000 population. The region encompassing Alto Sinú, Bajo Cauca, and Urabá had the highest API that year (26 per 1,000 population). Around 60% of all malaria cases were concentrated in 27 municipalities of the departments of Antioquia, Córdoba, and Nariño. Males aged 15–44 were the most affected population group. Mortality from malaria also follows an ascending trend in the country, with an annual average of 130–150 deaths; under-registration, however, is considered to be close to 70% (30). Due to the growing problem of resistance to amodiaquine and sulfapyrimethamine used

to treat uncomplicated *P. falciparum* malaria, artemisinin-based combination treatments were introduced in 2006.

In 2004, 24,460 cases of **dengue** (54 per 100,000 population) were reported; 2,261 of them (10 per 100,000 population) were dengue hemorrhagic fever, with 23 deaths. In 2005, there were 43,257 reported cases (187 per 100,000 population); 4,322 were dengue hemorrhagic fever (17 per 100,000 population), with 48 deaths. In recent years, circulation of all four dengue virus serotypes has been confirmed. In 2005, the population age groups most affected were those 45–84 years old (48%) and 5–14 years old (26%) (31).

There are jungle **yellow fever** infection foci, mainly in the Amazon, Catatumbo, and Orinoco river basin areas and the foothills of the Sierra Nevada de Santa Marta. Over the last five years, 179 cases have been reported, with a 47% case fatality rate. In 2003, there was an epidemic with 102 cases, which in particular affected the Norte de Santander department. Most cases appeared in male agricultural workers 15–44 years old (32).

There were 15,000 cases of **leishmaniasis** reported in 2004 and 22,000 in 2005; 99% of the cases were cutaneous leishmaniasis. Almost 80% of the cases occurred among the 15–44-year-old population segment, with male farmers being the most affected group. In 2005, approximately 75% of the cutaneous and mucocutaneous cases were clustered in the departments of Antioquia, Caquetá, Guaviare, Meta, Nariño, Santander, and Tolima. Confirmed cases of visceral leishmaniasis were largely concentrated in the departments of Bolívar, Córdoba, Sucre, and Tolima (33).

A 1999 national study on seroprevalence and risk factors for **Chagas' disease** reported an infection prevalence of 35 per 1,000 in children under 15, especially in the eastern part of the country. In detailed studies of morbidity in the adult population, between 19.4% and 47% tested positive for this disease, and between 25% and 47.8% showed electrocardiographic alterations. An annual average of two to five cases of acute Chagas' disease have been sporadically reported (34).

Vaccine-preventable Diseases

The eradication of **poliomyelitis** in 1991, the elimination of **measles** in 2002, and the elimination of **neonatal tetanus** and **diphtheria** as public health problems, as well as the current initiative to eliminate rubella and congenital rubella syndrome by 2010, place Colombia among the first Latin American countries to reach these regionwide goals. From August 2005 to June 2006, 17,697,717 persons between the ages of 14 and 39 years (96.9% of the goal) were vaccinated against measles and rubella. Achievements included interruption of the circulating rubella virus and no reported cases of newborns with congenital rubella syndrome. In 2005, there were 139 reported cases of **whooping cough**, 2,366 clinical cases of **mumps**, 84 cases of **rubella** (53 were laboratory-confirmed cases), 5 cases of **congenital rubella syndrome** (all were reported prior to National Vaccination Day against measles and rubella), and 19 cases of *Haemophilus influenzae*

type b **meningitis**. In 2005, the seasonal flu vaccine was given to adults over age 65 in geriatric residences and hospitals, and children aged 6–18 months with respiratory illnesses. Altogether, 423,648 vaccine doses were administered.

Intestinal Infectious Diseases

Based on sentinel surveillance of **acute diarrheal diseases** carried out by the National Health Institute, Colombia's national reference laboratory, data obtained from the processing of 1,335 samples in 2003 showed that 17.5% were positive for the following microorganisms: *Rotavirus* (7%), *Giardia duodenalis* (6%), *Cryptosporidium sp.* (3%), *Shigella sp.* (0.8%), and *Salmonella sp.* (0.7%). Corroboration of test results between the National Health Institute and sentinel posts ranged from 66% to 100% (35). No **cholera** cases were detected.

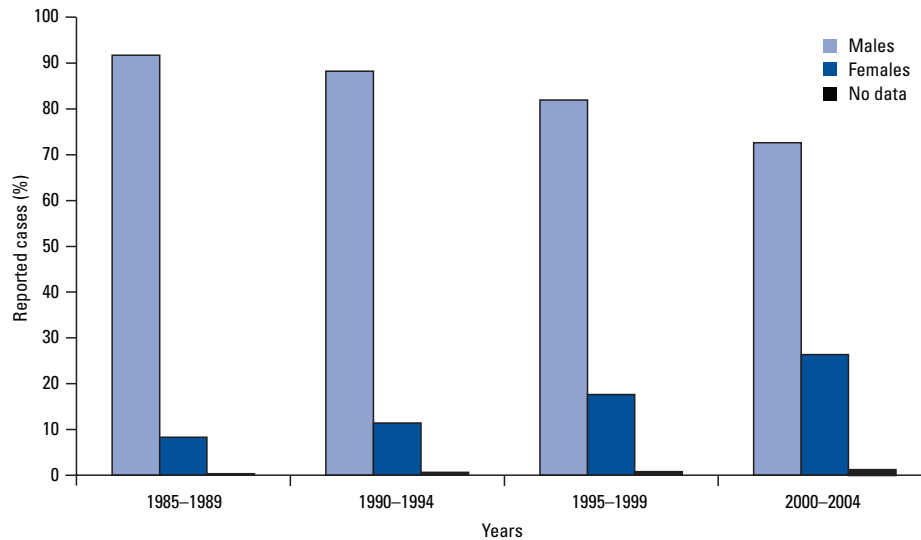
Chronic Communicable Diseases

Incidence rates for all forms of **tuberculosis** were 26.2 per 100,000 population in 2001, 26 in 2002, 28.5 in 2003, 24.8 in 2004, and 22.5 in 2005. The Amazon and Orinoco river basin areas were those most affected; 53% of the departments are classified as very high-risk (incidence above the third quartile) or high-risk (incidence above the national median). The most affected group was persons 25–34 years old. Based on partial information regarding the cohort receiving treatment in 2003, the cure rate was 72%; the treatment completion rate, 9%; treatment abandonment rate, 8%; death rate, 5%; transfer rate, 5%; and treatment failure rate, 1%. Coverage for the Directly Observed Therapy, Short Course (DOTS) strategy was 35% in 2004. The average percentage of deaths due to tuberculosis between 1991 and 2000 was 0.7%. Among HIV/AIDS patients, tuberculosis deaths averaged 10.8% during the 1997–2001 period (36).

