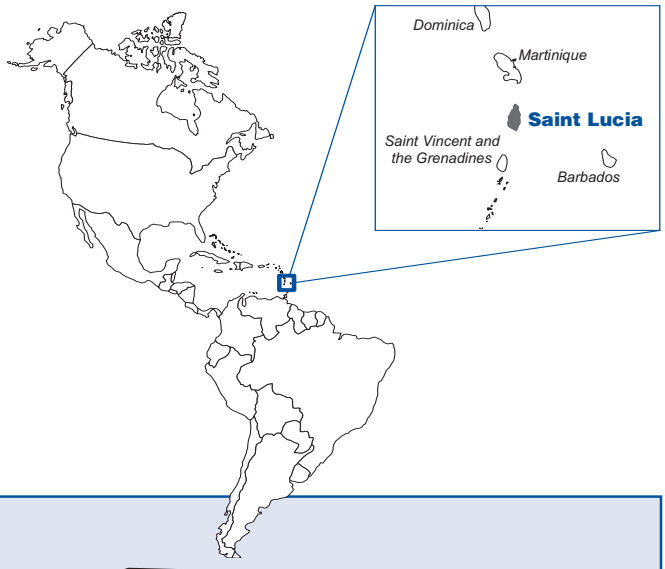
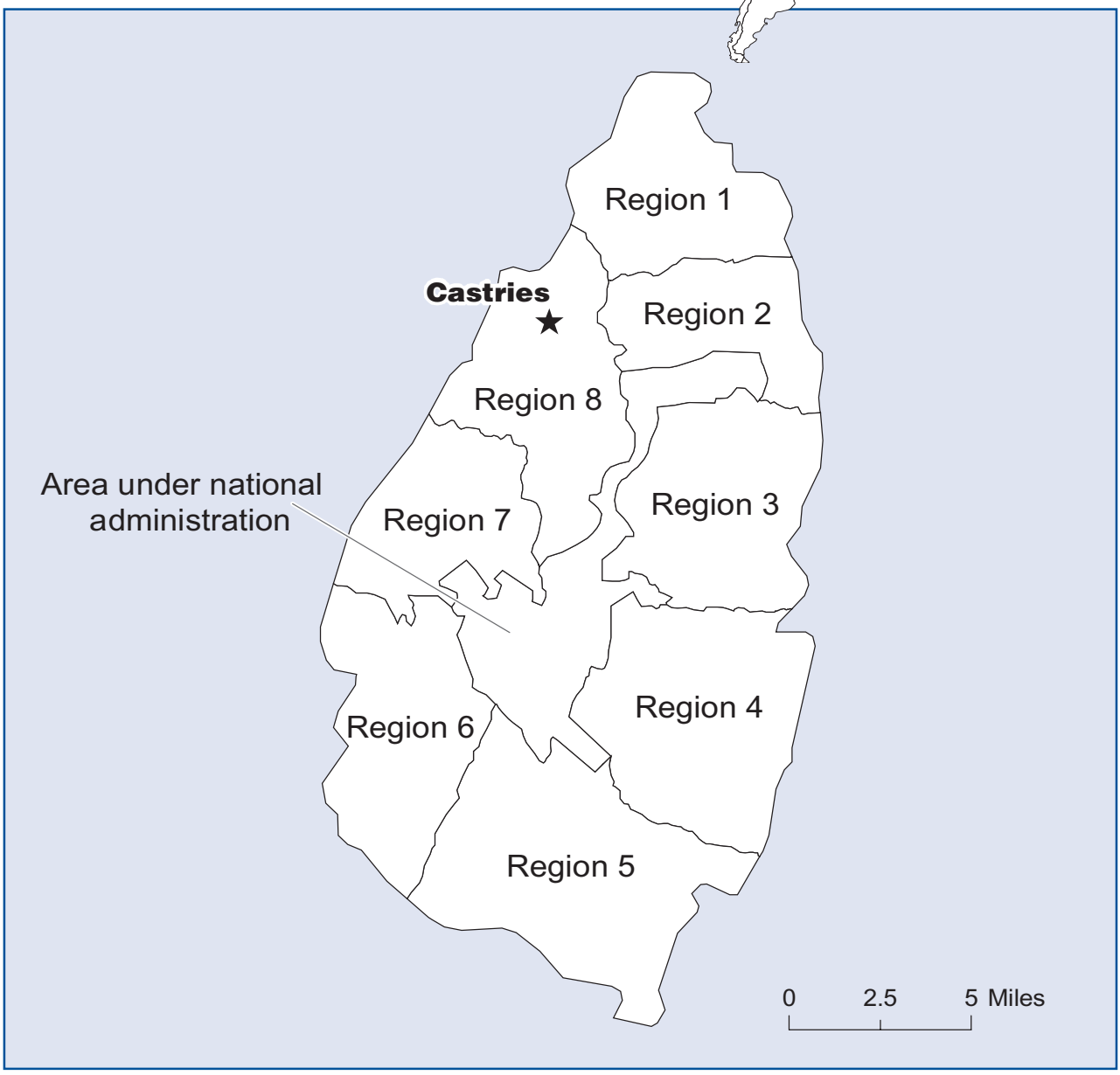
SAINT LUCIA


Dominica
Martinique
Saint Lucia
Saint Vincent and the Grenadines
Barbados


Region 1
Castries
Region 2
Region 8
Area under national administration
Region 7
Region 3
Region 4
Region 6
Region 5
0
2.5
5 Miles

Saint Lucia is a small, Caribbean island nation with a total land area of 616 km^2 located between the islands of Martinique and St. Vincent and the Grenadines. Castries is the capital city, and the twin pitons in Soufrière represent the island's most impressive landmark.

GENERAL CONTEXT AND HEALTH DETERMINANTS

Social, Political, and Economic Determinants

The country experiences both dry and rainy seasons, the latter spanning from June to November, and is prone to hurricanes that pose a continuous threat to its agriculture and physical infrastructure.

Saint Lucia attained political independence from the United Kingdom in 1979 and now has a democratic system of government based on the Westminster model; parliamentary elections are held every five years. The country is a member of the Commonwealth of Nations, the Organization of Eastern Caribbean States (OECS), and the Caribbean Community (CARICOM).

The official language is English, but a French patois is commonly spoken, particularly among most of the rural population. Roman Catholicism is the dominant religion (practiced by 67% of the population), followed by the Seventh-day Adventist (9%) and the Pentecostal (6%) religions; other religions are practiced by the remaining population (18%).

According to the 2001 population census, 83% of the population is of African descent, 3% is of East Indian descent, 1% is Caucasian, and 12% are of mixed ancestry (*1*). Most of the population inhabits the coastal areas and less mountainous regions of the north and south, and approximately 41% lives in the district of Castries. The city of Castries is the hub of the country's economic activity and political life.

Saint Lucia experienced an economic recession in 2001 due to a decline in tourism, the principal engine of economic growth, resulting in a growth rate of –3.8%. After 2001, however, the growth rate rose from 0.8% in 2002 to 5.4% in 2005. Gross domestic product (GDP) per capita increased from US$ 2,928 in 2001 to US$ 3,070 in 2005. Tourism accounted for 13.6% of real GDP in 2005, and real growth in the sector was further reflected by a 6.3% expansion of the hotel and restaurant subsectors. During 2005, output of the agriculture sector, with the exception of the livestock subsector, recorded contractions of varying magnitudes—the largest (36.2%) in the banana subsector (*2*); real output in the sector fell by 22% in 2005, following marginal growth of 1.8% in 2004, and, in keeping with this decline, the contribution of the agriculture sector to real GDP fell to 3.4%. Throughout the period under review, the exchange rate remained constant at ECD$ 2.70.

The 1995 poverty assessment, conducted by the Caribbean Development Bank and based on expenditures on food and non-food items, revealed that 25.1% of the population was poor. In rural areas, 29.6% were poor, compared to 17.4% of those living in urban areas. Poverty was slightly higher among males (25.5%) than females (24.7%).

According to the 2004 core welfare indicators questionnaire survey (CWIQ), the unemployment rate was 18.8%—a slight increase from the 2001 rate of 17%. Data for 2004 indicated a significant gender difference, with a 14% unemployment rate for males compared to a 25% rate for females. Youth unemployment was markedly higher at 39% and that of female youth was especially high at 44%. Lower unemployment among females could prove to be a major constraint to the country's achieving the MDG of gender equality and empowerment of women. The overall rate of underemployment was 8%—6% in urban and 11% in rural areas. Disaggregated by gender, the rates of underemployment were 10% for males and 6% for females (*3*).

According to the CWIQ, the adult literacy rate in 2004 was 89%, a significant increase over the 54% rate of 1990. Females had a higher literacy rate (90%) than males (87%), and the literacy rate of youth (persons 15–24 years of age) was high at 98.1%—in line with an indicator of the MDG pertaining to attainment of universal primary education. The primary school enrollment rate (children 6–11 years old) was 93%—91% for males and 94% for females; the secondary school enrollment rate was 79%—72% for males and 86% for females. Enrollment rates were similar for urban and rural areas, but secondary school enrollment was lower for the poorest households, especially in rural areas (67%). Although the school dropout rate was low (1% of the school population), females were more likely to be in school than their male counterparts (*3*).

Safe drinking water is accessible to 98% of the population—to 99% in urban areas and 96.7% in rural areas; among urban households 95% had safe water compared with 88% among rural households. Two-thirds of households had flush toilets or ventilated improved pit latrines, and 95% had access to public waste disposal services.

For the period 1999–2004, 1,048 cases of child abuse were reported to the Division of Human Services and Family Affairs. The most prevalent forms of abuse are child neglect and abandonment (34% of all reported cases), physical abuse (31%), and sexual abuse (29%). For the period 2000–2004, 2,165 cases of domestic violence were reported, but it is known that many cases go unreported. Ministry of Health interventions targeted alleviating the suffering of victims of domestic violence and interrupting the cycle of abuse. The Women's Support Center provided a temporary haven for women and their children in domestic abuse situations.

For the period 2000–2004, 228 deaths due to accidents and homicides were reported; of those deaths, 116 were homicides, most of them (108) in the 20–59-year age group; males accounted for 106 homicides, females for 10. Of the 112 deaths due to accidents, motor vehicle accidents accounted for 106; of those, 81 (76%) were males and 25 females (24%); 96 of the deaths (91%) occurred in the 20–59-year age group, while 10 deaths (9%) occurred in the 15–19-year age group. During this same period, 39 suicides occurred in the 20–59-year age group, 32 of them males (82%) and 7 (18%) females (*4*).

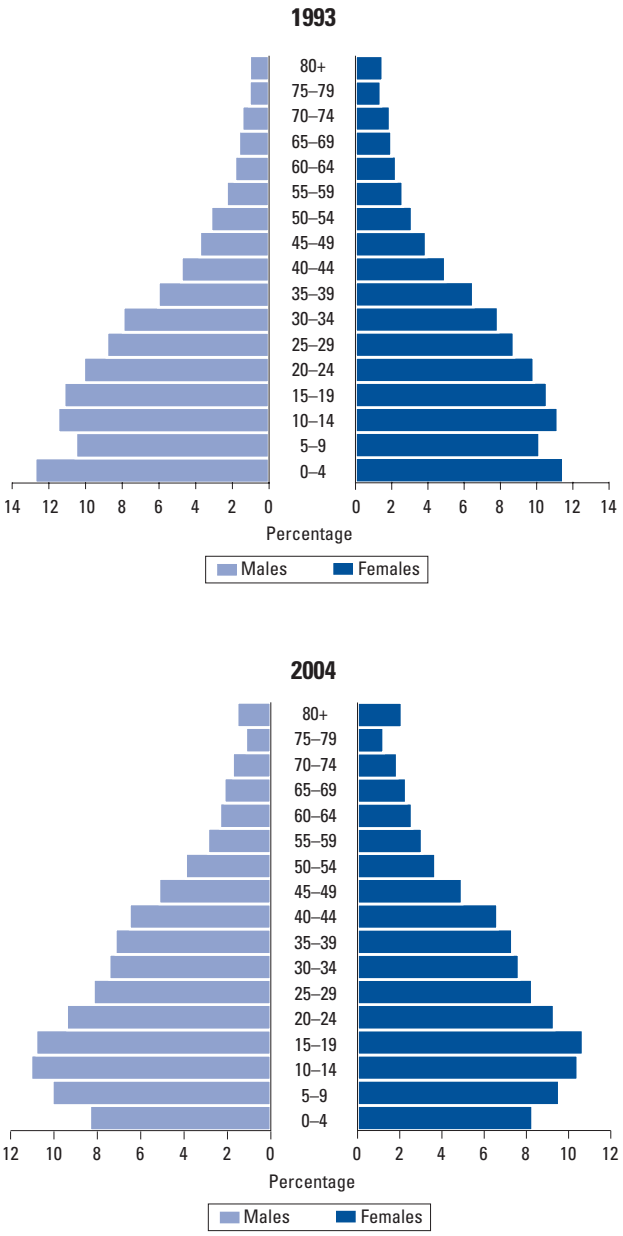
In 2002, tropical storm Lili forced 125 persons to seek shelter and resulted in an estimated EC$ 20.3 million in damages to the island, and destroyed over half of the banana crop. Another tropical storm in 2003 and Hurricane Ivan in 2004 together accounted for EC$ 9.9 million in damages. No lives were lost, however, as a result of these three disasters (*5*).

Demographics, Mortality, and Morbidity

The total mid-year population of Saint Lucia was estimated at 162,434 in 2004, reflecting an increase of 1,814 persons (1.1%) over the 2003 figure of 160,620 (*6*). Females accounted for 51% of the population, with women of childbearing age (15–49 years of age) representing 32.8% of the population. The population is still relatively young, with 28.8% below 15 years of age, while the elderly account for 7.1% of the total population (Figure 1). The dependency ratio in 2005 was 56.3% (*7*). In 2004, 2,322 births were registered and the crude birth rate was 14.3 live births per 1,000 population, as compared to 2,486 registered births and a crude birth rate of 15.5 in 2003. The number of births in 2004 is the lowest to date, a trend expected to continue as women delay pregnancies and use prescribed contraceptives and other methods of birth control. The decrease in total number of live births was reflected in the steady decline in total fertility rate, from 2.1 children per woman in 2001 to 1.7 in 2004. In 2004 teen births accounted for 18% of total live births, compared to 20% in 1991. Average life expectancy at birth in 2005 was 72.8 years—71.3 years for males and 74.3 years for females (*7*).

During the period 2000–2004, 4,860 deaths occurred, including 1,046 deaths in 2003 and 1,114 in 2004—a 6.5% increase from one year to the next. The crude death rate was 6.5 in 2003 and 6.9 per 1,000 population in 2004. Leading causes of death for

FIGURE 1. Population distribution, by age and sex, Saint Lucia, 1993 and 2004.



2004 are shown in Table 1 and were consistent throughout the period 2000–2004, although two other disease groups were also noteworthy: conditions originating in the perinatal period showed 92 deaths with a rate of 38.8 deaths per 100,000 population over the three-year period 2000–2002; and hypertensive diseases recorded 83 deaths and comprised 3.3% of total deaths by cause during that same period. The mortality rate of children under 1 year of age was 14.9 per 1,000 live births in 2003 and 19.4 in 2004 (*6*).

TABLE 1. Number of deaths and rate per 100,000 population for the leading causes of death, Saint Lucia, 2004.

Causes	Rank	No.	Rate
Diabetes mellitus	1	133	81.9
Cerebrovascular diseases	2	116	71.4
Ischemic heart disease	3	61	37.6
Pulmonary heart disease, diseases of pulmonary circulation, and other forms of heart disease	4	51	31.4
Malignant neoplasms of other and unspecified sites	5	45	27.7
Acute respiratory infections	6	43	26.5
Homicides	7	38	23.4
Malignant neoplasms of the digestive organs and peritoneum, except stomach and colon	8	37	22.8
Malignant neoplasm of the prostate	9	36	22.2
Chronic lower respiratory diseases	10	32	19.7

HEALTH OF POPULATION GROUPS

Children under 5 Years Old

In the period 2000–2004, 699 deaths occurred in the 0–4 age group; of those, 601 were due to premature births, 52 were due to slow fetal growth and fetal malnutrition, and 30 deaths were attributed to congenital anomalies.

In 2004, there were 45 infant deaths and an infant mortality rate of 18.5 per 1,000 live births—higher than the 2003 rate of 14.9 and the 2002 rate of 13.5. In 2004, 10.9% of births were low birthweight (< 2,500 g) compared to 9.5% in 2003. Of all births in 2004, 83.7% were of average weight (2,500–4,000 g), compared to 85.1% in 2003. In 2004, 5.4% of infants were overweight (> 4,000 g), and the average birthweight for all babies was 3,155 g—3,218 g for males and 3,081 g for females (*6*). In 2004, 95% of children in the under 5 year age group participated in three standard development assessment programs—at 6 weeks, 8 months, and 3 years of age. Vaccination coverage was high at over 90% for DPT 1, 2, and 3; BCG; and polio 1, 2, and 3; 7.5% of children under 5 were reported to have had no vaccinations.

Children 5–9 Years Old

During the period 2000–2004, 16 deaths occurred among children 5–9 years of age; 14 were due to accidents and adverse effects, and two to congenital anomalies. Five cases of HIV/AIDS have been reported in this age group since the beginning of the epidemic; of those, two have died (*8*).

Adolescents 10–14 and 15–19 Years Old

The number of births to mothers under 20 years of age was 443 in 2003 and 444 in 2004. Of those births, 1.8% were to mothers 12–14 years of age in 2004, and 1.4% to mothers in that age group in 2003. In an effort to postpone childbearing and reduce fertility among teens, they have been the target of special programs by the Population Policy Unit, the Ministry of Health, the Ministry of Education, and the Family Planning Unit (*6*).

During the period 2000–2004, seven deaths occurred among adolescents 10–14 years of age; four were due to land transport accidents, two were suicides, and one was a homicide; males accounted for six of the deaths. In the same period, 24 deaths occurred among 15–19-year-olds; 10 were due to land transport accidents, eight were homicides, and six were due to accidental drowning; males accounted for 22 deaths in this age group. Since the beginning of the HIV/AIDS epidemic, there have been 22 cases: three were 10–14 years of age; 19 were 15–19-years of age; of those 22 cases, five have died—one in the 10–14-year age group, and four in the 15–19-year age group. Among adolescents the preferred measures of preventing HIV/AIDS were condom use (83%) and abstinence (71%); 54% of adolescents indicated that they were sexually active.

Adults 20–59 Years Old

In 2004, there were 2,436 live births; 96% of the respective mothers had prenatal care; births to women in the 20–24-year age group accounted for 25% of all live births.

In 2002–2004, 773 deaths occurred among adults 20–59 years of age. The three leading causes of death were malignant neoplasms, heart disease, and homicides. In the same period, among males aged 20–59 years, the leading causes of mortality were malignant neoplasms (prostate, stomach, lung), homicides, and heart disease. The leading causes of death among females were malignant neoplasms of the breast and cervix, leukemia, diabetes, and heart disease. AIDS accounted for 5% of deaths in this age group, in which 195 AIDS deaths have occurred since the beginning of the epidemic.

Older Adults 60 Years Old and Older

During the period 2002–2004, 2,093 deaths occurred among adults 60 years and older. The leading causes of death were malignant neoplasms (29% of total deaths in this age group), diabetes mellitus (24%), cerobrovascular disease (24%), and heart disease (24%). The leading causes of death among males were

malignant neoplasms (365), heart disease (252), and cerebrovascular disease (215). Among females, the leading causes of death were diabetes mellitus (304), cerebrovascular disease (285), and heart disease (248). Since the beginning of the HIV/AIDS epidemic, six persons in this age group have died of AIDS.

A 2002 report on care of the elderly in the country revealed that the main problems facing older persons were abandonment by family, inadequate preparation for retirement, isolation, and poverty. Many older persons were unable to access health and other support services due to geographic location, lack of transportation, and the cost of drugs and medical services (*9*).