Leprosy prevalence has diminished from 9,604 cases under treatment in 1990 (3.0 per 10,000 population) to 1,716 cases (0.3 per 10,000 population) in 2004. Leprosy incidence also showed a downward trend, from 2.90 per 100,000 population in 1990 to 1.31 per 100,000 population in 2004. In 2004, only two departments showed prevalence rates above the elimination goal of 1 per 10,000 population: Amazonas (1.4) and Arauca (1.1). The highest proportion of cases occurred in men (66%); the median age was 46 years, and individuals aged 15–44 years were the most affected population segment (37).

Acute Respiratory Infections

In 1990, the mortality rate for acute respiratory infections in children under 5 years old was 48.5 per 100,000, whereas in 2002 it was 34.7. Potential years of life lost (PYLL) per 100,000 children under age 5 amounted to 3,225 in 1990, but by 2002 PYLL had fallen to 1,803. The risk factors related to mortality from acute respiratory infections include the absence or low percentage of breast-feeding, low birthweight, premature birth, second-hand smoking, use of domestic fuels such as firewood and kero-

FIGURE 5. Trends in HIV/AIDS, by sex, Colombia, 1985–2004.

Source: ONUSIDA: Infección por VIH en Colombia. Estado del Arte 2000–2005.

sene, and other predisposing factors, such as overcrowding and seasonal climatic changes (38). As regards surveillance of respiratory illnesses, distribution by etiologic agent in 2005 was 33% for **respiratory syncytial virus**, 31% for **parainfluenza virus**, and 15% for **influenza A virus** (39).

HIV/AIDS and Other Sexually Transmitted Infections

After HIV emerged in Colombia in 1984, its prevalence grew to 0.6% in 2003 (40). In 2005, an estimated 171,504 persons aged 15–49 were living with HIV, with an estimated prevalence of 0.7% (41). Between 1983 and 2005, a total of 40,809 cases of HIV/AIDS were reported to the Public Health Surveillance System (42). In 53.7% of these cases, transmission was heterosexual; in 27.1%, it was homosexual; in 15.1%, bisexual; in 2.9%, perinatal; in 0.6%, through blood transfusion; and in 0.4%, by other means. Analysis of reported cases by gender reveals a feminization of the epidemic: during the 1985–1989 period, 8.2% of cases were among females, whereas during the 2000–2004 period, this figure reached 26.6% (Figure 5). The male-female ratio changed from 9.4 in 1990 to 2.3 in 2005. According to data from the Ministry of Social Protection's National Observatory for HIV/AIDS Management, there were 13,195 deaths from AIDS during the 1995–2002 period (43). Currently, 78.5% of all HIV patients belonging to the General Health and Social Security System (SGSSS) are receiving antiretroviral treatment (44). The incidence for congenital **syphilis** is on the rise, from 0.75 per 1,000 live births in 2000 to 1.25 per live births in 2005. Data from the National Health Institute indicate that gestational syphilis increased from 0.89 per 1,000 pregnant women in 2003 to 2.51 in 2005.

Zoonoses

The country has been designated free of **foot-and-mouth disease** with and without vaccination in 60.8% of cattle (45). In 2001, there were six outbreaks of type O foot-and-mouth disease, and eight in 2002; type A virus was detected in a 2000 outbreak (45).

Reports of the presence of the neurologic syndrome associated with **Venezuelan equine encephalitis** increased between 1979 and 2000, with peaks reported in 1995 (88 foci) and 1998 (214 foci). Confirmed cases in humans showed virus activity from 2000 to 2005, when a total of 75 cases were reported (46).

Since March 2000, no cases of human **rabies** of canine origin have been reported. In 2005, three cases of human rabies caused by wild-type viruses were reported. Foci of wild rabies virus strains reported between 1982 and 2002 affected 31 of the country's 32 departments, with a median of 21 and an average of 46 foci per department. High-risk areas include the northern parts of the departments of Antioquia, Chocó, Norte de Santander, and Santander; the entire expanse of the departments of Arauca, Cesar, Córdoba, and Sucre; as well as the south-central section of the department of La Guajira (47).

NONCOMMUNICABLE DISEASES

Metabolic and Nutritional Diseases

The 2005 National Survey on Health and Nutrition indicated that chronic malnutrition in children under 5 had diminished slightly that year (13.5%) as compared to 2000 (12%), at which time 10% showed moderate malnutrition and 2% severe malnu-

trition, with children 1–2 years old being the most affected. Acute malnutrition was observed in 1% of children under 5 years of age. The prevalence of anemia in children under 5 increased from 18% in 1977 to 23% in 1995, and to 33.2% in 2005. In the 5–9-year-old age group, 13% showed stunting and 5% showed low weight for height. During 2005, the Atlantic region had the highest malnutrition rates, thus supplanting the Pacific region, where these rates have traditionally been among the highest. Among women, 40% were overweight and 6% had low body mass indexes. Low weight for gestational age was twice as common among pregnant women under age 15 (47%) as among those of average age (21%).

Cardiovascular Diseases

In 2002, diseases of the circulatory system as a broad group of causes were the leading cause of mortality in the general population, representing 27.3% of all deaths. In 1995–1998, they had accounted for 26%–30% of all deaths. Data from the National Administrative Department of Statistics revealed that in 2002 the most frequent causes of death were ischemic heart diseases (52.3 per 100,000 population), cerebrovascular diseases (31.1 per 100,000 population), and hypertensive diseases (12.7 per 100,000 population). The highest mortality rates by diseases of the circulatory system were recorded in the departments of Tolima (178.7), Caldas (158.6), and Santander (155.6). The National Survey on Health and Nutrition identified overweight and obesity as associated risk factors in 33% of males and 31.1% of females in the 18–64-year-old age group. The proportion of the population complying with the minimum recommended levels of physical activity was 26% among the 13–17-year-old age group and 42.6% among the 18–64-year-old age group.

Malignant Neoplasms

Mortality from this cause increased in frequency between 1998 (62.7 per 100,000 population) and 2002 (67.3 per 100,000 population), when it was the third leading cause of death. In 2002, stomach cancer was the first cause of death from neoplasms for both genders (9.7 per 100,000 population), followed by cancer of the trachea, bronchus, and lung (7.2 per 100,000 population), and leukemias and lymphomas (6.2 per 100,000 population). Cancer of the prostate is the second leading cause of death from neoplasms among men (4.7 per 100,000), while in women, it is uterine cancer (5.03 per 100,000), followed by breast cancer (3.9 per 100,000). The departments with the highest mortality rates from neoplasms in 2002 were Risaralda (90.6 per 100,000 population), Antioquia (90.4), and Quindío (88.5).

OTHER HEALTH PROBLEMS OR ISSUES

Disasters

Colombia is most commonly affected by hydrometeorological phenomena, especially floods, and secondly by geological phe-

nomena. Almost 80% of the population lives in areas threatened to some degree by earthquakes. Since 2001, there has been a steady increase in the number of persons seriously affected or killed by disasters, and this can be associated not only with the growing number of natural phenomena and the persistent concentration of the population in high-risk areas, but also with inadequate measures for disaster prevention, preparation, and mitigation as regards the various sectors involved. Between 2002 and 2005, there were 1,343,282 persons affected by natural disasters, which produced 487 deaths. During the same period, there were 371 deaths caused by manmade disasters related, above all, to transport accidents (48). In 2005, there was a monthly case average of 24 deaths and 68 wounded caused by accidents with antipersonnel landmines (49).

Violence and Other External Causes

The mortality rate from homicides and harm intentionally inflicted by another person was 72.6 per 100,000 population; 16.1 from transport accidents; 10.7 from accidents, excluding transport; and 5.5 from intentional self-harm and suicides. There are no data disaggregated by gender. According to the Institute of Legal Medicine and Forensic Sciences, in 2004 there were 203,438 cases of nonfatal wounds from external causes and, compared to 2003, there was an increase in sexually related and accidental injuries (1.6%). There has been a proportional reduction in common interpersonal violence (42.5%) and an increase in sexual crimes (8.8%); nonfatal injuries from domestic violence amounted to 29.4%.

Mortality caused by violent, illegally armed groups decreased from 28.2% in 2003 to 15.1% in 2004. Departments achieving the greatest reductions in homicide rates were Arauca, Antioquia, Caldas, Caquetá, and Norte de Santander; a majority of the country's departments (21) fell below the national rate (50). In several regions, the presence of antipersonnel landmines posed a serious risk of death or mutilation. Within the context of internal conflict, during the 1995–2003 period, the following violations against medical and public health activities were reported: 684 cases (68%) against life and safety, 146 cases (15%) against the health infrastructure, 160 cases (16%) against health activities, and 12 cases (1%) of misrepresentation or deception (51). The number of violations against medical targets increased from 468 during the 1995–1998 period to 1,006 during the 1995–2003 period (51).

Mental Health and Addictions

Two out of five persons (40.1%) experience at least one mental disorder during their lives, with anxiety disorder being the most prevalent form (19.3%). In men, the most frequent disorder is alcohol abuse (13.2%) and in women, major depression (14.9%). The prevalence of lifetime substances abuse (of all types) was higher in men; following alcohol abuse as leading disorders are alcohol dependence (4.7%), nicotine dependence (2.9%), and drug abuse (2.1%). Lifelong prevalence for suicidal ideation was

A System to Protect Vulnerable Populations

In a national effort toward securing the social inclusion of persons who have experienced inequities in the areas of health care, employment, and pensions, Colombia has established the Social Protection System, a body of public policies designed to manage risks, reduce vulnerability, and improve the quality of life of all Colombians, with particular focus on the country's least privileged social groups. In 2002, the Ministry of Health and the Ministry of Labor and Social Security were merged into a single Ministry of Social Protection, which oversees all aspects of the Social Protection System, including policy formulation, adoption, direction, coordination, implementation, follow-up, and monitoring. The documents CONPES 91 and *Visión Colombia 2019* and the National Development Plan for 2006–2010 have made a strong commitment to protect universally recognized human rights, reduce existing gaps between the country's social groups and geographic regions, and move toward achievement of the Millennium Development Goals. One of the greatest challenges to this effort is the persistence of violence perpetrated by illegally armed groups, which has led to the displacement of nearly 2 million persons over the last decade. The heightened vulnerability and precarious living conditions limit this group's ability to access health services and protect its health, thus constituting a grave humanitarian concern.

12.3%. Median age for the appearance of affective disorders in a major depression episode was 24 years (52).

Environmental Pollution

Events involving pesticides poisoning are seldom reported to the Public Health Surveillance System, but it can be assumed that there is considerable underreporting due to the fact that the surveillance system was extended to the national level only in 2005. That year, 5,590 poisonings due to chemical substances were reported; of these, 76% (4,251 cases) were due to pesticides. Pesticide sales in 2002 amounted to 20,081,231 kilograms: 75.4% were in fungicides, 13.9% in herbicides, 4.4% in insecticides, 1.5% in fumigants, 1.4% in biologicals, and 3.3% others.