The Family

The mean household size in 2004 was 3.4 persons; urban areas had a household size of 3.3, and rural areas of 3.5. Of those households, 43% were headed by females; and 25% of all female-headed households fell into the poorest quintile, compared to 18% of male-headed households. In addition, female-headed households were less likely to own assets such as land, housing, or vehicles, and half of the females who headed households were unemployed (*3*). During the period 2001–2004, only 2% of babies were not delivered at a hospital or maternity home (*3*); approximately 85% of live births were born to women out of wedlock.

Persons with Disabilities

The 2001 census revealed that 9,313 persons (6.2% of the total population) had disabilities; 39.1% of disabilities occurred in persons 65 years and older, and 25.1% in persons 15–64 years of age. The most noted disabilities were locomotor and sight disabilities, accounting for 63.4% of all disabilities.

HEALTH CONDITIONS AND PROBLEMS

COMMUNICABLE DISEASES

Vector-borne Diseases

From 2000 to 2002, five imported cases of **malaria** were reported; no cases were reported in 2003 or 2004. In the 2000–2004 period, 80 cases of **dengue** were confirmed, including an outbreak of 60 cases in 2001; dengue virus types 1, 2, 3, and 4 have been identified in the country.

Vaccine-preventable Diseases

Under the Expanded Program on Immunization (EPI), children under 5 years of age are immunized against **diphtheria**, **whooping cough**, **tetanus**, **Hib**, **hepatitis B**, **poliomyelitis**, **measles**, **mumps**, **rubella**, and **tuberculosis**. In 2004, vaccination coverage for polio was 91% and for BCG 99%. Only one case of tetanus has been reported in the past five years, in a two-year-old male in 2001. The near absence of vaccine-preventable diseases attests to the high immunization coverage over the last 10 years.

Intestinal Infectious Diseases

During the period 2000–2005 no case of **cholera** was reported. During the same period, 36 cases of **salmonella** were reported, and 20 cases of **typhoid fever** were confirmed. Gastroenteritis was the first cause of visits by persons to clinics and the cause of 47% of outpatients seeking medical attention.

Chronic Communicable Diseases

There were 73 reported cases of **tuberculosis** for the period 2000–2004, an increase due in part to improved detection of clinical and laboratory diagnoses; of those cases, 53 were new and 20 were relapses. There was an average of 11 new infections per year and an average of four relapses per year. For the period 2000–2004, 53 cases of leprosy were reported—an increase attributable to successful education and awareness programs in schools and media since 2000.

HIV/AIDS and Other Sexually Transmitted Infections

Between 1985 and 2004, 469 persons tested positive for HIV infection; children under 15 years of age accounted for 10% of cases, and adults aged 15–49 for 77%; 251 (53%) have developed AIDS-related diseases, and 230 (49%) of these have died. Males represent 53% of AIDS deaths among adults 15–49 years old and 64% among the 50+ age group. The male-to-female ratio of AIDS deaths in 1995–1999 was 1.4:1. Unprotected heterosexual sex remains the main mode of transmission.

Zoonoses

No cases of **rabies** have been reported in the country for the past two decades. For the period 2000–2004, 18 cases of leptospirosis were confirmed; all cases investigated suggested a link with rodent infestation in homes and workplaces.

Schistosomiasis was still present in the country, especially in the south, with 30 cases confirmed in the 2000–2005 period.

NONCOMMUNICABLE DISEASES

Nutritional and Metabolic Diseases

Between 1998 and 2002, **diabetes** accounted for 518 deaths, with 62% occurring among females. About 23% of all reported deaths from diabetes were in the 45–64-year age group, and 75% were in the 65 year and older age group.

Cardiovascular Diseases

Deaths by **cardiovascular diseases** (heart disease, cerebrovascular disease, and hypertension) totaled 1,577 (32% of all deaths) for the period 1998–2002, with an average of 315 deaths per year.

Heart disease and **cerebrovascular diseases** represented 85% of cerebrovascular mortality in the country. In 2001, there were 298 deaths from cardiovascular diseases (30% of all deaths) and, in 2002, there were 296 deaths from cardiovascular diseases (31% of all deaths). Deaths due to cardiac arrest accounted for 16% of all cardiovascular deaths for 1998–2002, ranging from 15% to 23% per year. Ischemic heart disease represented about 10% of all deaths due to cardiovascular diseases for 1998–2002 (*10*).

Malignant Neoplasms

Between 1998 and 2002, 763 deaths occurred due to malignant neoplasms—an annual average of 153 deaths—and represented about 16% of all deaths. Males accounted for 56% of all deaths due to malignant neoplasms, and among males the three sites most frequently reported for these deaths were prostate (36% of all male deaths due to malignant neoplasms), stomach (11%), and the trachea/bronchus/lung (8%). Among females, the leading sites of malignant neoplasms were breast (17% of all female deaths due to malignant neoplasms), cervix (17%), and leukemia (8.8%). Mortality due to malignant neoplasms was higher for women than for men in the 15–44-year age group, but was similar in the 45–64-year age group. In the 65 year and older age group, mortality from malignant neoplasms was twice as high among men than women, with the exception of colon cancer for which rates were higher among women (*10*).

Other Health Problems or Issues

Mental Health and Additions

The Golden Hope Hospital, a 162-bed mental institution, had an occupancy rate of 72–74%, with an average length of stay of 50 days and 43 days for 2003 and 2004, respectively. According to hospital records, schizophrenia was the most frequent diagnosis, accounting for approximately 60% of all diagnoses in 2003 and 58% in 2004. In 2005, 62 patients had resided at the hospital for more than one year. The models of care most commonly used were physiotherapy, occupational therapy, and other forms of therapy.

In 2005, the Substance Abuse Advisory Council sent survey questionnaires to primary (5–16-year-olds) and secondary (11–16-year-olds) schools; of the 11 schools that responded, 10 indicated that abuse of drugs—crack, cocaine, and marijuana—was a problem in the communities surrounding their schools. Six of the 11 schools reported that students had been caught with drugs in their possession.

Oral Health

In 1997 a community dental survey was carried out, and the results showed an average of six decayed, missing, and filled teeth among children 12 years old, which is considered high. In 2003–2004, the most common activities carried out by the public health dental program were preventive (education, fluoride treatments, and sealants), restorative (fillings and root canal treatment), and emergency (extractions); the most common procedures performed were periodic examinations and extractions.

RESPONSE OF THE HEALTH SECTOR

Health Policies and Plans

The Ministry of Health completed its National Strategic Plan for Health for the period 2006–2011 (*11*). The plan envisions: strengthening the organization and management of health and social services; improving and sustaining health gains and residents' well-being; achieving greater equity, cost effectiveness, and efficiency in the allocation and use of health resources; ensuring a cadre of well-trained and motivated staff; developing an effective health information system to support evidence-based planning; implementating a quality improvement system; and improving health infrastructure to support the reform process.

In 2005, a draft protocol for the prevention and management of child abuse was developed that is to provide relevant information to facilitate rapid and effective response to all suspected cases of abuse. Also, the country is a part of a domestic violence and family law reform project of the Organization of Eastern Caribbean States that aims to ensure that laws are responsive to the needs of clients. Some of the relevant bills under review relate to the status of children, child care and protection, and adoption. A draft policy for older persons was completed that prescribes various mechanisms to enhance the quality of life of the elderly. The WHO framework convention on tobacco control was ratified by Saint Lucia in 2005. The Disaster Preparedness and Response Act was enacted in 2000 to provide for more effective disaster and emergency mitigation, preparedness, response, and recovery.

Organization of the Health System

The Ministry of Health focuses on providing maximum quality of life for all the country's citizens. Among other priorities, health policies and plans continue to target poor at-risk populations, children, and older adults and to assure gender equity. The Ministry has two main divisions: an administrative arm headed by a permanent secretary and a technical arm headed by the chief medical officer, who is responsible for the health of the nation. The Ministry of Health is the sole provider of primary and secondary health care services in the public sector. The country seeks to strengthen the health sector within the national, regional, social, political, and economic contexts and to position it as a major driver of social and economic development (*12*).

Outpatient services are provided at medical clinics at health centers and district hospitals and through the casualty or emergency departments of acute general hospitals. Secondary and specialized services are provided by three institutions: Victoria Hospital, the main hospital, located in the city of Castries and

managed by the Ministry of Health; St. Jude's Hospital, located in the south of the island, a quasi-public institution that receives an annual subvention from the Government and many of whose specialists come from overseas and serve on a voluntary basis; and Tapion Hospital, a privately owned facility in the city of Castries. Two specialized institutions operate on the island: the psychiatric facility, Golden Hope Hospital, which offers inpatient and outpatient mental health services; and Turning Point, a drug rehabilitation center.

Most tertiary care services are provided through health facilities abroad, primarily in Martinique, Barbados, and Trinidad and Tobago. The national insurance scheme provides assistance to older persons, the disabled, and the indigent, whether or not they are contributors to the scheme. The cost of care for indigent persons is partially funded by the Ministry of Health, while the rest is funded out-of-pocket; private health insurance covers the insured.

Both the Division of Human Services and Family Affairs and the Division of Gender Relations respond to vulnerable and at-risk groups by implementing appropriate social protection programs. The elderly home refurbishment project aims to refurbish the homes of older persons in difficult circumstances, and the Government has committed to build a new home for older persons. Services to vulnerable children are to be increased through establishment of a transit home for children, foster care, and family intervention programs. The Division has implemented a foster care and recruitment program that promotes public involvement in caring and protecting children in need, and the public assistance program likewise targets helping those in need. The Division of Gender Relations is responsible for implementing gender mainstreaming and has developed a program to combat gender-based violence.

Public Health Services

Primary health care services are provided at 34 health centers, a polyclinic, and two district hospitals. These facilities routinely offer medical and pharmaceutical services, maternal and child health care (antenatal and postnatal care as well as immunization of children), prevention and control of sexually transmitted infections, mental health clinics, and services related to diabetes, hypertension, cancer screening, dental care, and food and nutrition.

In the Ministry of Health, the Bureau of Health Education is responsible for health education and promotion; it focuses on control and reduction of noncommunicable diseases such as cancer, diabetes, hypertension, arthritis, and lupus, and promotes good dietary habits and guidelines for treatment and care of those diseases. Community sensitization meetings are held to foster community participation and disseminate information on vector management.

Programs are executed for disease prevention and control, specifically of tuberculosis, leprosy, HIV/AIDS, and other sexually transmitted infections (STI), dengue fever, measles, and some cancers. Activities include surveillance, management, and treatment of cases, and special clinics for STI. A cancer registry was established in 1995, a national tuberculosis register in 1996, and a national diabetes register in 2001. Since 2000, a national tuberculosis management committee meets monthly and follows up on all cases of the disease. The Expanded Program on Immunization (EPI) has maintained high vaccination coverage for many years, and the incidence of vaccine-preventable diseases is very low. High-risk pregnancies are monitored, and all pregnant mothers are provided with folate and iron supplements and counseling services. Screening programs are offered for cervical, breast, and prostate cancer, although few men are being screened for prostate cancer. Preventive services are free except for contraceptives, yellow fever vaccinations, and vaccinations required for college entry. Nutrition protocols and guidelines have been established to manage HIV/AIDS, and the distribution of antiretroviral drugs, through the Global Fund, has commenced.

The communicable disease surveillance system, which was revised in 2001, bolsters the Caribbean Cooperation in Health initiative and aims to improve surveillance, prioritize response to outbreak-prone communicable diseases including emerging and reemerging infectious diseases, and increase sensitivity, preparedness, timeliness, and laboratory diagnosis; the major changes to the system include expansion of syndromic surveillance, discontinuation of suspected cases of diseases, quarterly-basis reporting of tuberculosis, and systematic and standardized outbreak reporting. Data for this system are collected from sentinel sites at the emergency and accident departments of Victoria Hospital, St. Jude's Hospital, and Gros Islet Polyclinic.

The Environmental Health Department within the Ministry of Health is responsible for the delivery of environmental health services including food and water safety, vector control, and sanitation and for monitoring and regulating the disposal of solid waste. Efforts have focused on surveillance and treatment of mosquito breeding sites; conduct of monitoring exercises for dengue, schistosomiasis, and leptospirosis; and port inspection for *Aedes aegypti* at Marigot, Rodney Bay, and Castries harbors. The Department developed and implemented effective mechanisms and strategies for monitoring and enforcing the quality of potable water; in 2005, 29 municipal distribution systems were monitored weekly. The Food Unit of the Department is responsible for food protection, control, and safety and conducts inspections of food service establishments and wholesalers at least three times a year; in 2004, 1,696 food handling establishments were inspected, and follow-up inspections were carried out in 204 to ensure compliance with guidelines. In 2004–2005, the unit trained some 300 farmers in basic food hygiene principles. The draft food and animal health acts were reviewed and circulated for comments.

Government Targets the Well-being of the Youngest Saint Lucians

Saint Lucia's is a young population—more than one in four inhabitants is younger than 15 years old. Given this age distribution, the Ministry of Health considers the country's children as a priority. Over the past decade, efforts to immunize children under 5 years old against diphtheria, whooping cough, tetanus, *Haemophilus influenzae* type b, hepatitis B, poliomyelitis, measles, mumps, rubella, and tuberculosis have resulted in the near-absence of vaccine-preventable diseases. The Government also has established a transitional home for foster care and family intervention services that will protect at-risk and abused children. Among other initiatives, development and guidance services are now being offered to children under 16 years of age, monthly clinics have begun to serve children with handicaps, and several years ago the ministries of Health and of Education collaborated in setting up a school dental health program. Concern for youths' use of drugs—marijuana, crack, and cocaine mainly—and exposure to HIV/AIDS have prompted an array of national efforts to combat these health threats.

Response to disasters caused by human activity centers on training personnel—firefighters, emergency medical technicians, and first responders; in addition, eight ambulances are available on a fee-for-use basis.

Individual Care Services

In addition to the above-mentioned secondary and specialized hospitals, two district hospitals (in Soufrière and Dennery) provide outpatient, hospitalization, and emergency services, as well as inpatient care for minor medical, surgical, and pediatric problems and maternity care for low-risk deliveries. The psychiatric hospital provides inpatient care and some primary care to outpatients through community psychiatric clinics at the hospital and in seven other locations.

Two public and three private laboratories operate on the island. The one at Victoria Hospital serves as the national reference laboratory and employs the country's only pathologist. Blood collection and transfusion services are done at the blood bank unit of Victoria Hospital; there is also a mobile blood bank unit. Blood donors are interviewed about lifestyle and other risk factors before blood is drawn and tested for HIV, VDRL, hepatitis B and C, HTLV-1 and -2, blood group, and antibody screening.

Among specialty services, one of the Ministry of Health's current areas of concern is mental health. The mental health reform initiative articulates a shift from institutional to community-based mental health care that is expected to result in decentralization of, and increased access to, mental health care. The reform process entails mental health policy and legislative reform; human resource development and training; mental health promotion and illness prevention; and community mental health services. In addition, plans were finalized for construction of a new mental health facility, to be opened in 2007–2008; estimates of personnel needs and the corresponding job descriptions were prepared.

In support of family planning, the Saint Lucia Planned Parenthood Association targets reduction of the incidence of unwanted pregnancies, particularly among adolescents, through a strengthened family life education program and comprehensive reproductive health care services. The Association provides counseling as well as contraceptive and other reproductive health services in clinical settings.

The National Strategic Plan for Health includes the provision of portable public dental health services, many of which are not currently available on a daily basis, to nine community health centers. In collaboration with the Ministry of Education, a school dental program was launched in 2003. Dental services are provided through a number of health facilities as well as the private sector.

Specialist ear, nose, and throat services were available, but those of speech therapists and audiologists were only periodically offered by short-term volunteers. A team of health professionals conducted monthly clinics for children with multiple handicaps. The Child Development and Guidance Center and the Ministry of Education offered services to children from birth to 16 years; their multidisciplinary team of professionals—a volunteer pediatrician, a physiotherapist employed by the Ministry of Education, visiting speech and language therapists, and visiting occupational therapists—provides comprehensive, ongoing assessment and diagnosis of children with physical, mental, emotional, and behavioral problems.

Human Resources

The most recent assessment of public health professionals in the country is summarized in Table 2. The total health sector human resource cost is estimated at US$ 15.2 million, which represented 70% of the latest total national budget.

The country experienced a shortage of health workers, as many of its nurses and other staff obtained more lucrative positions abroad. Approximately half of all nurses and midwives left the service within a year of graduating. The Nursing Council received 170 requests for transcripts in 2004, suggesting the departure of substantial numbers of trained nurses (*13*). The National Strategic Plan for Health emphasizes the development of measures to retain trained health workers.

In the reporting period, 14 persons participated in the PAHO/WHO environmental health three-step program, the main objective of which is to enhance the skills of environmental health officers. Two nurses were trained in the care and management of diabetic patients and subsequently assisted in developing protocols for the effective management of diabetics. The Ministry of Health implemented an internship program to ensure the quality of new doctors by affording them the opportunity to apply their skills in a supportive learning environment. In 2004–2005, 37 doctors were trained at a cost of almost US$ 400,000. In 2005, a family case worker was trained in Israel, and two welfare officers were trained in social gerontology in Malta.

TABLE 2. Public sector health professionals, by specialty and population covered per specialty, Saint Lucia, 2002.

Category	No.	Population/ specialty
General practitioners	60	2,669
General surgeons	4	40,036
Anesthetists	5	32,029
Pediatricians	3	53,382
Obstetricians/gynecologists	5	32,029
Psychiatrists	5	32,029
Physicians	8	20,018
Accident and emergency	4	40,036
Epidemiologists	1	160,145
Cardiologists	1	160,145
Dermatologists	1	160,145
Internists	2	80,073
Ophthalmologists	1	160,145
Pathologists	1	160,145
Radiologists	2	80,073
Orthopedic surgeons	3	53,382

Health Supplies

The country obtains drugs through the Eastern Caribbean Drug Services, while all vaccines used in the public sector are procured through the PAHO Revolving Fund. The pharmaceutical procurement service of the Organization of Eastern Caribbean States expanded its medical product portfolio from 470 to 680 items to increase economies of scale by international tendering of a diverse range of essential health care products; the 25% increase in tendered medical supplies included a wide assortment of sutures, which previously consumed a significant portion of the health budgets of OECS countries.

Research and Technological Development in Health

In 2004, the Government conducted a knowledge, attitude, and practice survey (KAPS) of young persons (10–30 years of age) regarding HIV/AIDS in Gros Islet, Vieux Fort, Canaries, and Dennery, as part of a joint effort with the Organization of Petroleum Exporting Countries and UNFPA; the survey revealed the need for a deliberate strategy to arrest and control the HIV/AIDS epidemic among Saint Lucian youth (*14*). In 2004, the above-mentioned core welfare indicators survey included the monitoring of poverty and household welfare, covering a sufficiently large and representative sample to provide reliable welfare indicators for planning and policy formulation. In 2005, a UNICEF-sponsored child vulnerability study provided the Government pertinent findings and recommended priorities for action. That same year, a survey conducted by the Substance Abuse Advisory Council Secretariat to determine the level of drug abuse and drug education activities among the secondary school population found that the drugs most commonly used were marijuana, crack, and cocaine.

Health Sector Expenditures and Financing

Health services are funded from four main sources: the cosolidated fund, out-of-pocket payments, private insurance schemes, and donor contributions. The total annual health budget in 2000–2001 was the highest for the decade, at US$ 20.2 million; in 2001–2002 it was US$ 19.5 million, representing 6.2% of the total national budget; and in 2002–2003 it was US$ 19.3 million, representing 6.7% of the national budget.