RESPONSE OF THE HEALTH SECTOR

Health Policies and Plans

Law #789 of 2002 defined Colombia's Social Protection System as the body of public policies designed to reduce vulnerability and improve the quality of life of Colombians, especially the least protected, in order to help this group obtain as a minimum the rights to health, a pension, and work (53). As a consequence of this principle, Law #790 of 2002 called for the creation of the Ministry of Social Protection—the product of the fusion of the Ministry of Health with the Ministry of Labor and Social Security. The primary objectives of the Ministry are to formulate, adopt, direct, coordinate, execute, follow up, and oversee the Social Protection System. This system functionally integrates the aggregate of public, private, and mixed institutions as well as the norms, procedures, and public and private resources allocated to prevent, alleviate, and overcome the risks that threaten the population's quality of life. It also encompasses the national system of family

welfare and social services, and the System of Comprehensive Social Security (made up of the General System of Pensions, the SGSSS, and the General System of Occupational Risks) (54).

Framed within Colombia's National Development Plan for 2002–2006 is a component on the protection of human rights and humanitarian international rights, which includes a provision for the design and implementation of a model to follow up, evaluate, and monitor public policies affecting human rights. The component refers not only to policies related to civil and political rights, but also those encompassing the economic, social, cultural, environmental, and collective realms (55). The Public Defender's Office (*Defensoría del Pueblo*) is the agency of the Colombian Government responsible for protecting, defending, and promoting human rights, democratic principles, popular participation, and pluralism.

Over the past decade, the health sector in Colombia has instituted many reforms; among the most important are political and administrative decentralization and reform of the social security system. Law #715, enacted in 2001, defined competencies and resources at the various levels of the educational and health sectors. Decentralization in the health sector defined health authority and areas of competency at the departmental, district, and municipality levels. Nevertheless, the evolution of the decentralization process in Colombia has been largely influenced by the country's heterogeneity in terms of development levels and economic and technical capacity. On the other hand, the state of transition in which the health sector currently finds itself has allowed remnants of the previous National Health System model to coexist alongside the newer SGSSS in a market of regulated competition.

Evaluations of the performance of Essential Public Health Functions (EPHF) were conducted in Colombia at the national level and in the Capital District of Bogotá in 2002, and in the departments of Antioquia, Caldas, and Valle del Cauca in 2003. The

departmental evaluations facilitated the formulation of plans for strengthening public health at this level. Currently, the structure of the EPHF performance evaluation tool is being adapted in order to undertake this exercise at the municipal level. Results of the national-level evaluation showed performance to be below satisfactory in most functions, except for EPHF11 (reduction of the impact of emergencies and disasters on health), which was judged to be of optimum standards. Performance was deemed to be poor as regards EPHF3 (health promotion), EPHF4 (social participation and empowerment of citizens in health), and EPHF10 (research, development, and implementation of innovative public health solutions).

The Colombian health system has a series of statutes and regulations regarding basic issues such as insurance, services delivery, generation/preparation and utilization of financial and human resources, benefit plans, public health, epidemiological surveillance, inspection, and control. The most important are Law #100 of 1993 (creation of the SGSSS); Law #715 of 2001 (competencies and resources) and its regulatory norms; Decree #1011 of 2006 (Obligatory System of Quality Control); and Resolutions #1943, #1045, and #1046 of 2006. During the last decade, domestic violence has gained visibility in Colombia and it is now considered a punishable offense. Law #248 of 1996 is intended to prevent, punish, and eradicate violence against women. Other laws (#294 of 1996, #360 of 1997, and #575 of 2000) penalize violent behavior in the home, including spousal sexual violence and offenses against sexual freedom and human dignity, and confer special protective rights for the victims of these crimes.

Legislative initiatives approved by the National Congress may originate in this body, the executive branch, the Ministry of Social Protection, or other entities involved in issues related to the health sector and its functioning. The Ministry of Social Protection holds responsibility for regulatory activities; when a regulation affects SGSSS members, however, it must be presented before the National Health and Social Security Council (CNSSS). Otherwise, the Ministry of Social Protection holds autonomy in this area.

Health Strategies and Programs

The Ministry of Social Protection, through the National Development Plan, established national goals and strategies to be carried out during the current government administration; as part of this process the Ministry periodically sends directives to the sub-national counterparts and respective health personnel on matters of public health interest that require obligatory compliance, such as early detection interventions, specific health protection measures, and other areas provided for within benefit plans. The various mechanisms comprising the health system seek to ensure principles of equity, quality, efficiency, and, particularly, the financial sustainability of interventions, while social participation is enabled by the regulatory mechanisms that oversee social guidance.

Organization of the Health System

The SGSSS comprises the System of Comprehensive Social Security, which, at the same time, is part of the Social Protection System. The new SGSSS was created through Law #100 of 1993. It seeks to guarantee economic and health care assistance to those whose labor situation or financial capability allows for participation in the System, provide complementary social services as specified by the law, and increase coverage until the entire population has access to the system (56). With the new SGSSS, a fundamental change in insurance came about, affecting in particular the model of health care and services delivery.

The SGSSS is a compound organization uniting the contributory and subsidized regimes, both of whose functions will require integration and national coordination and financial solidity. This model also encompasses a regime for transitory affiliates made up of the population's most disadvantaged sectors without the capacity to pay and who are not participants in the regimes previously mentioned. In addition, there are special regimes not covered by the stipulations expressed in Law #100 of 1993, such as the Colombian Petroleum Company, the teaching profession and public universities, the National Congress, and military and police forces.

The SGSSS specifies the compulsory affiliation of all salaried workers and population groups with the capacity to pay, all of whom join the contributory regime through the payment of premiums. Coverage with social security protection extends to all family members of the affiliated individual. Those without sufficient capacity to pay the compulsory premiums receive total or partial subsidies from the SGSSS in order to ensure their affiliation. Access to this latter regime is gained by beneficiaries of government subsidies who are identified through a socioeconomic survey known as the SISBEN and ultimately selected for inclusion by the corresponding territorial entity.

The System has three social security mechanisms: capitation payment units to balance the contributory regime's resources and ensure access under equal terms to premium-paying affiliates and beneficiaries with different income levels; the Solidarity and Guarantee Fund (FOSYGA), whose resources support access for the population in need of subsidization; and availability of current national income for those having access to the subsidized regime.