In terms of distribution of the total health budget, secondary care services accounted for 53% in 2001–2002 and 54% for 2002–2003; primary care services were the second major portion of the total health budget, accounting for 22% in 2001–2002 and 23% in 2002–2003, and community services consumed about half of the primary care services budget; Golden Hope Hospital accounted for 5% each year of the total budget for 2001–2003; and the Ministry of Health's administration, policy, and planning services accounted for 9% of the total budget in 2001–2002 and 10% in 2002–2003 (*10, 15*).

The National Insurance Scheme made an annual contribution to the consolidated fund to cover inpatient hospital expenses for its members. Health expenditures grew by 40% over the period 2000–2006, from US$ 22.6 million to US$ 31.9 million. This upward trend is a reflection of the demand placed on the public health system by the demographic and epidemiological health profile. As a result, the resources allocated to the public health sector were insufficient to adequately respond to the increasing health needs of the population. The universal health care program was developed as the mechanism to improve national health sector financing; universal health care is scheduled to be implemented in 2006–2007.

Technical Cooperation and External Financing

Given the limited resources of the health system, resource mobilization is a major public sector thrust. The country received technical and financial cooperation from several external agencies and foreign governments. The European Union provided support in the form of loans and grants for the new general hospital, the development of the National Strategic Plan for Health, the integrated child protection and development program, the care of the elderly project, and the Women's Support Center. The Government received partial financing from the Caribbean Development Bank to undertake rehabilitation of primary schools and community health centers. It also secured funding to repair and refurbish 24 health facilities—15 through the Central Bank economic reconstruction project, five through the Basic Needs Trust Fund, and four through the World Bank. The World Bank also provided both loan and grant funding to implement the HIV/AIDS prevention and control project. A grant from the Government of Ireland targeted improvement of HIV/AIDS services, and UNFPA funded a project for HIV/AIDS prevention among youth. PAHO provided cooperation through training, scholarships, and direct technical services. The Government of China began construction of the new mental health facility, and the Government of Cuba contributed to improving the national eye care program, by providing free eye care for Saint Lucians in Cuba and technical assistance for development of an ophthalmology center at Victoria Hospital.

Nongovernment organizations such as the Saint Lucia Blind Welfare Association (SLBWA) and the National Council for Persons with Disabilities are critical in their response to eye health and physical disability problems. The SLBWA, through its link with the Hilton-Perkins International funding agency, provides limited, predominantly home and community-based care to a small number of multidisabled and vision-impaired children.

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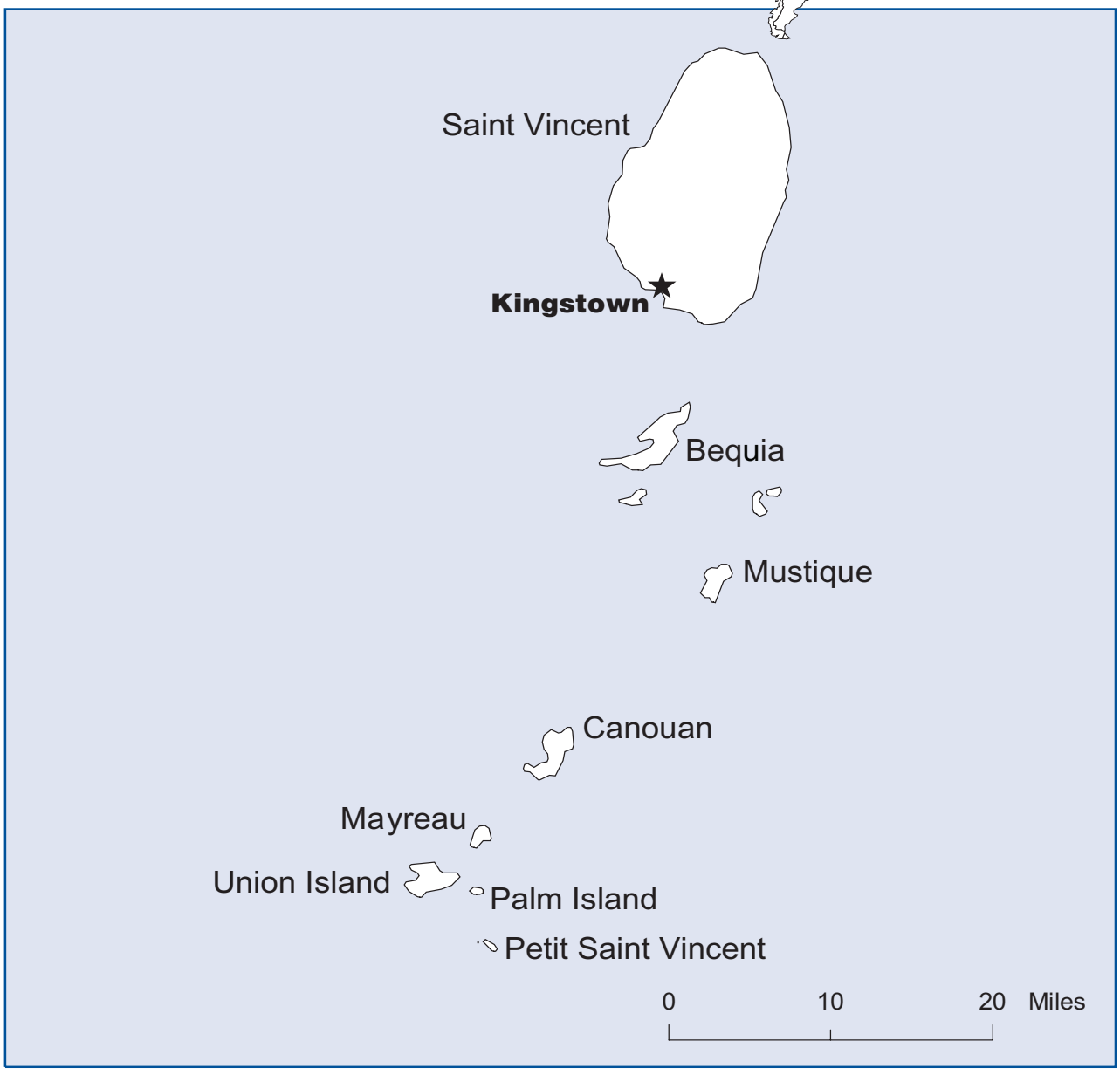
SAINT VINCENT AND THE GRENADINES



Saint Vincent and the Grenadines is a multi-island state in the Lesser Antilles; the country's 32 islands, inlets, and cays cover a 345-km^2 land area. The volcanic island of Saint Vincent, which accounts for most of the land area, is where 91% of the country's population lives. La Soufriere Volcano last erupted in 1979. The Grenadines includes seven inhabited islands—Bequia, Canouan, Mayreau, Union Island, Mustique, Palm Island, and Petit Saint Vincent. Sea transport links all the islands; airport facilities are available on Saint Vincent and in Bequia, Canouan, Mustique, and Union Island.

GENERAL CONTEXT AND HEALTH DETERMINANTS

The country has a tropical climate, with temperatures averaging between 72° and 80° F and rainfall averaging 80 inches along the coast and 160 in the central range; the rainy season falls between May and November. Saint Vincent and the Grenadines is susceptible to hurricanes, tropical storms, volcanic eruptions, and earthquakes.

Social, Political, and Economic Determinants

Saint Vincent and the Grenadines gained political independence from Great Britain in 1979 and is governed as a Westminster-style parliamentary democracy. The country is politically stable and free and fair elections are held every five years. The official language is English. The leading religious denominations are Anglican (17.8%), Pentecostal (17.6%), and Methodist (10.9%).

Between 2000 and 2004, Saint Vincent and the Grenadines' GDP grew from US$ 285 million to US $349 million. GDP growth averaged 5.1% per year in 2000–2004, resulting mainly from resilience in the construction, transportation, banking and insurance, electricity and water, communications, and wholesale and retail sectors. The removal of preferential tariffs and quotas on bananas, the country's main export crop, has led to losses in the agricultural sector. The Government has acknowledged the need to develop the services and tourism sectors to offset those losses. There were 77,631 tourist arrivals in 2002, nearly 7,000 more than in 2001.

In 2000–2004, the government annual budget ranged from US$ 150 million to US$ 180 million.

The 1996 Poverty Assessment Report concluded that 37.5% of the population (43,875 persons) was poor[1] and 25.7% (30,069 persons) was classified as indigent poor.[2]

The report also concluded that the country showed high levels of inequality. In 2001, the Government committed itself to address the doubly debilitating conditions of mass poverty and inequality, and established the National Economic and Social Development Council to oversee and guide the poverty reduction strategy. In 2002, the draft Interim Poverty Reduction Strategy Paper, a blueprint for developing policies and programs to address the central elements of poverty reduction in the short, medium, and long terms, was completed.

The overall employment rate[3] declined from 80.2% to 78.9% between 1991 and 2001. Unemployment among males increased from 18.4% in 1991 to 22.1% in 2001; among females, it decreased from 32.1% to 18.6% in the same period. The percentage of the population working in agriculture, construction, and wholesale industries declined from 49.1% of the labor force in 1991 to 41.6% in 2001. This drop was mainly due to a 37% decline in employment in agriculture. Fishing and manufacturing industries declined between 1991 and 2001. In 2001, 52% of the labor force was in the age group 15–43 years old as compared with 60% in 1991.

The unemployment rate in 2001 was 21%. The country's size, limited economic diversification, and extreme vulnerability to hurricanes triggered income insecurity and economic volatility at national and household levels. According to a World Bank document, the impact was particularly felt by the poor and the indigent poor, who were unable to tap savings or were not reached by the government's social protection programs in times of hardship.

The literacy rate in 2001–2005 was estimated at 96% overall, with equal levels for males and females. Saint Vincent and the Grenadines' educational system offers primary, secondary, and tertiary education levels. Since 2003, the Government has granted universal access to secondary education for all children. There

[1]Poverty is defined as insufficient diet and a lack of other goods and services necessary for effective functioning in a society.
[2]The indigent poor are persons who are not able to meet their basic food needs.

[3]The overall employment rate is the employed population as a percentage of the economically active population.

are 28 primary and 21 secondary public schools in the country, plus 3 private primary schools and 4 private secondary schools. School enrollment was 96% for the age group 5–9 years old and 94% for 10–14-year-olds. Preschool enrollment was only 33% in 2001. Although there were no full-time tertiary institutions on the island, 5.4% of the population has attained tertiary degrees. There were no observable differences in the number of males and females pursuing university education.

The Central Water and Sewerage Authority distributes potable water to about 90% of the country's population. According to the 2001 census, the water supply for 52.2% of households was publicly supplied into the home; for 17%, publicly supplied water was piped into the yard; for 20.8%, water was privately piped into the dwelling; and for 10%, mainly households on the Grenadines, water came from private catchments.

Food safety continued to be an issue of great concern in the country. Between 2001 and 2005, the number of food establishments increased, but there was no system for registering and licensing them. Food handlers' clinics conducted twice per year at district health centers provided education and information on food safety; attendance is voluntary.

In 2001, 52% of the households used a combination "water closet linked to cesspit" and "water closet linked to sewer," an increase compared with the 32% reported in 1991. Concomitant with this increase, the number of households using pit latrines fell from 62% in 1991 to 44% in 2001. Saint Vincent and the Grenadines has two sanitary landfills, one located at Belle Isle on the island's leeward side and the other at Diamond, on the windward side.

All households in Saint Vincent have their garbage collected once a week; households in the Grenadines have collection twice a week.

Squatting continues to be widespread. Persons who settle in squatting areas usually have no access to potable water or sanitary facilities. The areas where they live also are noted for vermin and rodent infestations, as well as the presence of other disease carrying organisms. Overcrowding, which allows for the easy spread of communicable diseases, is a common feature in these settlements.

Demographics, Mortality, and Morbidity

According to the 2001 Population and Housing Census, Saint Vincent and the Grenadines' total population was 106,253. Of the total population, 30.7% was under l5 years old, compared to 37.2% in 1991. This decline has reduced the dependency ratio, which dropped from 0.8 in 1991 to 0.6 in 2001. There were 29,523 persons 15–29 years old, which accounted for 27.8% of the population in 2001, compared to 29.5% in 1991. The broad age group of 30–44 years old, on the other hand, increased from 16.1% to 21.1% in those same years, while the age group 45–64 years old rose from 10.7% to 13.2%. Persons 65 years old and older represented 7.3% of the total population in 2001, compared to 6.5% in 1991. The census also showed that the female-to-male ratio was 1:1.02. (See Figure 1.)

According to the 2001 census, African descendents accounted for 72.8% of the population, mixed ethnicities for 20%, Caribs for 3.6%, and East Indians for 1.4%. Caribs and other indigenous peoples live predominantly along the country's northeast.

In 2001–2004, there were 3,097 deaths, for an average of 774 deaths per year. In 2001, there were 765 deaths. The five leading causes based on defined causes of death were malignant neoplasms (133), diabetes mellitus (103), cerebrovascular accidents (60), ischemic heart diseases (45), and HIV/AIDS (34). Diabetes, ischemic heart disease, cerebrovascular accidents, hypertensive diseases, and malignant neoplasms were the five noncommunicable diseases that accounted for around 50% of total deaths annually. In 2003 there were 774 deaths. The five leading causes of death were diabetes mellitus (120), malignant neoplasms (119), heart disease (102), hypertension (101), and cerebrovascular accidents (51); together, these causes accounted for 62.4% of total deaths.

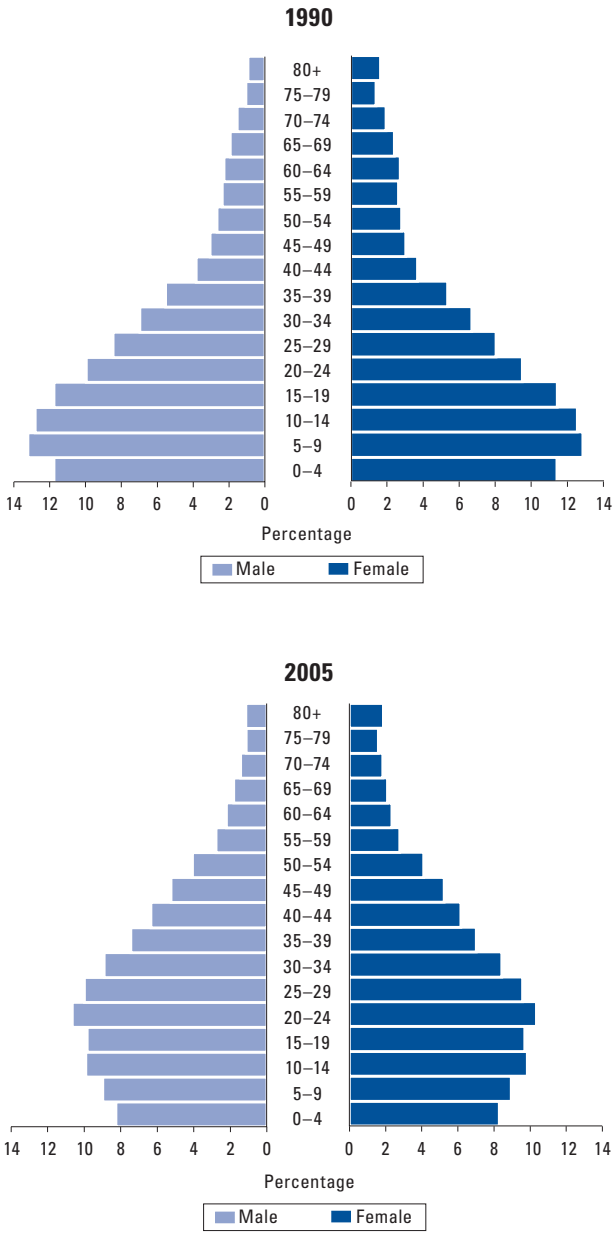
Diabetes accounted for 71 female deaths and 49 male deaths; 55 females and 46 males died of hypertension. Nearly equal numbers of males and females died from ischemic heart disease and cerebrovascular disease; economically and socially deprived women were particularly vulnerable to these two diseases.

The leading cause of death in males was malignant neoplasms; in 2001–2003 malignant neoplasms of the prostate was the fifth leading cause of death among males, with 91 deaths. An analysis of mortality data for 2003 showed that there were 69 deaths from malignant neoplasms among males, compared to 49 deaths among females. The most common site for malignant neoplasm in males was the prostate. Cardiac-related conditions have steadily increased in Saint Vincent and the Grenadines over the years; in 2004, 1, 205 cases were reported. Chronic obstructive pulmonary diseases were responsible for 23 deaths in males and 5 deaths in females. In 2003, 40 males died from cirrhosis of the liver, alcoholic cardiomyopathy, alcoholic hepatitis, acute pancreatitis, and gastrointestinal hemorrhage; only 16 females died from these diseases that year.

Data from public health care facilities revealed that injuries from poisoning and other consequences of external causes accounted for 827 visits. Males accounted for 468 (57%) visits and females, for 359 (43%). According to an analysis of clinic visits for noncommunicable diseases in 2003, the age group 15–24 recorded the most visits for soft tissue injuries, with 156 (19%), followed by the 25–34 age group with 149 (18%), and the age group 5–14, with 145 (17%).

Injuries and accidents accounted for 124 deaths in 2001–2003, with homicides accounting for 38.7%, drowning for 24.2%, motor vehicle accidents for 21.8%, and suicides for 16.1%. Between 2001 and 2004, motor vehicle accidents increased from 950 to 1,086. In those same years, 134 males were seriously injured, compared to 56 females. In 2003, external causes ranked among the ten leading causes of death in the country for the first time.

FIGURE 1. Population structure, by age and sex, Saint Vincent and the Grenadines, 1990 and 2005.



According to clinic data, external causes represented 0.6% of the reason for clinic visits in 1998, increasing to 2.2% in 2003. Police reports indicate that 63 homicides and 4,470 criminal assaults were reported in 2001–2004.

The surveillance system reported 2,500 annual visits for asthma to the emergency room at Kingstown General Hospital in 1998 and 1999, with 45% of these visits from children under 10 years of age. In 2001–2005, asthma continued to be a major reason for clinic visits.

Total life expectancy at birth was 71.6 years in 2005. Life expectancy for males decreased from 69.5 years in 1991 to 68.8 years in 2005; life expectancy for females remained constant at 74.4 years in that same period.

The total fertility rate in 1996–2000 was 2.3 children per woman and 2.2 children per woman by 2005. The fertility rate in 2001 was 2.4; it was 2.1 in 2005. The crude birth rate averaged 19.0 per 1,000 population in 2000–2001, while the crude death rate averaged 6.8.

Infant mortality ranged from 18.5 per 1,000 live births to 17.3 between 2001 and 2004. Three maternal deaths were recorded between 2001 and 2004.

HEALTH OF POPULATION GROUPS

Children under 5 Years Old

There were 4,094 live births between 2001 and 2002; 241 infants were low-birthweight babies (<2,500 g). Perinatal mortality in 1998–2002 registered an annual average of 20 deaths per 1,000 live births. The leading causes of death in this age group were extreme prematurity, birth asphyxia, and respiratory distress syndrome of the newborn. According to data from the maternity unit of Milton Cato Memorial Hospital, in 2002, 34.4% of admissions to the special care nursery were as a result of prematurity. Other leading morbidities seen at the nursery included sepsis, jaundice, and respiratory distress syndrome. According to the communicable disease data for 2001 and 2002, acute respiratory infections in the age group under 1 year old accounted for approximately 11% of total reported cases of acute respiratory infections.

Among the 1–4-year-old age group, poisonings were responsible for 47% (37) of reported accidents in 2002; falls were responsible for 32% (25).

A total of 20,324 child health visits were made at the various health centers. Most visits were for growth monitoring (19,606) followed by immunization (10,073); the remainder were for referrals and other health problems. There were 212 (18% of the total) clinic visits for asthma in the age group 1–4 years old. Visits for child health complications accounted for 214 visits, or 1% of total health visits made—problems included malnutrition, respiratory infections, diarrheal diseases, and injuries. In 2003, immunization coverage for BCG, polio, DPT, hepatitis B, and *Haemophilus influenzae* type b was 100%; coverage for MMR was 90.7%. In 2003, there were two reported cases of *Haemophilus influenzae* meningitis in the age group 1–4 years old; both were females.