The SGSSS is integrated by organisms in charge of supervision, surveillance, and oversight; administration and financing; and health services provision, within a model of regulated services delivery and coverage. The CNSSS acts in the area of supervision and oversight, representing the SGSSS's principal stakeholders and managers under the leadership of the Ministry of Social Protection. It functions as the FOSYGA's administrative council, and its main tasks are to oversee the Mandatory Health Plan and its essential medicines component, to establish premium amounts and value for the UPC with their respective differentials, and to regulate the co-payment and moderating fee

regime structure. The National Health Superintendency is an entity attached to the Ministry of Social Protection whose functions include inspection, surveillance, and supervision, as well as financial and budgetary oversight of the participating entities and the establishment of mechanisms to evaluate the quality of services delivery. The Ministry of Social Protection has expertise in epidemiological surveillance, directs the SGSSS, presides over the CNSSS, determines overall health sector policy and general policies of the Social Protection System, and provides technical guidance and assistance to decision-makers.

The departmental and municipal health authorities are representatives of the national government at their respective local levels. The departments and municipalities rely on a Territorial Council of Health and Social Security, whose duties at these two levels are similar to those of the CNSSS at the national level.

Health-promoting entities (EPS) form the basic nucleus of the SGSSS and are responsible for subscribing and registering SGSSS participants and collecting their premiums, as delegated by the FOSYGA. The principal function of the EPS is to organize and to guarantee, directly or indirectly, the delivery of Mandatory Health Plan services to subscribers. Special administrators are in charge of managing insurance to the most vulnerable and disadvantaged members of the subsidized regime as part of the duties the Government delegates to the heads of municipalities.

The institutions that deliver health services include hospitals, medical offices, primary health care centers, laboratories, and all other health services establishments and professionals that together or individually offer their services through the EPS. These facilities and individuals may or may not have a dependency relationship with the EPS, but in all cases they are technically and financially independent. The network of public hospitals operating under the former National Health System has been decentralized and transformed into what are known as Social Enterprises of the State, with the purpose of facilitating the country's supply of health services and at the same time ensuring the hospitals' financial sustainability in a competitive services market.

In 2004, 32.8% of the population subscribed to the contributory regime and 34.3% to the subsidized regime; 3.9% were affiliated to special regimes, and 28.9% were not insured within the system (12). Access to SGSSS services is not necessarily guaranteed as a consequence of insurance coverage. Given the existing barriers to access, subscribers often have had to resort to tutelage action as a tool to obtain compliance with benefit plan provisions, and national authorities have had to examine and follow up strictly on these cases to prevent violation of citizens' rights. The population not insured by the SGSSS basically belongs to socioeconomic levels 3 and 4 as determined by the SISBEN survey used to identify potential beneficiaries, but who have not yet been able to enter the system; young adults 18–24 years old who have not yet initiated education beyond the secondary level, but are of legal age and cannot be subscribed by their parents if they do not certify their student status; the un-

employed not surveyed by the SISBEN; and any other individuals remaining outside the system.

Inclusion and participation of indigenous populations in the SGSSS is a governmental priority. The creation of EPS organizations has been advocated, to be constituted by indigenous town councils or traditional authorities, or both, in order to facilitate adaptation of the health system's institutions and services to local ethnic and cultural values, needs, and expectations (57, 58). Law #691 of September 2001 regulates the participation of ethnic groups in the SGSSS.

Public Health Services

Among the strategies to improve access to health services and increase the response capacity of health care providers in Colombia, the national policy on health services delivery focuses on the identification, systematization, dissemination, and support of innovative strategies in the fields of primary health care, family health, and community health. Within this framework, since 2004 the decentralized levels of the health system—districts, departments, and municipalities—have developed and implemented care and management models incorporating the primary health care strategy. For example, a program in Bogotá seeks to guarantee the universal right to health and other primary health care principles throughout the Capital District jurisdiction by promoting the health and well-being of families and communities, with particular focus on the poorest and most vulnerable population segments. In the departments of Antioquia, Cesar, Santander, and Valle del Cauca, models of family and community health based on primary health care concepts have already been developed as well as public policies for their implementation at the municipality level.

Within the decentralization structure, there are no vertical programs for disease prevention and control and activities in this realm form part of the individual health services (Mandatory Health Plan) offered by the SGSSS. The Basic Health Care Plan is the instrument used in the community health sphere, and the Ministry of Social Protection periodically issues directives indicating the priorities, strategies, and goals to be achieved at local levels.

Law #715 (2001) established that municipality-level governments are responsible for health situation analysis and maintenance of the public health surveillance system in their respective jurisdictions. The National Administrative Department of Statistics is in charge of planning, gathering, processing, analyzing, and disseminating the country's official statistics, including vital statistics and demographic data. The Government is responsible for the Comprehensive Social Protection Information System. At the current time, the most developed departments and municipalities regularly collect and publish their respective basic health indicators. The Public Health Surveillance System actively reports throughout the country on communicable disease occur-

rences and other events due to a common origin or preventable cause. Models and protocols are being introduced for other types of surveillance in the areas of noncommunicable diseases, mortality, the environment, promotion and early detection activities, and medications. Also in progress are designs for a new information system and a model of territorial surveillance management.

The National Network of Public Health Laboratories has as its mission the diagnosis of communicable diseases of public health importance and the detection of risk factors; its structure is aligned with the ongoing decentralization trend. In 2006, the Network was reorganized in accordance with Decree #2323, which also identified strategic activities in the areas of public health surveillance, quality control, services delivery, and research. There are 33 public health laboratories situated in the departmental capitals; these depend technically and administratively upon departmental-level public health authorities. Public health laboratories are financed by the Basic Health Care Plan and by investments of the department's own resources. Territorial entities are free to contract the services of private laboratories. There is a combined total of 6,042 public and private laboratories with diverse specialties in the country; the great majority of these are clinical in nature.