Children 5–9 Years Old

The age group 5–9 years old accounted for 10.8% of the total population in 2001. Mortality in this age group is generally low. In 2001, there were 8 deaths: 5 males and 3 females. According to data for 2002, there were 6 deaths, 3 males and 3 females. Causes of death for males were unspecified drowning (1) and exposure to

electric current (2). The causes of death in females were malignant neoplasm of the kidney (1) and victims of an avalanche (2).

Health center data showed that in 2002–2004, visual problems, impacted cerumen, dental caries, viral illnesses, and tinea were the most common health problems encountered. Each child is examined upon entering and leaving primary school as a public health requirement.

In 2002, asthma workshops were conducted for 37 primary and secondary schools as well as for preschool teachers.

Adolescents 10–14 and 15–19 Years Old

This age group represented 21.1% of the population in 2001, almost equally distributed among the sexes. In 2001, the Pan American Health Organization conducted a national sample survey on healthy lifestyles among adolescents 10–14 years old and found that 11% of respondents admitted to using inhalants, 85% to using marijuana, 7% to smoking cigarettes, and 3% to using alcohol weekly or daily. Nutritional data from 2002 indicated that 87.8% of youth in this age group met criteria for normal nutrition, 8.6% were obese, and 3.6% were moderately undernourished. The Ministry of Health's National Family Planning Unit reported that of the 8,166 live births in 2000–2003, 1,704 (20%) were to teenage mothers. Disaggregated by age group, the 10–14-year-old cohort accounted for 48 live births, while the 15–19-year-old age group accounted for 1, 606 live births. Of the 782 diagnosed cases of HIV in 1984–2004, 48 (61%) were among persons aged 10–19 years old. Ten new cases were diagnosed in 2002, six in 2003, and five in 2004.

In 2000–2002, there were 10 deaths in the age group 10–14 years old. Causes of death included tuberculosis of the lungs, infantile cerebral palsy, secondary malignant neoplasm of the brain, and septicemia.

Adults 20–59 Years Old

This age group accounted for almost 50% of the population in 2001. Of total births (7,166) in 2000–2003, 91% (6,525) were to women 20–44 years old. Twenty-five percent of these women made their first visit to prenatal clinics prior to the 16th week of gestation. Trained personnel at Milton Cato Memorial Hospital delivered 99% of births. According to 2002 maternal and child health data, of the estimated 4,130 pregnancies in 1996–2002, 4.5% (92) had gestational diabetes and 4.2% (85) had hypertension in pregnancy.

In 2002, 9.2% (184) of women had anemia during pregnancy, 5.1% (102) had pre-eclampsia, 16.5% (341) had pregnancy with abortive outcome, 4.1% (85) were Rh-negative, 10.5% (216) gave birth to premature infants, 7.1% (143) had hypertensive disease during pregnancy, and 24.1% (709) gave birth by cesarean section. That same year, there were 141 low-birthweight babies, representing 11.8% of total births. There were 9,023 visits to prenatal clinics in 2002, excluding those made to private health care providers. That same year, there were 1,264 new family planning acceptors, 55% of them opting for oral contraceptives and 38% for injectables; six persons chose sterilization and two were fitted with intrauterine devices. In 2004, the number of family planning acceptors increased to 10,888. There is little data on the extent of condom use, but it is estimated that in 2004, the Government spent roughly US$ 3,875 on free condom distribution. In 2002, 2,926 Pap smears were done; 7.4% showed abnormal results.

Clinic records show that there were 220 obese persons in 2002, with women accounting for 85% (188 cases). Persons 35–45 years old had the most records of obesity (58%), followed by those aged 25–34 years (26%) and those 45–54 (22%). Persons aged 55–64 years old accounted for 3,432 visits for hypertension, and persons 45–54, for 1,927.

Older Adults 60 Years Old and Older

This age group represented approximately 7.2% of the population in 2001. Persons 60 years old and older always have accounted for the greatest number of attendances for hypertension, which in 2003 reached 5,774 (48.7% of all attendances). Arthritis ranked as the fourth leading reason for clinic visits for this group in 2003, accounting for 3,632 visits, or 8.9% of total visits. Arthritis has always predominantly affected persons 65 years old and older: in 2003, this group accounted for 2,199 visits (60.5% of all visits for arthritis), with women accounting for 75% of the group's visits. Cardiac problems were the primary reason for clinic visits among those 65 years and older. The age group 70 years old and older recorded the most skin cancers, accounting for 41% of the total number reported in 2003.

The leading problems facing this population group include chronic diseases, loneliness, and abuse. Saint Vincent and the Grenadines has a need for psychosocial support services for the elderly. Care for the elderly is provided through the public and private health care systems through a Government-operated home and a publicly operated program that provides care and support to the elderly in their homes. There are also four privately operated homes for the elderly. Two recently commissioned centers cater to the elderly's daytime needs and allow for older persons to interact socially with one another. There are 161 available beds for the elderly; 106 of them are in the public system.

The Family

Ninety percent of households were located on mainland Saint Vincent. In 2003, the mean household size was 3.5 persons, compared with 3.9 persons in 1991. In 2001, 85.2% of the households lived in undivided private houses (single dwelling units that comprise the entire building). The number of persons living in "combined business and dwelling" structures increased by 26.3% between 1991 and 2001. There were 30,518 households (one or

more persons living together) in 2001, compared with 27,002 in 1991, an increase of 13.0%; 12,136 households were headed by females, and 39% of them (4,723) were headed by women not in union. During 2001–2004, 35 children lost one or both parents to HIV/AIDS.

Morbidity data for 2003 made special note of spousal abuse—83 males and 49 females were affected. According to an analysis of clinic visits for noncommunicable diseases in Saint Vincent and the Grenadines in 2003, there were 83 clinic visits due to domestic violence recorded in 2003, with males accounting for 49 (59%) and females accounting for 34 (41%).

Workers

Work-related injuries contribute substantially to the country's morbidity profile; some workplaces are unsafe or provide unhealthy working environments. Occupational conditions fall outside the ambit of the Ministry of Health and the Environment, however.

HEALTH CONDITIONS AND PROBLEMS

Communicable Diseases

Vector-borne Diseases

Dengue fever and **leptospirosis** continued to be endemic in the country. National household and Breteau indices of *Aedes aegypti* breeding were 19.84% and 43.57%, respectively, in 2000; both figures were above internationally accepted levels. The introduction of West Nile virus and the rare Chikungunya virus are of real concern to the country's vector control unit.

Vaccine-preventable Diseases

Saint Vincent and the Grenadines vaccinates against **measles**, **mumps**, **rubella**, **diphtheria**, **pertussis**, **tetanus**, **poliomyelitis**, **tuberculosis**, and **hepatitis b**. In 2003, the pentavalent vaccine was introduced into the immunization program. Although vaccination against ***Haemophilus influenzae* type B** is not routinely offered in the country, private sector physicians administer it on request. Of the approximately 2,000 to 3,000 annual blood donors, 2% tested positive to hepatitis b in 2001–2003.

Saint Vincent and the Grenadines continued to enjoy a steady supply of vaccines, syringes, and needles, and the country's vaccination coverage has remained between 85% and 100% over the years.

Intestinal Infectious Diseases

There were 1,744 cases of **gastroenteritis** reported in 2002 and 4,122 in 2003, more than a twofold increase. The disease was listed as the second most common communicable disease in 2004 and 2003, accounting for 11.3% and 12.3% of cases, respectively.

Helminthiasis diagnoses in the primary care setting are usually based on clinical suspicion, rather than laboratory confirmation. Of the 4,281 stool samples screened for 2003 and 2004, there were 144 positive samples: 47 cases of ***E. coli***, 30 cases of **hookworm**, 2 cases of **trichuris**, 34 cases of **strongyloides**, 2 cases of **ascaris**, and 29 cases of **giardia**. In 2003, there were 60 cases of **foodborne illness** reported from the accident and emergency department. Fifteen cases of foodborne illness were reported in 2004; 13 were confirmed.

Pathology laboratory surveillance reports for 2004 identified three cases of **salmonellosis**, two cases of **shigellosis**, and one case of **campylobacterosis**. In 2003, there were four cases of salmonella, two of shigella, and two of campylobacter.

Chronic Communicable Diseases

There were 65 new cases of **tuberculosis** between 2000 and 2004. Each year in that period, the majority of cases were in males; in 2003, 13 of the 14 cases were in males. Diagnosed cases ranged between 15 and 80 years old. In the same period, there were 14 deaths from tuberculosis. Saint Vincent and the Grenadines has adopted the Directly Observed Treatment, Short-course (DOTS) strategy to reduce the number of tuberculosis cases since the Milton Cato Memorial Hospital began to offer the treatment.

The last case of **leprosy** (Hansen's disease) was reported in 2000.

Acute Respiratory Infections

There were 16,374 cases of acute respiratory infections reported in 2003 and 11,030 in 2004. In this two-year period, acute respiratory infections represented roughly half of all reported communicable diseases, which is a matter of grave concern for the country. In 2004, there were 4,654 cases of acute respiratory infections in children under 5 years old, 40% of the total number of acute respiratory infections in the population; the male-to-female ratio was 1.2:1.

HIV/AIDS

There were 60 cases of HIV infection in 2002 and 81 in 2003. In 2004, there were 108 confirmed new cases of HIV infection—the highest incidence since the first case was reported; males accounted for 64 of the cases (59%). There were 40 cases of AIDS, 26 in males (65%) and 14 in females (35%). There were 57 cases of AIDS in 2003.

Vertical transmission accounted for two cases in 2004; there were no new cases in 2003. A formalized system of care and treatment to persons with HIV/AIDS offering antiretrovirals was put in place in August 2003; the program was bolstered in 2005. In 2004, 14 new clients began antiretroviral treatment, adding to the 22 persons (12 males and 10 females) who had been participating since 2003; as of this writing, there were 25 males and 11 females enrolled in the program. The availability of the care-and-treatment program, as well as voluntary HIV counseling and testing programs, may be responsible for more people volunteer-

ing to be tested and for more persons accessing treatment centers for managing their infection.

The 17 fewer AIDS cases between 2003 and 2004 may be attributed to the introduction of antiretrovirals treatment and the bolstering of the national HIV/AIDS program through the project jointly funded by the Global Fund to Fight AIDS, Tuberculosis, and Malaria and by the World Bank.

Zoonoses

There were 53 cases of **leptospirosis** in 2000–2004, most of them in males. The mean age of those affected was 34 years.

NONCOMMUNICABLE DISEASES

Metabolic and Nutritional Diseases

Anemia accounted for 531 clinic visits in 2004, representing 1.4% of all noncommunicable diseases clinic visits. The female-to-male ratio was 4:1: females accounted for 429 visits (80.8%) and males, for 102 (19.2%).

The age group 65 years old and older is the most affected by metabolic and nutritional diseases, accounting for 82 visits for these diseases (15.4%), followed by the 15–24 age group with 79 (14.8%), and the age group 5–14 with 78 (14.6%). In 2003–2004 there were more than 500 annual visits for metabolic nutritional diseases.

Diabetes accounted for 4,070 visits, or 11% of total clinic visits, in 2002; males accounted for 23% and females for 77%.

Obesity accounted for 271 visits in 2004. Most visits were among persons aged 25–44 years, accounting for 120 visits, or 44.2%. Results of the 2004 Food and Agriculture Organization/Caribbean Food and Nutrition Institute study of 143 adolescents and adults aged 11–65 years old showed a widespread use of foods high in fats, salt, and sugar. On the other hand, foods rich in fiber and antioxidants were not consumed widely, especially among the younger age group. The study also pointed out that persons who reported daily consumption of vegetables also were vegetable producers. Estimates of national food availability indicated that there was a trend in an oversupply of per capita energy, increasing from 2,540 kcal/day in 1999 to 2,642 in 2000, and then decreasing slightly to 2,609 in 2001. The corresponding figures for protein and fat were 68.1g and 74.9g, respectively, in 2000 to 66.7 g and 73.0g in 2001.

Cardiovascular Diseases

Hypertension accounted for 29% of all clinic visits in 2000. Visits for hypertension rose slightly in 2002, accounting for 30% of all clinic visits (11,082). Males represented 26% of these visits and females, 74%. The age group 65 years old and older accounted for half of all visits for hypertension, followed by the age group 55–64 years, which accounted for 20%.

Cardiovascular diseases accounted for 1,869 (4.6%) clinic visits and ranked as the fifth leading reason for health visits in 2004. That same year, the age group 65 years old and older—the age group with the highest number of visits for cardiovascular diseases—accounted for 1,273 visits (73.5% of all visits). Records at the Milton Cato Memorial Hospital, the main referral hospital, show that in 2000–2003 there were 1,025 admissions for cardiovascular diseases: 237 for myocardial infarction, 279 for chronic ischemic heart disease, and 509 for hypertensive heart disease.

Malignant Neoplasms

Between 2000 and 2003, there were 554 deaths from malignant neoplasms. The six most common sites were: the prostate, 118 (21%); upper respiratory organs and lungs, 56 (10%); upper gastrointestinal tract, 47 (8.0%); female breast, 39 (7.0%); bowel, 30 (5.4%); and cervix, 23 (4.1%). Cervical cancer is the most common form of malignant neoplasm in females.

OTHER HEALTH PROBLEMS OR CONDITIONS

Mental Health and Addictions

During 2002–2004, there were 1,437 admissions to the mental hospital, 282 of them (19.6%) were new cases. According to a breakdown by diagnosis, drug-induced psychoses was the leading cause of admission, followed by schizophrenia, acute psychoses, mental retardation, and manic depressive disorders. Drug users accounted for 85 admissions (40%).

Oral Health

Oral health services are offered through a network of public and private health care facilities. The government operates ten public health dental health clinics that offer primarily preventive care. In 2002, public dental health clinics cared for 15,921 patients. The frequency of procedures performed by the department were: extractions (52%); preventive care (18%), restorations (18%), and other (12%). There is no school dental health program.

RESPONSE OF THE HEALTH SECTOR

Health Policies and Plans

In developing Saint Vincent and the Grenadines' national health policies and strategies, consideration was given to the country's specific and unique local health conditions; to relatively unchanging societal and policy circumstances, such as economic and political organization; to cultural factors, such as the society's and specific groups' values and commitments; and to external factors that influence the country, such as regional and international agreements.

Caring for the Poor, Caring for the Environment

Squatting—the practice of establishing unregulated settlements on state-owned land—is widespread in Saint Vincent and the Grenadines, and it poses major public health and environmental challenges for the country. An estimated 16,000 squatters—more than one in seven of the country's citizens—survive mostly through subsistence farming. As a rule, in these settlements housing is substandard, and the communities are overcrowded and prone to vermin and rodent infestations, which lead to high rates of communicable diseases. The squatters usually have no access to potable water or sanitary facilities. By far the most promising endeavor is embodied in the Government's Integrated Forest Management and Development Program (IFMDP), an ambitious multisectoral effort involving various ministries. The program aims to encourage squatters to relocate to areas that provide better access to health services and to apply better farming practices.

Health Strategies and Programs

In 2004, the Ministry of Health and the Environment began to prepare the 2006–2011 national strategic health plan which is guided by local, regional, and international policies the Government has suscribed to. First, the Government relies on the principle of primary health care as the main mechanism to improve the population's quality of life. Second, in a regional context, priority areas set in the Caribbean Cooperation in Health Initiative will be adhered to. Thirdly, the results of the analysis of the country's Essential Public Health Functions will guide the direction the health sector will pursue during the period of the plan. In addition, the regional initiative for extending social protection in health will facilitate a greater collaboration with the National Insurance Service as a way to address universal access to programs and services. In 2001, Parliament passed the National Economic and Social Development Council Act; the Council finalized the Interim Poverty Reduction Strategy paper in 2003.

Saint Vincent and the Grenadines became a signatory of the WHO Framework Convention on Tobacco Control in 2004, an international treaty that promotes state parties to enact or amend public health laws to control the burden of disease from tobacco use and prevent the initiation of smoking.

Legislation regulating the work of nurse midwives and nursing assistants was amended to incorporate and expand the role and functions of the family nurse practitioner. In 2002, the draft legislation requiring the use of seatbelts while riding in automobiles and helmets while riding motorcycles was enacted in 2006. The 2004 pharmacy act gives greater autonomy to pharmacists.

Organization of the Health System

The Ministry of Health is the agency within the Executive Branch charged with providing equitable, good quality, sustainable, and comprehensive primary, secondary, and tertiary health care. The Ministry also must offer health promotion, nutrition, and health education services to the population, as well as protect and preserve the environment and the country's natural resources, through a health service delivery process, the conduct of environmental assessments and research, and the efficient management of available resources.

The Minister operates as the political director; the Permanent Secretary is the administrative leader; and the Chief Medical Officer (CMO) is the technical head. Administrative and technical leaders follow public service rules and regulations. A Health Planner sits within the Ministry of Health and the Environment, although administratively this officer functions under the Ministry of Finance and Planning.

To support this structure a senior management committee has been constituted, involving senior administrative and technical personnel at the Ministry. The committee's primary responsibility is policy development and implementation. The Ministry of Health and the Environment provides primary, secondary, and tertiary services through its 14 programs.

Thirty-nine health centers provide services across nine health districts. Shifts in population have affected the numbers of persons to be served in various districts, resulting in a need to redefine district boundaries.

On average, each health center is equipped to provide services to a catchment population of 2,900 persons, and no person is required to travel more than three miles to access care. Primary health care services available include emergency care, medical care, prenatal and postnatal care, midwifery services, child health services (including immunizations and school health), family planning services, and communicable and noncommunicable disease control. Dental health services are delivered at selected centers and mental health services are offered at all health centers on a visiting basis. Each health center is staffed with a full-time district nurse, a nursing assistant, and a community health aide. Other district health teams—including a district medical officer,

a pharmacist, a nursing supervisor, a family nurse practitioner, an environmental health officer, a family life educator, a social worker, a nutrition officer, and other visiting staff—provide additional support.

Public Health Services

The Government of Saint Vincent and the Grenadines is firmly committed to a program to prevent and control the spread of HIV/AIDS and to alleviate the socioeconomic impact of the disease on the population. A National Strategic Plan was launched in 2001 and a program that will fall under the Ministry of Health and the Environment was budgeted in 2002 expenditure estimates. An updated Plan to be implemented in 2004–2009 includes the following overarching goals: to reduce the incidence of HIV to 0.1% from the current rate of 0.6%; to decrease the case fatality rate of persons living with HIV/AIDS; and to offer support to people living with HIV/AIDS and their families. The Plan targets the following five priority areas: to strengthen intersectoral management, organizational structures, and institutional capacity; to develop, strengthen, and implement prevention and control programs for HIV/AIDS and other sexually transmitted infections with priority given to youth and high-risk or vulnerable groups; to strengthen care, support, and treatment programs for people living with AIDS and their families; to conduct research; and to upgrade surveillance systems. The agencies implementing the Plan include civil society organizations and ministries other than the Ministry of Health.

The response to natural and manmade disasters is the responsibility of the National Disaster Management Organization (NEMO), which includes community disaster committees that are responsible for the response at the community level. Under a World Bank sponsored project, new headquarters for NEMO were constructed, equipped with necessary infrastructure to house an emergency command center. Strategic sea defenses in vulnerable areas have been constructed. All government sectors have developed national disaster plans.

In 2000–2004, the government funded contraceptive distribution at a cost of US$ 89,630.

An assessment of the school feeding program was conducted in 2004 with assistance from the Caribbean Food and Nutrition Institute. An adolescent health and family life survey was conducted in 2002 and a study on how to communicate behavioral change for preventing HIV was carried out in 2003.

Individual Care Services

The 211-bed Milton Cato Memorial Hospital is the country's only acute-care referral hospital in the public sector that provides specialist care in most major areas. The delivery of care is organized into seven departments: accident and emergency, outpatient services, surgery, medicine, operating theatre, pediatric services, and obstetrics/gynecology. Five rural hospitals with a combined 58-bed capacity provide a minimum level of secondary care. There also is a 10-bed acute-care private hospital, the Maryfield.

The Government also operates the 186-bed Mental Health Centre, which provides care to patients with acute and chronic psychiatric problems, and the 106-bed Lewis Punnett Home, which caters to an indigent elderly population. Five private institutions with a combined bed capacity of 55 offer resident care for the elderly.

With the installation of a Coulter Haematology Analyzer® in 2002, blood testing has been streamlined in the country, with turnaround times significantly cut down and the capability to conduct new tests expanded. In addition, the installation of a BD FACSCount™ cytometry instrumentation system in 2003 has allowed the laboratory to effectively handle an increased demand for CD4 testing, which has led to the introduction of antiretroviral treatment for HIV/AIDS, as well as to handle greater demand for routine hematology. The laboratory also has benefited from two information programs, the Rapid Automated Biological Identification System (RABIS) and Portable High-throughput Integrated Laboratory Identification System (PHILIS).

Saint Vincent and the Grenadines participated in a project sponsored by the European Union designed to strengthen medical laboratories in the Caribbean, which has led to a better understanding of the quality of laboratory services in the country and has set the course for achieving standardization and accreditation in the future. Since 2001, histology specimens have been analyzed locally by a resident pathologist.

In 2001, an additional plain-film unit was installed at Milton Cato Memorial Hospital's accident and emergency department.

Health Promotion

In 2001–2005, some public schools adopted healthy school policies, including providing only healthy food choices in the school feeding program or through vendors at the school. Teachers received additional training in physical education so they could make it more enjoyable for students. All the new schools built included facilities for physical education or had such a facility nearby. The health and family life curriculum included topics related to the prevention of noncommunicable diseases. Of 1,620 schoolchildren screened, 20 were referred to the ENT specialist.

A program to reduce drug demand began in 2004; it is designed to build human resources to address the issue of drug abuse, strengthen treatment and rehabilitation capability, raise public awareness about drug abuse and its attendant problems, and develop a strong multisectoral response to prevention.

Human Resources

According to 2005 figures from the Nursing Council's register, there were 398 nurses of varying categories registered. The coun-

try has access to two schools of nursing: the Government-run School of Nursing and the Kingstown Medical College, which is based in Grenada. In 2003, the School of Nursing strengthened its registered nurse program to accommodate increased enrollment and help offset nurse shortages due to nurses migrating out of Saint Vincent and the Grenadines. Table 1 shows the number and ratio of health professionals in the country.

Health Supplies

The Central Pharmacy and the pharmaceutical services are charged with procuring, preparing, dispensing, and distributing all drugs in the national health system, as well as procuring and distributing through medical stores the medical and other supplies that facilitate the health system's proper functioning.

The bulk of pharmaceuticals are purchased through the Organization of Eastern Caribbean States' Pharmaceutical Procurement Services (formerly the Eastern Caribbean Drug Service). According to the Procurement Services' Regional Formulary and Therapeutics Manual Saint Vincent's Ministry of Health and the Environment can purchase drugs from 76 categories. There are 39 district pharmacies that supply drugs to the public health system. There also are 13 registered private pharmacies and 31 registered pharmacists, 19 of whom are employed by the Ministry.

TABLE 1. Number and ratio of health professionals, by category, Saint Vincent and the Grenadines, 2001–2005.

Health professional category	Number	Ratio per 10,000 population
Physicians	101	9.5
Registered nurses	228	21.5
Nursing assistants	124	11.7
Nursing auxiliaries	115	10.8
Laboratory technicians	13	1.2
Pharmacists	36	3.4
Environmental officers	14	1.3
Psychiatrists	2	0.19
Psychologists	1	0.09
Dentists	13	1.2
Counselors	5	0.5
Nutrition officers	12	1.1
Health educators	7	0.66

Health Sector Expenditures and Financing

The Ministry of Health and the Environment collaborates with other ministries and departments in the pursuit of its health care goals and objectives.

Financing from the Government is based on annual budgetary proposals submitted to the Ministry of Finance and Planning and on a program of work derived from strategic and operational planning processes. According to Government estimates, the total health budget for 2000–2004 ranged from US$ 18.6 million to US$ 21.7 million, representing an annual average of roughly 12% of the national budget.

Information on the cost of medications for noncommunicable diseases in the public health system is provided by the report of the audit of the country's pharmaceutical supply. Medications for diabetes cost US$ 407,154 and medications for hypertension cost US$ 230,032 in 2004; the two combined represented 20% of the annual pharmaceutical budget in the public system. According to information from the Family Nurse Practitioner and asthma initiative coordinator, the most recent medication costs for asthma are for 2002; they totaled US$ 21,283.90.

Technical Cooperation and External Financing

Technical and financial assistance is obtained from international organizations such as the World Health Organization, the World Bank, the Pan American Health Organization, the European Union, the Caribbean Epidemiology Center, and the Organization of Eastern Caribbean States; from individual governments such as the governments of France, Japan, and Taiwan; and from private institutions such as St. Georges University.

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SURINAME


Paramaribo
1
2
3
4
Guyana
Nickerie
Coronie
Marowijne
Para
Brokopondo
French Guiana
Sipaliwini
Brazil
1 Paramaribo
2 Saramacca
3 Wanica
4 Commewijne
0 25 50 Miles

Suriname is located on the northeast coast of South America, and covers 163,820 km^2. In the north, it borders the Atlantic Ocean; its neighbors to the east, south, and west are French Guiana, Brazil, and Guyana, respectively. The topography encompasses a narrow coastal plain that extends from east to west, consisting mainly of a savanna belt and a highland tropical rainforest.

GENERAL CONTEXT AND HEALTH DETERMINANTS

The land is divided into urban, rural, and interior areas. The urban area, comprising the capital city of Paramaribo, the city of Nieuw Nickerie in the west, and parts of the district of Wanica, covers 0.4% of the country's land surface and is inhabited by 59.4% of the total population. The coastal rural area is inhabited by 29.6% of the population. Both urban and rural areas are located along the coast, covering 10% of the land surface, with a population density of 526.5 inhabitants per km^2. The remote, heavily rainforested interior to the south, making up the remaining 90% of the country, is home to only 11% of the total population, with a density of 0.2 person per km^2. The interior's inhabitants are largely Maroons (descendants of runaway slaves) and indigenous tribal settlements of 100 to 4,000 persons, who have little or no basic sanitation, piped water, or electricity.

Social, Political, and Economic Determinants

The Government of Suriname accords high priority to sustainable development, poverty reduction, and improvement of the living conditions of its population within a framework of democracy and the preservation of human rights. Formerly a Dutch colony, Suriname gained independence in 1975. The political system (*1*) may be characterized as a constitutional democracy. The last elections were held in 2005. The present administration has majority support in the 51-seat National Assembly from a coalition of political parties that represent ethnic groups more than political platforms and ideologies. Below the national level there are 10 District Councils, and at the sub-district level there are 62 Resort Councils.

GDP growth for most of the 2001–2005 period remained high and reached 7.8% in 2004. Mining, agriculture, and manufacturing are the most important sectors in Suriname's economy, with good prospects for the construction and tourism sectors. Bauxite mining and oil extraction continue to account for more than 90% of total foreign exchange earnings while agriculture, forestry, and fishing accounted for 7.5% of the GDP in 2002. The tourism industry is still in an early stage of development, yet shows encouraging signs of growth: in 2004, there were 137,000 tourist arrivals, compared to 85,000 in 2003.

National statistics indicate that there is a very large informal sector accounting for at least 20% of GDP and composed of remittances from family members living abroad, especially in the Netherlands, and various types of small-scale gold mining and logging operations. The Head of the Judicial Section of the Police Corps indicated in 2000 that narcotics trafficking had become a major challenge and estimated that approximately 26,000 kg of cocaine are shipped to Europe each year, with a street value of slightly over US$ 1 billion. Of this, he estimated that some US$ 300 million stayed in Suriname. The country's location and remote, sparsely populated interior contributed to its desirability as an international transit point for drug trafficking (*2*).

The country has experienced a significant loss of skilled labor due to emigration. The Netherlands is the country with the highest number of emigrants from Suriname, with 321,000 living there in 2004 (*1*) and an average migration of 3,300 Surinamese per year to the country (*3*). The external migration of skilled professionals affects several areas: in the health sector, there is a very high out-migration of nurses.

According to the local definition of poverty, a person or household is considered poor if there are insufficient means to provide for basic human needs, particularly as regards food. Figures for the average poverty lines for the second quarter of 2005 for Paramaribo and Wanica show that the poverty line for a household consisting of one adult would be US$ 135 per month and that of one adult and two children, US$ 281 per month. The General Bureau of Statistics estimates that in 2000, between 60% and 75% of the population lived below this poverty line. Women living in the interior, women without a partner, youth, and older adults are the groups most affected by poverty. Women overall are poorer than men (*4*), due to persistent gender inequality in the household and in society. A lack of access to employment in the formal sector forces women into informal economic activities, which are often characterized by poor working conditions, health risks, irregular

working hours, and low income (*5*). After the public sector, private sector agriculture is the second largest productive activity of women. The majority of rural families own and work small plots of land, with women and children usually working without pay. Poverty is also common among youth and children below 15 years of age, with 61.6% in this group living in poverty. The prevalence of poverty declines gradually with age, reaching 46.3% in the 45–60-year-old age group. However, of the population over 60 years of age, 52.1% live below the poverty line because the current pension system does not effectively meet the financial needs of retired persons. Although the majority of poor live in urban areas, the sectors living in the most extreme poverty are found in the country's interior (*6*). However, this latter sector is gradually migrating to Paramaribo; many are women and the majority are poorly educated and possess only minimal job skills (*7*).

The urban unemployment rate decreased from 14% in 2001 to 8% in 2004 (*8*). The national unemployment rate is 9.5%, with the unemployment rate for youth ages 15–24 standing at 15.8% for males and 33.4% for females in 2004. While women are disadvantaged by unequal political, social, and economic opportunities, males have poorer school performance and are more frequently involved in negative social and economic activities.

In 2000, the national average school attendance of children was 77.5%, ranging from a high of 80.9% for Paramaribo District to a low of 51.7% for Sipaliwini District in the interior. Low teacher salaries have led to a shortage of trained teachers in the schools, limiting access to a quality education. The overall literacy rate of the population age 15 years and older is 86%; the highest rate (92%) is found among the population aged 15–34. Literacy rates decline with age, dropping to 63% for the population age 65 years old and older. Differences in literacy between sexes increase with age, with an equal gender distribution in the age group 15–24 years, but with a difference of 19.3% higher for males than females at aged 65 and older. Overall literacy is 93% in urban areas (94% for males, 92% for females), 87% in the rural districts (89% for males and 85% for females), and 51% in the interior (66% for males and 44% for females) (*9*).

Despite institutionalized programs of the Government and initiatives promoted by nongovernmental organizations (NGOs), gender disparities persist. The proportion of seats held by women in National Parliament is 20% (*10*), and in general there are nearly twice as many men as women holding decision-making positions and other types of high level employment. Women's advancement in the academic world is not reflected in the levels of their participation in the nonpolitical public sector or private enterprise.

Violence against children and women is a major political and public health issue. In the first half of 2005, there were 139 cases of child sexual abuse and 59 cases of cruelty to children reported to police. Children of Creole and Maroon descent represent two-thirds of these cases. There is no formal national registration system for domestic violence. Suriname is both a transit and destination country for human trafficking, especially for the purpose of sexual exploitation such as commercial sex work in the mining camps in the country's interior (*1*).

Policies and legal frameworks to ensure rights-based, sustainable human development are inadequate, obsolete, or absent, as is the systemic response to violence, particularly against women and children. Also, there are no appropriate measures to ensure equal access to a basic education and health and other social services that would thereby target social investments to those most in need and empower communities with multiple disadvantages. There is also a lack of data collection that would more clearly reveal the disparities and provide the evidence base for policy development and management.

The health sector in Suriname is currently confronted with a series of serious obstacles. These result from macroeconomic problems, the emigration of qualified personnel to other countries, shortages of essential drugs, physical deterioration of health services infrastructure, and health care deficiencies, particularly at the secondary level.

There is inequitable access to water and sanitation services. For every urban dweller without water service, there are two inhabitants in the country's interior without this service. The distribution of sanitation services is even more inequitable: for every one urban dweller without these services, there are four rural dwellers and 17 dwellers in the interior without access to them. The distribution patterns for drinking water quantity and quality are similar. Mercury pollution from small-scale gold mining activities in the interior, excessive pesticide use on agricultural lands in rural coastal areas, and the widespread practice of dumping sewage into street ditches and canals all pose a serious threat to drinking water quality. The only treatment for urban public water supplies consists of aeration and rapid filtration to remove iron and manganese. In the interior, piped drinking water is often sourced from rivers and distributed untreated. The distribution systems are compromised because of poor maintenance, water theft, and leakages, resulting in pump breakdowns, low pressure, intermittent supply, and high potential for contamination.

Surface water quality in urban as well as rural areas is under severe stress due to poor sanitary practices, a high groundwater table, and industrial and mining activities. The aquifer providing water to the population of Paramaribo is expected to be depleted in 15 to 20 years. The situation in the interior is considerably worse than in other regions. Improvements of the water system are under way that are expected to increase water service capacity to approximately 5,680 m^3 per hour, while the demand when the improvements are complete is projected to be 4,430 m^3 per hour.

Littering by the general public contributes to flooding during rainy periods. Polyethylene terephthalate (PET) bottles, household garbage, and even semi-industrial refuse are often thrown into ditches and canals, resulting in massive blockages of sewer and drainage systems.

Demographics, Mortality and Morbidity

According to the 2004 census (*11*), the total population of Suriname was 492,829 (50.3% men and 49.7% women), a small population for the country's geographical size. The ethnic composition is as follows: 27.4% Hindustani, 17.7% Creole, 14.7% Maroon, 14.6% Javanese, 12.5% mixed, 3.7% Amerindian, 1.8% Chinese, 0.6% Caucasian, and 7.2% other/not reported. The principal religions are Christianity (40.7%), Hinduism (19.9%), and Islam (13.5%).

In 1980, the population was 355,240 (*11*). With an absolute growth of 137,589, the population has grown by 38.7% in 24 years. The male-to-female ratio both in 1980 and 2004 was 1:1. In 2004, 10.5% of the population (51,837) was under age 5 and 39% was under age 20. The number of Maroons has more than doubled, from 35,838 in 1972 to 72,553 in 2005. The overall annual growth rate remained at 0.9% (*12*), based on the natural positive growth of the population (6,618 persons in 2001 and 5,773 persons in 2004), with a consistent negative growth migration balance between 2001 and 2004. The population structure of Suriname in 1990 and 2005, by age and sex, is presented in Figure 1.

Ninety-five percent of all births are registered (*9*). The total annual number of births ranged from 9,052 to 10,188 for the 2001–2004 period. Crude birth rates ranged from 19.4 to 22.3 births per 1,000 population annually during that same time. An ongoing problem exists regarding the underreporting of live births due to legal regulations of the Surinamese Civil Code, resulting in less accurate estimates of the infant and perinatal death rates (*13*).

Approximately 85% of all deaths that are registered on the Civil Registry are certified. The total number of registered deaths showed a minor increase from 3,099 in 2001 to 3,319 in 2004.

Crude death rates remained stable at approximately seven deaths per 1,000 population between 2001 and 2004. Life expectancy at birth was 69.7 years in 2005 (66.6 years for males and 73.0 for females). The total fertility rate was an average of 2.0 births per woman in 2004.

Officially registered external migration figures are 2.5 times higher than immigration figures. Immigrants arrived mainly from the Netherlands, China, Guyana, and French Guiana (63%, 13%, 6%, and 4%, respectively, in 2004). As the vast borders of rainforest do not permit reliable controls, there is also a considerable amount of illegal immigration from these countries. Emigration is also underreported. The principal destination country for external migration is the Netherlands; others included the Netherlands Antilles, French Guiana, and the United States (60%, 18%, 12%, and 4%, respectively, in 2004). Internal migration rates have remained fairly stable, with major migration to urban areas.

Table 1 presents the 10 leading causes of mortality in Suriname in rank order for 2004, based on 85% of certified deaths.

Between 2001 and 2004, the largest proportion of deaths occurred between the ages of 65 and 79 years, representing an average of 32% of all deaths. During this time period, the percentage of deaths by gender remained constant at 57% for males and 43% for females (*3*). Until age 25, there is an almost equal percentage of mortality between the sexes. Between 25 and 39 years of age, the number of deaths among males is 2.5 times higher than among females. The principal cause of death for the population aged 1–29 years is external causes; for the 30–39-year-old age group, it is AIDS, and after age 40, it is cardiovascular diseases.

FIGURE 1. Population structure, by age and sex, Suriname, 1990 and 2005.

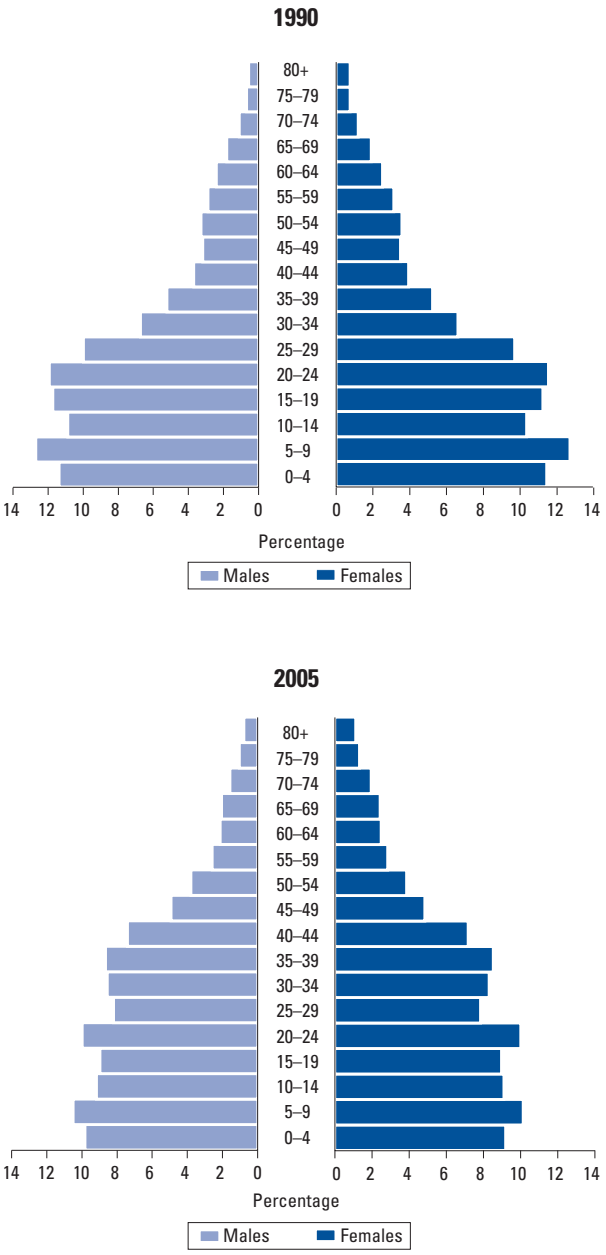

TABLE 1. Number of deaths, proportional mortality, and rates for leading causes of mortality, Suriname, 2004.