Over the past decade, the coverage levels and quality of public household water and sanitation services have improved; in large urban areas, there are a variety of public, private, and public-private enterprises working in these areas, while in rural areas, community-based entities usually provide water and sanitation services. Thus, between 1993 and 2003, urban water supply coverage increased from 94.6% to 97.4%, and sanitation services coverage rose from 81.8% to 90.2%. In rural areas, current water supply coverage reaches 66%, which represents a 12% increase over the last 10 years, even though water quality remains deficient. Basic sanitation coverage in rural areas is 57.9% (7).

The national production of solid wastes is estimated at 27,300 tons/day, of which 22,800 tons come from urban areas. Solid waste disposal coverage is 95% (59). Of the country's 1,098 municipalities, 350 dispose of their wastes in sanitary landfills and 565 in open air garbage dumps. Hospital wastes amount to 8,500 tons/year, and 40% of this amount involves infectious residues. In 2002, regulations were established requiring municipalities to develop comprehensive management plans for the disposal of solid wastes.

Most emissions of particles smaller than 10 μm , nitrogen oxides, and carbon monoxide are produced by mobile sources (85% by gasoline used in transportation), whereas total suspended particles and sulfur oxides are produced by stationary sources (65% from carbon). Air pollution is mostly produced by land transportation means (86%). Social costs triggered by air pollution have been estimated at Col\$ 1.5 billion a year. Diseases such as cancer, asthma, chronic bronchitis, and respiratory disorders are associated with pollution (60).

The Ministry of the Environment, Housing, and Territorial Development has advanced in the consolidation of a national inven-

tory of persistent organic pollutants (POP); an evaluation of the regulatory framework, institutional capacity, and infrastructure available in the country for POP management; information dissemination and raising community awareness; and strengthening national capacity for the management of POP-affected sites. Through the National Inventory of Dioxins and Furans, the principal POP-generating sources were identified and quantified: uncontrolled combustion, 55.1%; incineration, 15.7%; energy and heat transformation, 8.9%; and metals production, 6%. A national inventory of biphenyl polychlorates is now being carried out (61).

Use of the following fungicidal pesticides based on mercury components has been prohibited in the country: leptophos (phosvel) 2,4,5-T, 2,4,5-TP, DBCP, EDB, DDT, chlordimeform, dinoseb, captafol, aldrin, heptachlor, dieldrin, mirex, dicofol, endosulfan, lindane, and camphechlor (toxaphene). Additionally, some restrictions have been established regarding the use of paraquat, parathion, methyl parathion, and methyl bromide.

Surveillance of foodborne diseases in humans is directed by the National Institute of Health, and the inspection, surveillance, and control of food products is directed by the National Institute for Medications and Food Surveillance (INVIMA). In 2005, there were 7,941 cases of foodborne diseases reported, a 30.4% increase over 2004 (6,090 cases). The 15–44-year-old age group was the most affected, with 42% of cases (62). The Colombian Agricultural Institute monitors the incidence of more than 50 pests and 13 endemic and exotic animal and plant diseases. Since there are no official control programs directly related to risk factors of biological or chemical origin, the country lacks baseline information on the presence of pathogenic microorganisms and chemical contaminants in various types of foods (63).

Both bovine brucellosis and bovine tuberculosis are present in Colombia, but the country is free of bovine spongiform encephalopathy, with certification subject to demonstration. Poultry farming is free of highly pathogenic avian influenza, Newcastle disease, and *Salmonella*. Endemic diseases in the country include classical swine fever, shrimp white spot virus, Venezuelan equine encephalitis, and equine infectious anemia (63). In September of 2005, the presence of low-pathogenic avian influenza virus H9N2 was detected on poultry production farms in the Fresno municipality of Tolima; this focus was controlled, and the virus was not detected in any other parts of the country.

During the 1996–2005 period, the Nutrition and Food Plan was implemented as part of national government policy. Under the coordination of the Colombian Institute of Family Welfare, activities were carried out in the following areas: food security projects covering the entire life cycle, with particular focus on indigenous families; consumer protection through food safety and quality control initiatives; prevention and control of micronutrient deficiencies; prevention and treatment of infectious and parasitic diseases; promotion, protection, and support of breast-feeding; promotion of healthy nutrition and lifestyles; and research and human resources training in diet and nutrition.

The Ministry of Social Protection has institutionalized the Group on Emergencies and Disasters; 72.2% of departments and districts now include staffing in this area. Ongoing training of health sector personnel in disaster preparedness, mitigation, and response has been implemented as a strategy to overcome weaknesses detected at the subnational levels, particularly as regards interinstitutional coordination and development of a comprehensive emergency response approach. Regulatory frameworks and processes have been adopted for the structural reinforcement and refitting of existing health facilities and for the construction of new health establishments that will ensure their compliance with safety structural standards for earthquake resistance. There is a need for better development of the Regulating Centers for Urgent Care and Emergencies, and for mechanisms to ensure adequate coordination among the Centers for Emergency Operations and local and regional health authorities with disaster prevention and response committees.

In September 2005, the Ministry of Social Protection allocated Col\$ 12 billion (approximately US\$ 5 million) to the development of a plan for the prevention and mitigation of the impact of an influenza pandemic (64). The plan's principal components include emergency preparedness, public health surveillance, research and case management, community disease prevention and control, preservation of basic services, and evaluation.

Individual Care Services

According to the National Register of Health Care Providers, in September 2006 there were 58,010 health care sites and 51,095 health care providers in the country. Of the latter, 82.7% were independently employed health professionals and 16.6% were affiliated to public or private institutions. There were 872 public hospitals functioning as Social Enterprises of the State. Among the country's registered health services, 68% pertain to outpatient consultations; 13.8% to support services, diagnosis, and complementary therapy; 6.2% to external care; 2.5% to surgical services; 3.8% to hospital service; 1.5% to urgent care; and 1.2% to special transportation. There were 54,475 beds registered in the country (58).