Rank	Disease category	Number	% total[a]	Cumulative %	Rate[b]
1	Cerebrovascular diseases	456	15.8	15.8	92.5
2	Certain conditions originating in the perinatal period	244	8.5	24.3	49.5
3	Ischemic heart diseases	209	7.3	31.6	42.4
4	HIV disease	152	5.3	36.8	30.8
5	Diabetes mellitus	133	4.6	41.4	27.0
6	Events of undetermined intent	111	3.9	45.3	22.5
7	Heart failure and complications	67	2.3	47.6	13.6
8	Intentional self-harm (suicide)	65	2.3	49.9	13.2
9	Neoplasms of the uterus	31	1.1	51.0	12.7
10	Neoplasms of the prostate	30	1.0	52.0	12.1

[a]Total deaths defined by cause.
[b]Rate per 100,000 population.

External causes remain the principal cause of mortality among males until age 29, while for females external causes remain the principal cause until age 25. AIDS becomes the principal cause of death among females from the age of 25 to 39. For males in this age group, AIDS is the second leading cause, although the number of deaths caused by AIDS is 2.4 times higher among men. For the group aged 50 years and older, cardiovascular diseases ranked first, followed by malignant neoplasms.

In 2003, 68.1% of all deaths occurred among the 25–44-year-old age group. In 2004, this percentage declined to 53.4%, while for the 45–49-year-old age group, the percentage doubled from 8% in 2003 to 16.5% in 2004.

Among malignant neoplasms, those of the digestive organs ranked highest, accounting for 17.2% of all malignant neoplasms, followed by those of the cervix (9.8%), lung (6.1%), prostate (12.1%), and breast (9.0%). When considering malignant neoplasms of the reproductive organs as a whole, in 2004 these comprised 22.5% of all malignant neoplasms among females and 12.1% among males.

Mortality due to diabetes mellitus accounted for 5% of the 10 leading causes of death in 2004. Forty-eight percent of all deaths due to diabetes mellitus that year occurred among the population of Hindustani descent, and 35% of all deaths due to cardiovascular diseases were among this population group. Thirty-one percent of all cardiovascular deaths were among those of Creole descent, as were 25% of all deaths due to diabetes mellitus. The populations of Creole and Maroon descent accounted for 57% and 21%, respectively, of all HIV/AIDS-related deaths.

HEALTH OF POPULATION GROUPS

Children under 5 Years Old

According to the 2004 census, there were 9,872 children under 1 year of age, making up 2% of the total population. The number of live births was 9,717 in 2001 and 9,062 in 2004. Approximately 90% of all births were attended by skilled health personnel, with the remaining 10% by traditional birth attendants in the interior. Of those births attended by skilled health personnel, about 90% occurred in hospitals and 10% in primary health care facilities. The number of stillbirths increased from 202 in 2001 to 243 in 2004. Most stillbirths are due to conditions originating in the perinatal period (48%), followed by obstetric complications (22%), short gestation and low birthweight (15%), complications of diseases of the mother (9%), and congenital malformations (4%). Although virtually all pregnant women receive some type of prenatal care and 91% of all pregnant women visit the prenatal clinics at least once (*9*), nearly 20% of these women do not have their first visit until the second trimester of their pregnancy.

The infant mortality rate averaged 19 deaths per 1,000 live births during the 2000–2004 period, but dropped as low as 16 deaths per 1,000 live births in 2001. During the years 1990 to 1994, the infant mortality rate was consistently around 21 deaths per 1,000 live births. The number of deaths in the under-1-year-old group increased from 154 in 2001 to 174 in 2004. Major causes of death in this group were intestinal infections, followed by respiratory diseases and congenital malformations. The perinatal mortality rate increased from 29.2 deaths per 1,000 deliveries in 2001 to 39.3 in 2004. There was also a noticeable increase in the early neonatal mortality rate from 9.2 deaths per 1,000 live births in 2001 to 13.6 in 2004. The late neonatal mortality rate was 1.6 deaths per 1,000 live births in 2001 and 1.1 in 2004. The postneonatal mortality rate was 5.0 deaths per 1,000 live births in 2001 and 4.5 in 2004. Most early neonatal deaths are due to complications of short gestation and low birthweight (47%), followed by intrauterine hypoxia and asphyxia (17%), complications of diseases of the mother (16%), congenital malformations (9%), and obstetric complications (6%). Only 13% of children under 4 months of age are exclusively breast-fed.

The major causes of death in children 1 to 4 years old were gastrointestinal infections, followed by respiratory infections and external causes.

About 13.0% of children under age 5 in Suriname are underweight, and 2.1% are severely underweight. Approximately 10% of children are stunted, and 6.5% are wasted. There are noticeable differences between the prevalence of malnutrition in urban, rural, and interior areas. Children in the interior are the group most at risk for chronic malnutrition. The disparity is mainly related to the geographical inaccessibility of the country's interior; many parts are reachable only via air or water, creating formidable obstacles for the availability and distribution of goods and services. More than half of the children hospitalized due to malnutrition are under age 1. Seventy-five percent of children ages 1–4 who are hospitalized for malnutrition are of Maroon and Creole descent. The majority of hospitalized children, equally boys and girls, are from Paramaribo South, an area known for its socially deprived living conditions and the migration of families from the interior, and from the interior Sipaliwini and Brokopondo districts (*14*).

The marked differences in living conditions found in the interior and the urban and rural regions are also reflected in child morbidity data. Clinic visits in the interior show that children aged 0–4 are the most frequently returning visitors (61%); the most frequently treated conditions among this age group are respiratory infections (59.9%), diarrhea (23.1%), and malaria (15%).

Malaria is a common cause of school absenteeism and one of the leading causes of mortality in the 0–5-year-old age group. Preventive measures, especially the use of mosquito nets treated with insecticide, continue to be implemented. Insecticide-impregnated mosquito nets are used by 72% of children between the ages of 0 and 4 when sleeping. Poor sanitary conditions and personal hygiene practices, as well as limited access to safe water sources, especially during dry season, are the leading contributors to the high incidence of diarrhea in Suriname's interior. The Suriname Multiple Indicator Cluster Survey (MICS) study conducted in 2000 (*9*) revealed that only 24.2% of children with diarrhea received oral rehydration therapy. In many cases, medical attendance is sought too late, resulting in preventable deaths.

Children 5–9 Years Old

According to the 2004 census, the population 5 to 9 years of age totaled 49,409 persons, representing 10% of the total population. The principal causes of death in this age group are external causes, cardiovascular diseases, and intestinal infections. All schoolchildren are required to have a vaccination card in order to enter elementary school, usually at the age of 6 years.

Adolescents 10–14 and 15–19 Years Old

According to the 2004 census, the population segment ages 10 to 14 years consisted of 45,143 persons, or 9.1% of the total population. Leading causes of death in this age group are external causes, followed by malignant neoplasms and cardiovascular diseases. In 2002, the average number of decayed, missing, or filled teeth at age 12 was 2.7.

The population aged 15 to 19 years in 2004 was 46,508 persons, or 9.4% of the total population. The leading cause of death in this age group is external causes. From 2002 to 2004, there were three deaths due to HIV/AIDS each year among this group.

The establishment of reproductive health services targeted to adolescents is a priority need. For the 2001–2004 period, an average of 16.7% of the total live births were to mothers between 15 and 17 years of age; 4.3% of all live births were to girls between the ages of 10 and 14. Most of these occurred in the Paramaribo and Wanica districts.

The prevalence of tobacco consumption among the population ages 13 to 15 years was 11% for girls and 20% for boys in 2004 (*15*).

Adults 20–59 Years Old

According to the 2004 census, the adult population between the ages of 20 and 59 stood at 253,039 persons, representing 51.3% of the total population. Within this broad age group, external causes are the leading cause of death, followed by HIV/AIDS, cardiovascular diseases, and neoplasms. Beginning at age 40, diabetes makes its first appearance on the list of the 10 leading causes of mortality; cardiovascular diseases also grow in importance as external causes descend in the rankings.

Maternal mortality decreased from 15 deaths in 2001 to 8 in 2004. The main causes of maternal death during 2001–2004 were hemorrhage (31%), preeclampsia (29%), and sepsis (17%); in most cases the health facility was lacking the necessary supplies for a timely response to the complication (*16*). The cesarean section rate for 2001 was 12.7%, and for 2002 it was 13.3%. Abortion is illegal but widely practiced, particularly by women under the age of 24. Estimates of 8,000–10,000 abortions performed annually are based in part on sample surveys among adolescents (*17*). These outcomes indicate an unmet need in family planning. Abortions are performed upon request and are generally socially tolerated. The illegality yet tolerance for and frequent use of abortion are the result of a lack of official mechanisms and/or structures to regulate abortion practices and further increase the risks for unsafe practices and financial obstacles, particularly among poor women with a higher risk of unwanted pregnancies and more barriers to education (*18*).

The mortality rate due to external causes was 62 per 100,000 population in 2004. Of all external causes, events of undetermined intent had the highest percentage (23%), followed by intentional self-harm (13%). The 20–49-year-old age group accounted for nearly 55% of all deaths due to these causes (75% males and 25% females).

Older Adults 60 Years Old and Older

According to the 2004 census, the population segment aged 60 and older consisted of 42,060 persons, or 8.5% of the total population. The leading causes of death in this age group are cerebrovascular and cardiovascular diseases, followed by malignant neoplasms, diabetes mellitus, external causes, acute respiratory infections, and chronic lower respiratory infections.

The Family

An estimated 40% of all households consist of three to four members, with 62.2% of children living with both parents, 22% living with their mother only although their father is alive, and 7% living with neither parent although both are alive (*9*). The family structure in the interior is quite different from that found in urban and rural areas along the coast: less than 50% of children live with both parents, 34% live with their mother, and 12% live with neither parent. Cultural standards and expectations dominate decisions with regard to reproductive health issues in the interior. Generally, contraceptive use in rural areas and the interior is low, because producing children in these regions is highly valued. Contraceptive use among Maroon women is low (between 6% and 17%). On average, Maroon boys become sexually active between the ages of 10 and 13 and girls initiate sexual experiences between the ages of 13 and 15 (*19*).

The oral contraceptive pill is the most popular method of birth control, with 70% of couples practicing contraception choosing the pill. Past studies have found that around 40% of women with a partner use contraceptives (*20*). According to the 2000 MICS study, contraceptive use in urban areas was 51%, while in the coastal rural areas it was 45%, and in the interior it was 7.1% (*9*).

Workers

A rapid assessment of child labor conducted in 2002 by the International Labor Organization (*21*) indicates that 2% of all children between the ages of 4 and 14 years were economically active. Fifty-four percent of children in this group worked more than 15 hours a week and were involved in activities related to fishing, vending, agriculture, gold digging, construction, and boat transport. Some children, especially females, were involved in domestic work and trade (described in the study as "vending a variety of products"). None of the children interviewed reported being involved in commercial sexual activity, the production or sale of illicit drugs, or any form of human trafficking. However, the study notes sporadic reports by NGOs of children being involved in prostitution and becoming victims of sexual exploitation. There were no specific findings to suggest that children were exposed to violence in their work environment, although health concerns were raised related to their exposure to sand, dust, and mercury vapor and the carrying of heavy loads.

There are an increasing number of non-Surinamese workers in the gold mining and other natural exploitation sectors in the interior, including an estimated 30,000 *garimpeiros* (gold diggers from Brazil). Mercury poisoning and malaria and sylvatic yellow fever transmission, as well as HIV/AIDS and other sexually transmitted infections, are serious health threats for miners and local communities. Additionally, traditional community life has undergone sociocultural disruption due to the commercial sex industry, the gold economy, drug use and related crime, and degradation of the natural environment.

Border Groups

The border population along the eastern border, consisting mainly of Maroons, has frequent interaction with the population living in French Guiana across the Marowijne River. It is not uncommon for groups belonging to the same family to be living on both sides of the border, separated only by the river. Women on the Surinamese side prefer to deliver their children in French Guiana because health care there is perceived to be of higher quality. At the northwestern border with Guyana in Nickerie District, as with the French Guiana–Suriname border, related families often live on both sides of the Corentyne River and often cross over. However, the influx of Guyanese nationals into Suriname is much larger than that of French Guianese nationals.

HEALTH CONDITIONS AND PROBLEMS

COMMUNICABLE DISEASES

Vector-borne Diseases

The two most prominent communicable diseases are **dengue** in the coastal area and **malaria** in the interior. Morbidity data on dengue come principally from hospital surveillance. Suspected cases of dengue are also reported by telephone surveillance. The number of suspected cases decreased from 516 in 2001 (of which 64 cases were confirmed) to 309 suspected cases in 2004 (of which 56 were confirmed). As of 2001, dengue serology studies isolated all 4 subtypes. From 2001 to 2004, most hospitalized suspected cases of dengue were among individuals of Hindustani descent (30%), followed by those of Creole (20%) and Javanese descent (15%). The majority of cases came from the densely populated areas of Paramaribo and Wanica, and from less-populated Saramacca. Incidence was equally distributed among the various age groups. The male-to-female ratio of reported cases of dengue was 1:2.

Malaria is an important public health problem in Suriname's interior, where the natural habitat of the vector, *Anopheles darlingi*, is found. In 2000, 13,216 cases of malaria were reported. After the introduction of new treatment policies in 2004, case

numbers declined to 8,560 in 2004 and 9,000 (preliminary estimate) in 2005. Half of the new cases of malaria occurred in children under the age of 15 years. No transmission in the coastal area has been reported. Incidence is highest in the Suriname–French Guiana border area along the Marowijne River. Gold mining activities by Brazilian *garimpeiros* and frequent border-crossings by the population have contributed to the increase of malaria in that area. Gold mining activities have spread to new areas in the interior as well, leading to the emergence of malaria in regions where previous transmission seldom occurred. The incidence rate of malaria per 100,000 population was estimated at 3,500 in 2001 and 1,700 in 2004. The national incidence is most probably higher. There is underreporting due to patients receiving clinical treatment without laboratory confirmation and non-reporting by private physicians and traditional medicine practitioners. The number of hospitalized suspected malaria cases was 436 in 2001, with 50% of the cases being confirmed, and 248 in 2004, with 65% being confirmed. Of these confirmed cases, death occurred in 21 cases, or 9.7% in 2001, and 8 cases, or 4.9% in 2004. The male-to-female ratio of hospitalization was 1:2.1 in 2001 and 1:2.5 in 2004.

Chloroquine-resistant malaria due to *Plasmodium falciparum* is widespread, but quinine resistance has not yet been established. In 2003, Suriname introduced malaria treatment with Coartem, resulting in a less severe course of the disease and a decrease in the mortality rate. For several years now, the use of bed nets has been promoted throughout the interior. They are produced, treated with insecticide, and distributed by local women's groups.

Yellow fever has not been reported in Suriname over the past decades. But in view of the disease's reemergence on the South American continent, vaccination activities for yellow fever have been intensified. The mass yellow fever vaccination campaign that started in 2000 was finalized in 2002. Persons traveling to Brazil and French Guiana are vaccinated for yellow fever regularly, as this is mandatory for these countries. Yellow fever serology tests yielded a negative result for six suspected cases in 2003 and four in 2004.

Vaccine-preventable Diseases

During the review period there were five reported **tetanus** cases (excluding neonatal tetanus): two cases each in 2001 and 2002, and one in 2003. There were no reported cases of **measles**, **diphtheria**, or **congenital rubella syndrome** between 2001 and 2005.

The geographic disparities between the urban, rural, and interior regions are also reflected in the immunization status of children. The frequent movement of migrant groups between the interior and Paramaribo and between Suriname and French Guiana places an additional burden on monitoring the vaccination status of children in these groups.

National coverage increased from 82% for measles, mumps, and rubella vaccine (MMR); 68% for the final dose of diphtheria, pertussis, and tetanus vaccine (DPT3); and 65% for three doses of the live oral poliovirus (OPV3) in 2001 to 86.4% for MMR, 84.9% for DPT3, and 83.5% for OPV3 in 2004. In 2005, Suriname introduced the pentavalent vaccine (diphtheria, pertussis, tetanus, hepatitis B, and *Haemophilus influenzae* type B) in the national vaccination schedule for infants. Routine tetanus vaccination of pregnant women was also initiated in 2005, together with yellow fever vaccination for children ages 12–23 months who live in the country's interior.

Intestinal Infectious Diseases

The number of laboratory-confirmed ***salmonella* infections** was 48 cases in 2001 and 104 in 2004. Of these cases, 7 persons (15%) died in 2001, and 14 persons (13%) died in 2004. Children under age 5 (and especially those under age 1) represent the highest percentage of deaths due to *salmonella* infection. Adults aged 60 and older are the group most frequently hospitalized for diarrheal diseases. Creoles had the highest laboratory-confirmed incidence of *salmonella* infection in 2001 and 2003 among ethnic groups, while Hindustanis had the highest incidence in 2002 and 2004. The number of laboratory-confirmed ***shigella* infections** increased from 91 cases in 2001 to 114 cases in 2003, then dropped to 92 cases in 2004. Of the 398 cases of laboratory-confirmed shigellosis during the 2001–2004 period, 7.3% died. Of those who died, 41% were 60 years old or older and 38% were younger than 5 years.

Between 2001 and 2004, there were 25 foodborne outbreaks. In two of these outbreaks *salmonella* infection was laboratory-confirmed, in another outbreak *shigella* infection was laboratory-confirmed, while in the rest, laboratory analyses were unable to identify the responsible microorganism.

Chronic Communicable Diseases

Between 2001 and 2004, the annual incidence of leprosy averaged 1.1 new cases per 10,000 population. The number of new cases of **tuberculosis** (TB) ranged from 80 to 101 annually between 2001 and 2004, equal to annual incidence rates ranging from 18 to 21 new cases per 100,000 population. Pulmonary or respiratory TB is the most frequent type reported, comprising 84% of all TB cases. The indigenous population experienced the highest TB incidence rate.

HIV/TB coinfection ranged from nine out of 80 new TB cases, or 11% of all new TB cases in 2001, to 17 coinfections out of 101 new TB cases, or 17%, in 2004. By far the highest HIV/TB coinfection rate was among the 25–44-year-old age group. Sixty-six percent of treatment outcomes for TB were successful. The Directly Observed Treatment, Short Course (DOTS) strategy has not yet been adopted.

HIV/AIDS and Other Sexually Transmitted Infections

The first case of HIV/AIDS was reported in Suriname in 1983; by 2004 the cumulative number of reported HIV/AIDS cases was 3,032. Newly reported HIV-positive tested cases increased from 255 in 2001 to 524 in 2004. Since 2003, HIV testing has been included in routine prenatal care.

In 2001, persons who were tested for HIV in the 30–34-year-old age group had the highest count of first-time HIV-positive tests of any five-year age group, with 19 positives. In 2002 and 2004, those who were tested for HIV in the 34–39-year-old age group had the highest count of first-time HIV-positive tests of any five-year age group, with 37 and 41 positives, respectively. In 2003, the highest counts of HIV-positive tests occurred among the 20–24-year-old age group, with 42 positives. In 2004, there were 28 HIV-positive tests among children in the 0–4-year-old age group.

In 2005, the HIV prevalence rate among the population aged 15–49 years was estimated at 1.9% (*22*). In the same year, 610 persons testing HIV-positive for the first time were reported. The gender distribution of new HIV-positive tested cases has shifted from more males than females prior to 2004 to more females than males since 2004 (*18*). Of newly reported HIV-positive cases, 60% to 80% are between the ages of 15 and 49 years. Transmission of HIV occurs principally through heterosexual contacts. In 2005, there was one case of HIV-positive transmission through donated blood. Prevention of mother-to-child-transmission services began in 2003. Each year there are approximately 10,000 pregnancies, and in 2005 almost 70% of all pregnant women were screened. Between 2001 and 2004, a total of 2,456 persons with suspected HIV/AIDS cases were hospitalized; of these 1,400 (57%) were confirmed as being HIV-positive.

The increase of HIV-positive cases with a coinfection of *salmonella* also contributes to the overall increase of salmonellosis and the increase of death due to HIV and *salmonella* coinfection.

In 2001, 14% of deaths due to *salmonella* infections occurred among individuals who were HIV-positive; in 2004, 50% of *salmonella* infection-related deaths were among individuals with HIV-positive status. There has also been an annual increase in the number of shigellosis patients with HIV-positive status, but coinfectivity with *shigella* has led to a lower case fatality than *salmonella*-HIV coinfections.

Zoonoses

No cases of **plague** and **human rabies** were reported during the 2001–2005 review period.

The incidence of **leptospirosis** can be linked to the incidence of rainfall, with the majority of cases occurring during the rainy season (May to August) and in the country's most densely populated districts. From 2001 to 2004, the average number of hospitalized suspected leptospirosis cases was 149.5 per year, or 12.5 per month, and the average number of confirmed leptospirosis cases was 13.8 per year, or one per month. The male-to-female ratio for hospitalization for leptospirosis is 1:1.95, with the Hindustani and Creole population groups being the ones most frequently hospitalized for this disease.

Meningitis

During the reporting period, the number of hospitalizations for meningitis was 69 cases in 2001 and 72 cases in 2004. The reported incidence rate was 15.2 new cases of hospitalized meningitis per 100,000 population in 2001 and 14.6 per 100,000 population in 2004. The male-to-female ratio for cases of hospitalizations for meningitis was 1:2.1 in 2001 and 1:2.3 in 2004. Fifty-five percent of all cases of hospitalized meningitis were among children under age 5, with the greatest proportion of these under-5 cases being younger than 1 year of age.

NONCOMMUNICABLE DISEASES

Metabolic and Nutritional Diseases

Counts of hospitalizations for malnutrition were 138 in 2001 and 125 in 2004. Of these cases, six (4.4%) resulted in death in 2001, and 11 (8.8%) died in 2004. Children aged 0–4 years accounted for 96% of hospitalizations. The male-to-female ratio was 1:1. Maroons and Creoles were the ethnic groups most frequently hospitalized for malnutrition, followed by those of Amerindian and mixed descent.

Cardiovascular Diseases

Recent studies show that approximately 50% of all persons aged 60 years or older suffer from a chronic disease. The leading condition is hypertensive diseases, followed by diabetes mellitus and a combination of both conditions.

Diseases of the circulatory system, including cardiovascular, hypertensive, and cerebrovascular diseases, have held their position as the leading cause of mortality for a number of years; during the 2001–2004 period, they accounted for 29% of all deaths in Suriname.

Malignant Neoplasms

The highest mortality rates due to neoplasms were caused by neoplasms of the uterus for females, with a rate of 12.7 deaths per 100,000 females, and neoplasms of the prostate for males, with a rate of 12.1 deaths per 100,000 males.

OTHER HEALTH PROBLEMS OR ISSUES

Disasters

Suriname did not experience any major natural disaster during the 2001–2005 period.

Environmental Pollution

The impact of gold mining activities in Suriname's interior, including persistent mercury contamination of the soil, water, and air, as well as other disturbances to the terrestrial and aquatic ecosystems, are recognized by environment authorities as being substantial and difficult to reverse (*23*).

RESPONSE OF THE HEALTH SYSTEM

Health Policies and Plans

The health sector occupies a key position in the Suriname Government's overall social program. Article 36 of the national Constitution (*24*) specifies that health is the right of every citizen and that the Government's role is to promote general health care through systematic improvement of living and work conditions and the provision of information to protect health. Availability of and accessibility to health care for the entire population is therefore of crucial importance.

The first phase (1998–2003) of the project "Support for Health Sector Reform" consisted of a series of studies on health sector supply and demand, with the goal of introducing a sector-wide approach as part of the national macroeconomic development strategy. Based on the results, in May 2004, the Sector Plan for Health Care 2004–2008 was approved by the President's Cabinet of Ministers and implementation began. The second phase embodies the principles of efficiency, equity, and quality and focuses on the improvement of primary health care performance, increased access to medicines, and strengthening of the Ministry of Health. The strategies over the 2004–2008 period are: (1) strengthening primary health care and prevention, (2) improving hospital care efficiency and quality, (3) promoting financial access to health care, (4) controlling health care costs, (5) strengthening health support systems, (6) human resources development, and (7) improving and safeguarding quality throughout the health system.

With its stated goal as being "to achieve an integrated and sustainable health care system of good quality and effectiveness, accessible for everyone, and a continuous improvement of health for the whole population," the Plan serves as a guiding document in the development of the national health system. Within this context, the 2004 census provides crucial data and information for assessing the population health status and providing input for health planning over the four-year period.

Suriname signed the Stockholm Convention on Persistent Organic Pollutants (POPs) in 2002, but had already started banning the use of POPs, particularly polychlorinated biphenyls, as long ago as 1971. At present, there is no national policy to ensure the environmentally sound management of persistent toxic substances and wastes. There is little awareness on the part of the private sector and general public of the dangers posed by the unsafe use and disposal of chemicals, whether household, automotive, or industrial.

Health Strategies and Programs

The Government priority of poverty reduction has been translated into several programs managed by the Ministry of Social Affairs and Housing. One target group is the elderly. Various provisions have been implemented that especially support older adults living in poverty, including a subsidy to long-term living facilities, financial support to the needy to cover the cost of living, free medical services to the poor and near-poor, and monthly payments to those with a free medical service card.

The Ministry of Social Affairs and Housing is the institution responsible for certifying those living in poverty or near-poverty and ensuring that the economically disadvantaged population has access to subsidized health care. Approximately 30% of the population qualifies for government-subsidized health care services that are mostly provided by government hospitals and clinics.

Organization of the Health System

The principal tasks of the Ministry of Health are policy-making, evaluation, coordination, setting of standards and protocols, and quality assurance, with overall responsibility for ensuring the availability, accessibility, and affordability of health care.

The health care system's core institutions are the Ministry of Health's Central Office, the Bureau of Public Health, and the Inspectorate. The Central Office and the Inspectorate function at the level of global health planning and standard-setting, inspection, and monitoring, while the Bureau of Public Health is responsible for program development.

The public providers of primary health care are the Regional Health Services (RGD), a state foundation, and the Medical Mission (MM), an NGO. Both institutions are subsidized by the Government. The RGD provides services to the poor and near-poor in the coastal area through 50 clinics, serving approximately 100,000 patients of generally lower socioeconomic means. The MM provides curative and preventive health services to the interior Maroon and Amerindian population through 50 health centers and health posts, serving around 50,000 patients.

The Government also runs vertical programs targeting special populations or conditions, such as sexually transmitted infections, leprosy, youth dental care, malaria, and immunizations.

The private providers of primary health care are the general practitioners (GPs) and some NGOs permitted by the Government to provide specific health care services, such as the Foundation for Family Planning (*Stichting Lobi*), an affiliate of the International Planned Parenthood Federation specializing in reproductive health issues. Large private-sector firms provide health care for their employees and families through their own

clinics. Secondary care is provided through five general hospitals, all located in the coastal area. There are three public and two private hospitals and one psychiatric center. The private Diakonessen Hospital, through an agreement with the MM, provides care to patients from the interior.

Medical specialists provide both outpatient and inpatient care. Private physicians are highly centralized in the capital. Secondary care is likewise centralized, since four of the general hospitals and the psychiatric center are located in the capital and one in the rural coastal district of Nickerie.

The contribution of the private sector is at the level of service provider; the majority of its activities are curative, while the government-subsidized RGD and MM provide both preventive and curative health care services. Private participation in the health system is also through larger companies, which employ their own general practitioners. Others have a list of contracted general practitioners from which the employee may select one. Consultation of GPs is required for referral to a specialist or hospital.

Health care is financed through public and private sources: the Government provides the largest share (44%), followed by households (20%), donors (18%), and companies (2%). Distribution of these payments by level of care is primary health care (34%), secondary care (55%), and other (11%).

Approximately 315,000 persons (64% of the total population) are covered by health insurance; another 177,000 persons (36%) are not insured, or do not know if they are.

The distribution of health insurance coverage includes the State Health Insurance Fund, known as SZF (21%), the Ministry of Social Affairs and Housing (24%), the Medical Mission (6%), company medical plans (10%), private health insurance companies (3%), out-of-pocket (19%), other (1%), and no insurance/not known (16%).

Public Health Services

Control of vaccine-preventable diseases is coordinated by the Bureau of Public Health's National Immunization Program that collaborates with the Epidemiology Unit in case investigations.

The RGD's school health program includes growth development monitoring, visual screening, and vaccination of all primary-level schoolchildren in the coastal area. Cases of suspected health problems or special conditions are referred to a physician. The Bureau of Public Health's health education department provides public health information related to the prevention of communicable diseases and the promotion of breast-feeding practices and healthy lifestyles.

Malaria control activities are supervised by the Malaria Board, which developed a multisectoral Roll Back Malaria strategy supported by international donors. Vector control activities, including spraying and promotion of the use of bed nets treated with insecticide, are carried out by the Bureau of Public Health and MM.

The Ministry of Health's National Health Information System (NHIS) Unit is responsible for official national health data. Most of the health information reaches the NHIS Unit through hospital registrations and reports of the Bureau of Public Health, RGD, MM, and professional health associations.

Communicable diseases surveillance is conducted through weekly hospital and sentinel surveillance, and, occasionally, through physicians and outbreak reporting. Hospital surveillance focuses on dengue, leptospirosis, shigellosis, *salmonella* infection, and malnutrition, while the telephone sentinel system reports on gastroenteritis, rash and fever, upper respiratory tract infections, and sexually transmitted diseases. Serotyping is done at the Ministry of Health's Central Laboratory. Data on malignant neoplasms is provided by the Pathology Laboratory.

The Bureau of Public Health's Epidemiology Unit also requests data for known communicable diseases of public health importance from such institutions as the Dermatology Clinic, the TB Clinic, and the National Blood Bank, and presents this information on a regular basis to the Caribbean Epidemiology Center (CAREC). Currently, there is no noncommunicable diseases surveillance system in the country.

Suriname's environmental institutional framework is based on three entities utilizing intersectoral coordinating mechanisms. The National Environmental Council (*Nationale Milieuraad*) is a policy-making body in the Office of the President. It is charged with developing overall environmental policies for the President's consideration, as well as advising and guiding the National Institute for the Environment and Development in Suriname (*Nationaal Instituut voor Milieu en Ontwikkeling*, or NIMOS) in setting priorities for environmental action. NIMOS functions as the Council's operational arm. NIMOS and the Council work together with the Inter-ministerial Advisory Commission (IMAC), which disseminates environmental information among other key government ministries and sectors with responsibilities and activities in this area.

Regulations to control the quality of the environment have been mandated to NIMOS, while the Bureau of Public Health oversees environmental health quality control activities.

Approximately 73% of the population has access to safe drinking water: 92.6% in urban areas, 66.6% in coastal rural areas, and 20% in the interior (*9*). Coverage of piped water supply varies significantly by region. Ninety-one percent of the urban population uses drinking water that is piped into their dwelling or yard. In the rural areas, 65% use piped water, whereas in the interior only 18% have access to this type of source. In rural areas, the second-most important source of drinking water is rainwater, while in the interior some 60% of residents use river or stream water and the rest collect rainwater. Drinking water is provided by two state-owned water suppliers. Five private companies provide drinking water to village populations near their operations. The piped water is treated and thus potable.

Addressing Inequities in the Interior

One in ten Surinamese, most of them indigenous peoples and Maroons (descendants of African slaves), live in the country's interior. A lack of electricity, difficulties in transportation, and scanty communications infrastructure make it difficult to supply goods and services to those living in this inaccessible region. Grievous inequities in terms of socio-economic development, health status, and access to health care exist between the inhabitants of the interior and those living on the coast, including:

- only 18% of households in the interior have piped water in their homes, and only 31% have sanitary excreta disposal services;
- women in the interior are among the poorest groups in the country;
- one in five Maroon deaths are HIV/AIDS-related;
- children there are at the highest risk for chronic malnutrition; and
- fewer than half of all children in the interior live with both their parents and one in eight live with neither parent.

The Ministry of Health, working through the Medical Mission, provides curative and preventive health care services free of charge to residents of the interior, operating 57 health centers and health posts serving some 60,000 people.

Eighty-eight percent of households have sanitary excreta disposal facilities (99.1% in urban areas, 98.3% in coastal rural areas, and 30.5% in the interior). The most common facilities in urban and rural areas are flush toilets connected to a septic tank.

Responsibility for sewage management and wastewater disposal is shared by the Ministry of Public Works' Sewer and Drain Division, the Bureau of Public Health's Environmental Control Division, and the Ministry of Regional Development, which provides logistical support.

The Ministry of Public Works is responsible for collecting and disposing of garbage and other wastes. Indiscriminate dumping sites are very common in Paramaribo and throughout the coastal and rural areas. Since 2002, a medical waste incinerator has served the hospitals in Paramaribo, while clinics in the coastal area and the interior use low-cost drum incinerators.

Limited waste recycling activities are carried out. Polyethylene terephthalate (PET) bottles are recycled, and the shredded materials are added to reinforce bricks used in the construction industry.

The Bureau of Public Health has a mandate to control air quality. Its inspection activities focus on small-scale entrepreneurs such as backyard industries and automotive paint and repair shops. However, inspection technicians require more training in these activities. All gasoline sold in Suriname is lead-free. Multinational mining companies in Suriname adhere, for the most part, to dust emission policies and guidelines set at their corporate headquarters.

The Bureau of Public Health is responsible for food protection and control, including quality analysis through its laboratory, as well as the inspection of restaurants, food processing plants, and public and private sanitary systems, including the disposal of solid waste and sewage. A food safety program, focusing on the development of food handling and processing protocols, is being implemented. Food aid programs for children of low resource households are carried out by the Ministry of Social Affairs and Housing and by NGOs in selected elementary schools in the coastal area.

Although the Labor Inspectorate of the Ministry of Labor, Technology, and the Environment performs occupational health inspections, these are limited to registered entities; economic activities in the informal sector are beyond the scope of these inspections. Recent studies indicate that low radioactive waste handling and storage do not pose significant public health problems.

A draft national disaster plan addressing both natural and human-made disasters has been recently prepared; the health sector has not yet developed its own plan.

In 2001, the completion of the National Strategic Plan on HIV/AIDS and the availability of two grants from the Global Fund to Fight AIDS, Tuberculosis, and Malaria significantly enhanced Suriname's capacity to develop a comprehensive response to HIV/AIDS during the review period. The Plan outlines the targets, strategies, and activities for the 2004–2008 period. Specific targets toward achieving the Millennium Development Goals include a 25% reduction in the number of new HIV infections in the 15–24-year-old age group and a 25% reduction in the number of HIV-positive pregnant women. Measures currently being implemented are the expansion of the prevention of mother-to-child transmission program and intensified prevention programs based on the ABC strategy, which promotes abstinence, faithfulness to partner, and the consistent and correct use of condoms.

Condom availability was increased as part of the strategy. Through the "3 by 5" initiative of the World Health Organization and Joint United Nations Program on HIV/AIDS, whose goal was to provide antiretroviral therapy to three million people in developing countries by the end of 2005, 486 individuals in Suriname, or 15%–20% of the estimated total HIV-positive population, received much-needed medications and treatment. In December 2005, the "Know Your Status" campaign was launched to raise public awareness regarding the importance of HIV testing.

Individual Care Services

Inpatient and ambulatory services are provided by all five hospitals in a variety of specialty services. The public Academic Hospital, which is also a training institution, employs the majority of medical specialists and offers nearly all types of specialty care, some of which are exclusively available at this facility, such as open heart surgery, laparoscopic surgery, orthodontic surgery, pulmonology, and ophthalmology.

There are two emergency medical care units, one in Paramaribo and one in a remote district in the west. The Military Hospital functions as an ambulatory facility for army personnel and their families.

In addition to the laboratories at each of the five hospitals, there are three private laboratories (MyLab, Health Control, and Medilab). The laboratories also offer decentralized services through sample-taking sites.

The National Blood Bank, supervised by the Red Cross, operates exclusively through voluntary blood donations. With 4,844 registered blood donors, 70% of the national demand for 7,000 blood donors is covered. The National Blood Bank supplies all blood for open heart surgery sessions at Academic Hospital, which are now performed on a regular basis.

The National Blood Bank supplies blood products to the country's five hospitals and the Foundation for Renal Dialysis. All blood donations are screened for HIV, HTLV, hepatitis B and C, malaria, and syphilis. Quality control mechanisms for the screening of blood donations for HTLV and HIV have been established through collaboration with the Bureau of Public Health's National Reference Laboratory, CAREC, and the U.S. Centers for Disease Control and Prevention.

Special programs for persons with disabilities are under the coordination of the Ministry of Social Affairs and Housing. Several NGOs have programs for special target groups, including the blind, individuals with hearing impairments, former leprosy patients, children with combined physical and mental disabilities, and older adults diagnosed with Alzheimer's disease.

The Rehabilitation Center, as a subdivision of the Academic Hospital in Paramaribo, provides services to referral patients for the construction of artificial limbs, and physical, occupational, and speech therapy. With a staff of 14 paramedics and medical professionals, the Center registers approximately 6,000 patient visits each year. In 2004, the Center opened a special children's unit under the care of a specialized physiotherapist. The 25 children of the school for the handicapped (*Mytylschool*) have daily access to this unit. The majority received treatment for conditions related to cerebral palsy and muscular dystrophy. The adult patients received treatment principally for conditions related to hemiplegia or amputations.

The Youth Dental Service Foundation is available in the coastal area through dental clinics located in primary schools and RGD clinics with a staff of 70 youth dental care professionals. Children access these services through payment of an annual membership fee. The Foundation also offers private services to adults. After the primary school age, dental care is available only through private firm health insurance or out-of-pocket payment.

The Suriname Psychiatric Center is the only institution providing mental health care in the country. With a staff of 430 (including 270 nursing staff, 6 psychiatrists, and 3 psychologists) and a capacity of 300 beds, the Center currently houses 245 patients. There are 15,000 polyclinic visits per year. The Bed, Bath, and Bread Center serves approximately 50 persons, mostly the homeless population with problems related to drug addiction. There is an association for patients with Alzheimer's disease and their families. The NGO Ypsilon provides support to families of those affected by schizophrenia. Since 2001, there has been a national mental health plan.

The Foundation for Family Planning promotes responsible parenthood and offers family planning methods, fertility counseling, basic infertility testing, and cervical cancer screening. In 2003, the Ministry of Health initiated a United Nations Population Fund/European Union-funded reproductive health project utilizing a rights- and gender-based framework, with the objective of achieving the targets set at the International Conference on Population and Development (Cairo, Egypt, 1994) and the Millennium Development Goals related to sexual and reproductive health.

All Surinamese nationals over the age of 60 are entitled to a monthly financial compensation from the Government under the coordination of the Ministry of Social Affairs and Housing. The gerontology unit at the Bureau of Public Health aims at improving care for the elderly at all levels, including institutional and home care.

Health Promotion

During the period under review, a variety of health promotion activities in the areas of environmental, reproductive, and community health; disease prevention and control; and public health education were initiated and implemented by government entities and NGOs with the support of international development partners. NGOs have played an active role in attaining targeted health outcomes. Examples include the Community Health Development Program implemented by ProHealth and the envi-

ronmental health activities undertaken by the Foundation for a Clean Suriname. The national health-promoting schools committee is a Government-led initiative. The Bureau of Public Health's health education department provides information to the public on the prevention of malaria, dengue, leptospirosis, yellow fever, and other communicable as well as noncommunicable diseases and breast-feeding practices.

In general, there is a growing recognition of the need for intersectoral cooperation. This is best demonstrated in the National Strategic Plan on HIV/AIDS approved by the Government in 2004. Priority areas include coordination; policy formulation; legislation and advocacy; prevention; reduction of stigma and discrimination; treatment, care, and support; and monitoring and evaluation.