In the SGSSS there are 20,332 services that comply with basic established quality requirements. These include radiology and diagnostic imaging, clinical laboratory testing, gastrointestinal endoscopy, cytopathology, cardiovascular diagnosis, transfusion and other blood services, renal dialysis, fiberoptic bronchoscopy, urology/lithotripsy, clinical oncology, radiation therapy, and pharmaceutical services. The blood bank network consists of 110 banks; as Colombia's national reference laboratory, the National Health Institute coordinates the network's functioning and quality control system and offers training and technical advice in support of the promotion of voluntary blood donation. All banks in the network, whether public or private, must comply with SGSSS quality standards. INVIMA oversees inspection and surveillance of the blood banks. There are 11 units of blood per

1,000 population, whereas the standard is 50 per 1,000 population; availability and distribution are not equitable, with remote rural areas at a particular disadvantage. Blood donation, especially voluntary, increased from 41.7% in 2003 to 55% in 2005. The network guarantees 99.9% screening for internationally recommended infection markers (HIV, HBsAg, HCV, syphilis, and Chagas' disease).

Health Promotion

Territorial entities, EPS, and subsidized regime insurers hold responsibility for evaluating, conducting follow-up, assisting, advising, and overseeing the public health promotion activities that form part of the Mandatory Health Plans of both the contributory and subsidized regimes of the SGSSS. The objective of the Basic Health Care Plan is to promote community health and the prevention of disease; all territorial divisions and public administrative levels are expected to participate in this effort, with the municipality level holding responsibility for the provision of basic social services and promotion of the community's participation in these activities.

Health promotion at the national level accords priority to the development and implementation of public policies, strategies, and activities geared to the achievement of health-promoting schools and housing. Health promotion efforts in Bogotá focus principally on improving health conditions and protecting human rights among residents of disadvantaged communities. In the cities of Bucaramanga, Cali, and Manizales, the initiatives developed have been based on the reduction of risk factors for non-communicable diseases utilizing the CARMEN strategy. Three Collaborating Centers of the World Health Organization work at the national level in health promotion efforts: the Institute for Research and Development in the Prevention of Violence and Promotion of Social Coexistence, the Center for Development and Evaluation of Public Health Policies and Technology, and the Institute for the Promotion of Health and Sexual and Reproductive Health.

The country now has a very active National Network for Healthy Housing and is developing guidelines for the incorporation of the healthy housing concept in housing projects for vulnerable populations. In educational programs held for community leaders between May of 2003 and the end of 2005, 1,350 facilitators and 4,527 community agents received training. In addition, 28,500 families were visited through healthy housing initiatives carried out in 15 departments. The Network is led by the Ministry of the Environment, Housing, and Territorial Development, and includes as participants the Ministry of Social Protection, the National Learning Service, the Presidential Agency for Social Action and International Cooperation, the academic community, and various nongovernmental organizations.

The environmental component has been strengthened in schools through the development of a toolbox for risk control and

support of water quality surveillance through projects such as “Youth, Science, Health, and the Environment,” which provides support to teachers, children, and youth with the goal of reinforcing the important linkages between human health and the physical environment.

Colombia is implementing a program designed to prevent violence and reduce crime through “crime observatories” in the country’s southwest that involves various activities at the municipality, subregional, and departmental levels. In addition, the establishment of mandatory insurance for traffic accidents backed by the SGSSS has contributed significant resources to road safety programs and strengthened the country’s emergency health services network (65).

The National Occupational Health Committee drafted the National Plan for Occupational Health 2003–2007 as a framework and management tool for the General System of Occupational Risks (SGRP). Components in the Plan include promotion of health and safety in the workplace; creating a culture of self-care and occupational risks prevention; establishment of SGRP entities, institutions, and offices; promotion of technical, technological, and scientific advancement; recognition of workers’ rights to health benefits; ensuring SGRP economic viability; and extension of SGRP coverage. In November of 2004, the working age population (≥ 12 years old in urban areas and ≥ 10 in rural areas) was 33,548,030. Of this number, 4,836,939 workers were affiliated with the SGRP.

Health Supplies

INVIMA is the agency that regulates, inspects, oversees, and controls medications, foods and health supplies, blood banks, tissues, and organs. There has been a National Pharmaceutical Policy since December 2003. The Ministry of Social Protection determines policies, establishes norms, and oversees the pharmaceutical system. Regulations of the drug production and importation registry incorporate Good Manufacturing Practices requirements. According to the pharmaceutical industry’s Annual Manufacturing Survey, gross production of medications fell by 2% in 2004 as compared to 2001. In December 2004, the pharmaceutical market amounted to US\$ 1.1 million; the market for finished products has expanded to 10.8% imported and 8.8% exported, compared to 2001. Domestic production—both in national and foreign-owned laboratories—has fallen; in 1995 it supplied 90.6% of internal market needs and in 2004, only 74.3%. The relationship between importation of finished products and apparent consumption rose from 7% in 1994 to 27% in 2004 (66). Shortcomings in the SGSSS as regards the availability and timely provision of medications to its participants have been observed: in 2000, 39.8% of SGSSS participants reported being unable to receive needed medications (67), and in 2005, only 51.6% reported being able to access medications on the same day as prescribed;

the remainder experienced difficulties requiring them to purchase these medications elsewhere. Various studies have shown how severely this issue affects expenditures within the context of the family basket of basic goods and services, particularly as regards the country’s poorest population segments (68).

In 2004, regulations were established for the surveillance of diagnostic reagents used *in vitro* for the examination of specimens of human origin. INVIMA holds responsibility for the inspection, surveillance, and oversight of these activities, as well as the work of a special committee in charge of evaluations of diagnostic tests.

In 2005, through regulation of health registry regimes, marketing authorization, and health surveillance, regulations were set for medical devices for human use (production, processing, packaging, packing, storage, sale, use, importation, exportation, marketing, and maintenance). A program was also implemented for the post-marketing surveillance of medical devices (including equipment). In 2004, regulations were established for conducting surveys of hospital infrastructure at the first level of the public health services network (69). Information was gathered in 2006 for the purpose of establishing policies regarding structure and technology.

Human Resources

In 2005, it was estimated that 278,685 persons were employed in the health sector (659.5 direct service workers per 100,000 population); 70.6% were women and 29.4% were men. The average age among women was 38.6 and among men, 40.9. Auxiliary personnel made up 53.3% of all workers; another 41.9% were professional personnel, and 4.8% were technical personnel. During the 2001–2005 period, the number of general care physicians grew from 29,460 to 33,682 (7.3 per 10,000 population). In 2005, there were an estimated 27,034 registered nurses (5.9 per 10,000), 28,373 odontologists (6.1 per 10,000), 17,643 bacteriologists (3.8 per 10,000), 116,204 nursing auxiliaries (25.2 per 10,000), and 5,544 nutritionist-dietitians (1.2 per 10,000).

Information on the nature of contractual relationships in the health services field was available for only 53.7% of the total workforce; of these, 17.3% hold private work contracts; 14.3% hold career service appointments; 7.3% are permanent staff; 5.6% hold temporary short-term appointments; 2.5% work on a freelance basis; and 6.7% work in some other kind of labor arrangement. Estimates based on the perspective of supply and demand of health professionals and auxiliaries for 2000–2005 show a shortage of 6,316 general care physicians and 17,312 nutritionist-dietitians; on the other hand, there is a surplus of bacteriologists (4,787), odontologists (4,374), and nursing auxiliaries (34,780) (70). At the beginning of 2006, there were 909 academic health training programs (34.8% undergraduate and 65.2% postgraduate), concentrated mainly in universities (70.5%) and university-affiliated institutions (26.4%) (71).

Research and Technological Development in Health

The national science and technology policy seeks to strengthen the capacity of the Francisco José de Caldas Colombian Institute for the Development of Science and Technology (known as Colciencias). The nation's general budget includes a specific category for research and a regulation stating that 7% of the income derived from national lottery proceeds must be reserved for allocation to research activities. Between 2002 and 2004, US\$ 11,200,000 were devoted to this pursuit: 38% went to basic biomedical research, 37% to clinical investigation, and 25% to epidemiological and public health studies; of the funds allocated to these three types of research, 47% focused on research related to communicable diseases, 46% was invested in studies of noncommunicable diseases, and only 2% was devoted to research on issues relating to violence and injuries from external causes.

During the 1992–2001 period, 168 articles were published in international indexed journals, 68 articles in international non-indexed journals, 71 articles in catalogued national journals, and 123 in non-catalogued national journals. The number of research teams has increased from 73 (1990–1999) to 194 (2000–2004), and the number of researchers holding a doctorate degree has grown from 157 to 373 during the same period. Seventy-five percent of the groups recognized by Colciencias are based in the cities of Bogotá, Bucaramanga, Cali, or Medellín, which together account for 25% of the country's population. The national agenda of health research priorities is currently being retooled to focus on the country's most salient health problems and the development of inter- and multi-disciplinary approaches to them (72). There is an information system (Observatory of Science and Technology), and Colciencias has developed the Red Scienti, a virtual network for use in the health research area. Norms have been prepared to guide research work involving human subjects that focus on ethical aspects and also address scientific, technical, and administrative issues.

At the current time, Colombia does not have a policy regarding health technologies development. However, aside from the norms for regulating medical devices and diagnostic laboratory reagents, there are updated guidelines for the regulation, evaluation, and importation of biomedical technologies. A Committee on Medications and Technology Evaluation advises the CNSSS on the definition and updating of the list of medications, procedures, and technology pertaining to the Mandatory Health Plan.

The National Network of Medical Libraries includes university medical libraries and research centers, with the National Institute of Health Library serving as the chief repository of the country's most important research works in the public health field. Development of the Virtual Library on Health began in 1998 and now includes contributions from 45 affiliated institutions. In 2005, with assistance from the Latin American and Caribbean Center on Health Sciences Information (BIREME) and 20 affiliated institutions, the Ministry of Social Protection launched the Virtual Library for Public Health Surveillance. Other virtual libraries on

a variety of health topics—such as psychology and children, adolescents, and youth—are currently in the development stages. In 2006, the SciELO (Scientific Electronic Library Online) Colombia project was launched. Managed by the National University of Colombia and based on the model originally created by BIREME, SciELO Colombia features more than 600 full-text articles published in peer-reviewed journals in the health and biomedical disciplines.

Health Sector Expenditures and Financing

Total expenditures on health in relation to the gross national product varied from 9.7% in 1997 to 8.1% in 2002. Per capita expenditures ranged from US\$ 255 in 1997 to US\$ 149 in 2002. The heaviest burden is borne by families (approximately 30%), especially through payment of SGSSS premiums (13%) and out-of-pocket expenses (9.5%); businesses provide approximately 25%, largely through employers' contributions; the general national budget contributes 21.8%, with one of the largest expenditure items (14%) being resource transfers to territorial-level health entities; in fourth place are resources from the system's agents, represented by their own resources (non-operational income) and by financing of accounting losses (20.5%); and finally, resource expenditures at the departmental and municipality levels (3.8%). A breakdown of average health sector expenditures during the 1993–2002 period shows that 74.6% corresponded to health care costs, 16% to administrative costs (personnel and general expenses), 7.9% to miscellaneous expenditures, and 1.5% to investment costs, including physical infrastructure and equipment, research, and training.

Technical Cooperation and External Financing

During 2005, the Ministry of Social Protection signed 10 cooperation agreements for the strengthening of health activities in Colombia with the following international partners: the Government of Japan, Japan International Cooperation Agency, Hipólito Unanue Agreement, Andean Development Corporation, Organization of Ibero-American States, World Bank, Inter-American Development Bank, International Organization for Migration, Spanish Agency for International Cooperation, and Andrés Bello Agreement. The two Japanese entities provided financial support and the other eight organizations technical support for a variety of health objectives, including strengthening of health systems and the public hospitals network, improving sexual and reproductive health, and health sector reform and financing. In addition, bilateral cooperation agreements were signed with various institutions and governments, among them the International Cooperation and Assistance Fund and the Governments of Brazil, Canada, Ecuador, El Salvador, Jamaica, Mexico, Panama, Peru, and Venezuela.

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