Human Resources

The availability of health personnel by category in 2004 is presented in Table 2. General physicians receive training at the University of Suriname's Faculty of Medical Sciences, which has a limited admission of 30 students per year. Registered nurses and nursing assistants are trained at the Central Training Institute for Nurses and Allied Professions (Foundation COVAB). Two hospitals (AZP and St. Vincentius) have internal training courses for nurses. Midwives are trained at one public hospital ('s Lands). The Medical Mission and Youth Dental Services provide internal training for their respective medical and dental assistants. The Skillslab is a training facility for medical and paramedical students.

Registration and certification of physicians, midwives, and pharmacists are regulated and supervised by the Ministry of Health. Physicians are licensed through the Ministry and require permission from the Director of Health for clinical practice. Regional licensing and accreditation are currently under review. There are currently no regulations or statutes for official registration or certification of paramedical professionals.

Health Supplies

The state-owned Drug Supply Company of Suriname (BGVS) is the central purchaser, importer, and producer of drugs and medical supplies for local consumption. Ninety percent of all drugs are imported, and 10% are manufactured internally. BGVS distributes medications on the National Essential Drug List to private and public pharmacies and hospitals and also oversees marketing and quality control. All immunobiologicals and nearly all reagents are imported. All vaccines are obtained through the PAHO Revolving Fund for Vaccine Procurement.

Availability of the medications on the National Essential Drug List is not guaranteed. To compensate for scarcities, hospitals and pharmacies may turn to private importers, resulting in extremely high costs. This negatively affects the accessibility of drugs for those with health insurance through the Ministry of Social Affairs and Housing or SZF. Many drugs are also accessed directly through personal connections outside of Suriname, bypassing proper customs and quality inspection, or through private pharmacies.

All drugs must be approved by the Governmental Committee on Drug Registration, while the Pharmaceutical Inspectorate oversees inspection of pharmaceutical manufacturing and pharmacies.

There are one CT scan unit and two CD4 count units in the country.

There are a total of 1,378 beds (excluding 60 psychiatric care beds) in Suriname, or 2.7 beds per 1,000 population. The average bed occupancy rate is 70%. In 2002, the average length of hospitalization was 7.2 days, including the longer hospitalization stays of social security patients.

TABLE 2. Number and ratio of health personnel, by category, per 10,000 population, Suriname, 2004.

Category	Number	Number/ 10,000 population
General practitioners	295	6.0
Family physicians	225	4.6
General practitioners in hospitals	70	1.4
Medical specialists	105	2.1
Total number of physicians	400	8.2
Dentists	42	0.9
Non-university trained nursing personnel	1,745	35.4
Registered nurses	778	15.8
Midwives	57	1.2

Research and Technological Development in Health

Research projects are funded by international organizations and conducted by the Ministry of Health or other governmental institutions. Most research is limited to conducting surveys on specific health issues, such as malnutrition and mortality, for which current data are required for policy or project development. Training in new technologies and skills for medical and paramedical personnel is also usually sponsored by international entities.

Publications and research reports regarding health and development issues in Suriname are available through the Ministry of Health and the various agencies funding public health projects, including the Pan American Health Organization/World Health Organization (PAHO/WHO).

Health Sector Expenditures and Financing

In 2002, the gross domestic product (GDP) was US$ 879.9 million. GDP per capita was US$ 1,925. The latest available figures on total health expenditure are from 2000, when it was US$ 78,763,778. Total per capita health expenditure was

US$ 180.33, or 9.42% of GDP. In 2002, public health expenditure was US$ 31.7 million and per capita expenditure was US$ 69.40, or 4.97% of GDP. Public and private health care expenditures are nearly equal, with the Government spending about 44% and the private sector (company cost coverage and household out-of-pocket health expenditures) approximately 42%. The remaining 14% comes from external sources (donors). The contribution of the private sector to health care is significant. Out-of-pocket household expenditures are an area of particular concern.

Of total health expenditure for 2000, 55% went to secondary care (public and private hospitals, medical specialists, hospital laboratory and x-ray services, hospital drugs), 34% went to preventive and primary care (Bureau of Public Health, RHS, Medical Mission, private GPs, etc.), while the remaining 11% went to administration, training, and other areas.

The Community Development Fund, United Nations Development Fund GEF (Global Environment Facility) Small Grants Program, Suriname Conservation Foundation, Cordaid, and other NGOS have played a leading role in financially supporting and implementing poverty reduction initiatives. The National Women's Movement is actively involved in initiatives to improve the well-being and living conditions of women in the interior.

Technical Cooperation and External Financing

The principal international development partners working in the health sector are PAHO; the United Nations Development Program; United Nations Population Fund; United Nations Children's Fund; Global Fund to Fight AIDS, Tuberculosis, and Malaria; Inter-American Development Bank; Islamic Development Bank; International Planned Parenthood Foundation; and the European Union. Bilateral donors include the Netherlands, United States, Japan, France, and Germany. Of these, the Dutch Development Cooperation provides by far the largest amount of funding and covers the broadest scope of health-related activities. There is also strong cooperation between local NGOs and Dutch private institutions for development assistance, such as Cordaid.

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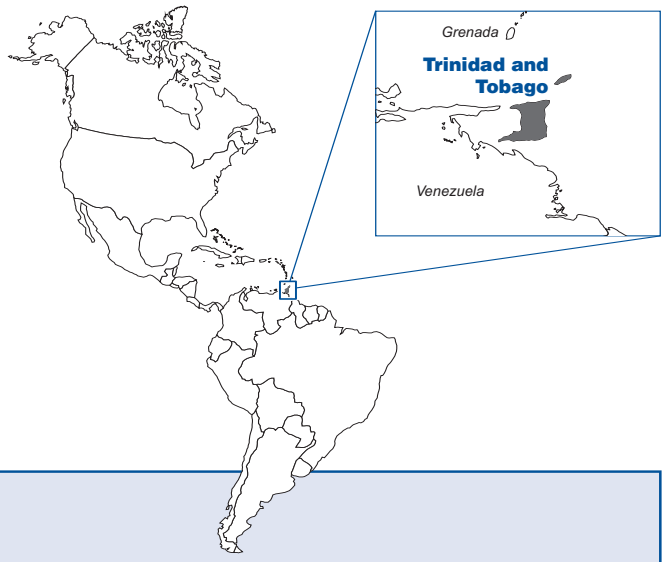
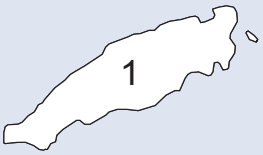
TRINIDAD AND TOBAGO



1 Tobago
2 Diego Martin
3 Tunapuna/Piarco
4 San Juan/Laventille
5 Port of Spain
6 Arima
7 Sangre Grande
8 Chaguanas
9 Couva/Tabaquite/Talparo



10 Rio Claro/Mayaro
11 Princes Town
12 San Fernando
13 Penal/Debe
14 Point Fortin
15 Siparia

Trinidad and Tobago is the second-largest and southernmost territory of the West Indies. It has a total area of 5,128 km^2, of which Trinidad covers 4,828 km^2 and Tobago 300 km^2. The climate is tropical with a dry and rainy season. The capital city of Port of Spain is located on the northwestern coast of Trinidad. According to the 2000 national census, the population was 1,267,366, which represented a 4% increase over the previous decade. Of this total, 96% reside in Trinidad and 4% in Tobago. The male-female ratio is 1:1, and there is a population density of 246 persons/km^2.

GENERAL CONTEXT AND HEALTH DETERMINANTS

The twin-island nation gained independence in 1962 and became a republic within the Commonwealth of Nations in 1976 with a parliamentary democracy and an appointed President. Executive power lies with the elected Prime Minister and designated Cabinet with 23 public ministries. Legislative power rests with the Parliament. The bicameral legislature has an elected House of Representatives and an appointed Senate. The local government system consists of 14 corporations made up of two cities, three boroughs, and nine regional corporations principally responsible for maintenance and hygiene of the general environment and public buildings, including solid waste disposal. Tobago has its own political administrative structure under the executive power of the Tobago House of Assembly Act.

Social, Political, and Economic Determinants

In 2005, the Government of Trinidad and Tobago adopted the Vision 2020 National Strategic Plan to strengthen and support initiatives and increased investment in the social sector. The Plan's development priorities center on promoting effective governance, facilitating competitive economic enterprise, and providing sound infrastructure in an environmentally friendly manner. Vision 2020 focuses on human investment and resources development, as evidenced through a sustained increase in national budgetary allocations to the health (30%) and education (32%) sectors for 2005 (*1*).

The establishment of the CARICOM Caribbean Single Market and Economy in 2006 poses new social challenges that will affect the health and education sectors, due to the resulting rise in the free movement of people, goods, services, and capital between member countries and the need to secure competitive human capital for the global market. Such dynamics also increase the potential risk of disease transmission and require innovative, harmonized, and shared health information and epidemiological surveillance systems and improvements in both the quality and coverage of health services from public and private sources, including coordinated social financing mechanisms.

To achieve the Millennium Development Goals (MDGs) within the context of a stable economy, the Government of Trinidad and Tobago developed, enacted, and implemented plans and policy and legislation reforms and established institutional bodies to expedite achievement of the MDGs. The MDG national assessment report for 2004 indicated that the global partnership for development had increased through anti-dumping and fair trade legislation; access to technology and services had increased; the debt service ratio had declined; and coverage of social assistance programs to vulnerable groups, such as older adults and families living below the poverty line, had increased (*2*, *3*).

The economy has shown robust growth (7% in 2005) with a significant increase in energy exports, a low external debt, and increased external reserves. Core inflation rose on a year-to-year basis, reaching 3% by early 2005 due to rising food costs. Headline inflation has been stationary since 2000 and was approximately 4% in 2004. External current account surplus increased to 14% of GDP in 2004, up from 9% in 2003. Gross national income per capita increased over 2000–2004 by 64%. Real GDP at constant 2000 prices reached 6% in 2005. The dependency ratio was 47% in 2000 and decreased to 41% in 2005. Agricultural production steadily declined over the last decade, with the contribution of the agricultural sector to GDP falling from 2% in 1999 to 0.7% by 2005. This decline is attributed to several factors, such as the closure of the main government-owned sugarcane growing and processing company in 2003 due to a revision of World Trade Organization tariff and trade rules and the removal of European Union sugar subsidies, low wages in the agricultural sector, and

the worldwide rise in oil and gas revenues. As a result, the import value of food rose by 31% between 2002 and 2004 (*4–7*).

The labor force participation rate has remained stable since the 1990s, particularly for males, due to a decrease in the working population group for which qualified laborers and professionals are being imported in the social, productive (such as farm and nonfarm enterprises and manufacturing), and construction areas.

Between 1996 and 2000, women's participation in the labor force remained stable at 38%, with a moderate increase in 2002, predominantly in the public services and informal sectors, and at lower clerical and income levels. Women's average income as a percentage of men's in 2000 was lower in all occupational categories, with the smallest disparity being that of clerks (88% for women vs. men) and the largest being that for legislators and senior officer managers (53%). The youth (15–24 years of age) unemployment rate stood at 25.4% in 2001; female unemployment has been consistently higher than male unemployment over the last three decades.

The Ministry of Education's mission statement focuses on a modernization and renewal of the education system with the institutional target of achieving universal primary education by 2015. The objectives of the Ministry's policy are to improve and increase access to educational opportunities at all levels, achieve and sustain quality in schools, provide student support services, and develop well-articulated human resources. Education is compulsory for children up to 12 years of age; the 2004 MDG national assessment report indicated that education coverage goals had been achieved, even though not all segments of the population were fully benefiting from the available opportunities.

In 2000, a policy was established for universal secondary education in Trinidad and Tobago, and during the review period all students completing primary school and taking the Common Entrance Exam for the 221 existing secondary schools were guaranteed placement. Expenditure in public education as a percentage of GDP was 3% in 2003. The annual Education for All (EFA) Global Monitoring Report for 2005 placed Trinidad and Tobago among the countries with a high (97%) EFA development index, a net enrollment rate in primary education of 94%, a gender-specific EFA development index of 96%, and a survival rate to grade 5 of 98%. The national education network has 917 early childhood education centers, 22% of which are public and focus on children ages 3–5. For the 2002–2003 school year, the pupil-teacher ratio was 12:1. There are 483 primary schools for children ages 5–11, yet 50% of students are considered to be at high risk of missing school, due to the schools' geographical location. Following the introduction of universal secondary education, promotion of primary students into secondary level studies increased by 79% for the 2002–2003 school year; female enrollment was 49%, and the pupil-teacher ratio was 19:1. Secondary education focuses on students ages 12–16; among these, those who pass the advanced proficiency examination continue on to an additional final two years of secondary education; in 2003, female enrollment was 52%, with a pupil-teacher ratio of 20:1. The combined primary, secondary, and tertiary gross enrollment ratio showed a downward trend in the early 1990s due to such socioeconomic factors as structural adjustment, unemployment, and parent migration. The change in the primary and secondary enrollment ratio fluctuated from a negative proportion over 2000–2003 to 28% in primary schools and 1% in secondary schools. With the introduction of universal secondary education in 2000–2001, the declining pattern at the secondary level improved in the advance years of 2002–2003 even though a decline of first entrants was maintained. Females predominated at the secondary and university enrollment levels with a male-female ratio at the latter level of 1:1.5 in 2001.

The estimated literacy rate for 2003 for the population aged 15 and over was 99%, with no significant gender differential. Literacy rates are higher among women of East Indian descent than men of East Indian descent, but lower for women of African descent than men of African descent. Low resource families with children enrolled in public schools receive government subsidies for books, transport, and meals (breakfast and lunch). In 2001, the Government of Trinidad and Tobago initiated the "dollar-to-dollar" program as a way to subsidize tertiary education by matching parents' local tuition fees; the 2005 national budget widened the scope by committing to provide free local first-degree tertiary education for nationals (*8–10*).

The situation of males poses challenges for achievement of the MDGs due to poor retention in schools and increased mortality from HIV/AIDS, external causes, violence, and crime. The Ministry of Community Development, Culture, and Gender Affairs, in conjunction with an Inter-ministerial Committee and the participation of the National Council of Women in an advisory role, promotes the Government of Trinidad and Tobago policy in support of gender and development. An active movement comprised of nongovernmental and community-based organizations supports the advancement of women in the country together with an ad hoc committee that supports women in the production and trade sectors. The Tobago House of Assembly has also established a Gender Division with a similar advocacy role as that of the various entities working together in Trinidad. The percentage of seats held in Parliament by women increased from 11 to 19 between 2000 and 2004; in 2002, the first female was elected by the Senate to become its President (*11*).

Key issues related to health are evident in the number of reports on serious criminal and violent events (traffic accidents excluded), ranging from 17,134 in 2000 to 16,387 in 2004 and 11,289 as of August 2005. The National Gender Policy addressing domestic violence is in formulation, together with a central registry for domestic violence data and a national plan of action. A range of nongovernmental organizations (NGOs) is working together to complete these activities, including the National Rape Crisis Society (NRCS), national toll-free hotlines, a network of shelters for women that are largely private, the family court (es-

tablished in 2004), and 19 community drop-in/information centers, among others. Women and children living with domestic violence and women's intimate partners may access a variety of public services ranging from counseling and alternate job placement to confidential medical services. The NRCS reports rape as the country's principal abuse problem, representing 37% of all cases reported by service users in 2004; those most frequently affected are women of African descent in the 12–17-year-old age group. Females were the group most affected by domestic violence, with a predominance of male perpetrators. Partial data on cases assisted by the NRCS indicate that new cases of child sexual abuse rose from 7% to 10% between 2000 and 2004, while new cases of incest declined from 16% to 8% and crimes and injuries, such as unlawful carnal knowledge (a local term referring to illicit sexual intercourse or contact), narcotic offenses, and attempted suicide, increased. Motor vehicle accidents and fatal collisions increased by 23% and 46%, respectively, over the 2000–2004 period (*12–16*).

According to the latest (1997–1998) national household survey, within the nine counties there were five defined poverty areas. At the national level, 21% of households in Trinidad and 26% in Tobago were designated as poor. Population groups characterized as poor were those who were uneducated or undereducated, the unemployed or underemployed, unskilled or semiskilled workers, and female-headed households and single-parent households with an average monthly income ranging from US$ 95–160 (at the current exchange of TT$ 6.27 = US$ 1). The root causes identified for these outcomes included lack of educational attainment and intergenerational entrapment by poverty, among others. While there is no significant gender gap identified among the poor, approximately 60% of this group has no qualifications.

One percent of the population is comprised of squatters, of which 26% are poor. Heads of households with no educational qualifications account for 77% of the total poor population. The national MDG assessment of 2004 focuses on the issues of eradication of extreme poverty and hunger and calls for the need to conduct more frequent living conditions surveys, strengthen institutional capacity, carry out poverty eradication programs, set measurable targets, improve data quality, and ensure sustainability of newly created jobs (*3*, *17*).

Population groups such as minors and young adult males and females are predominantly high-risk groups for mortality and morbidity incidence, particularly among those living under the poverty line and those whose behaviors, lifestyles, and social environments increase their exposure to external injuries, crime, violence, HIV/AIDS, and noncommunicable diseases. In 2003, there were 734 socially displaced persons (street children, ex-prisoners, deportees, older adults, substance abusers, those with mental disorders, and those infected with HIV). Males and those who live in the country's two major urban settings (Port of Spain and San Fernando) make up the majority of this group. Between 1997 and 2002, the number of deportees returning to Trinidad grew. In general, they had left as minors with their families and were now returning to an environment unfamiliar to them and without a support structure. In addition to being socially displaced, they were unemployed and prone to violence and crime. The 2004 Caribbean Epidemiology Center (CAREC) pilot behavioral risk factor survey showed that women experience illness more frequently than men, but also live longer, and persons with lower educational levels seek medical care less often than those with higher levels of education (*18*).

A 2001 study on overweight, obesity, and skin fold thickness among children of African and East Indian descent, using international standards for overweight and obesity and British (1990) reference curves for body mass index (BMI), showed that those of African descent were taller for their age, but with lower BMI. Obesity was higher among the older Afro-Trinidadian children, particularly among girls. The study concluded that higher BMI was associated with higher BMI in the child's parents, higher reported birthweight, older age of the child's mother, smaller family size, and higher maternal education attainment. The Food and Agriculture Organization estimated the undernourished population at 11.9% for 2001. Food fortification for flour with iron and B complex is mandated and carried out by law, but fortification with calcium is optional. The establishment of "Baby-friendly" initiatives in all the major hospitals and efforts by the National Breast-feeding Committee to improve breast-feeding practices have contributed to the initiation among 95% of mothers of breast-feeding, with the rates of exclusive breast-feeding ranging from 26%–30% for infants under 4 months of age. The 2000 United Nations Children's Fund (UNICEF) Multiple Indicator Cluster Survey estimated that 6% of children under age 5 were underweight, less than 0.5% were severely underweight, and 4% were stunted or showed wasting. In 2002, the Caribbean Nutrition and Food Institute (CFNI) reported a prevalence of 3% overweight among preschool children. Data on food availability indicate that there is an excessive quantity of foods high in energy, proteins, and fats and that the population's ability to access healthy foods in sufficient quantities is affected by income disparities (*19–22*).

A country assessment of essential public health functions (EPHF) indicated that the national health system identifies outbreaks as they occur but due to weak monitoring practices its predictive capacity is limited. The EPHF exercise also identified the need for regular quality assessments and improved feedback mechanisms for information input utilized for decision-making and policy formulation. Consequently, the institutional response capacity is weak. No official declaration of disease outbreaks occurred during the 2001–2005 review period. Nevertheless, the risk for epidemics remains and is closely monitored at points of entry based on the level of commercial and population movement in and out of the territory (*23*).

In 2000, 69% of households received water piped into their homes or yards; on the other hand, only 26% of households had

a continuous 24-hour water supply seven days a week. Storage of water is therefore commonplace, and 57% of the households had their own water storage tanks. Poor access to potable water is attributed to several factors, including a 40%–50% loss of water in the distribution system, deterioration of assets, and weak institutional and human resources programs. The quality of water delivered meets World Health Organization guidelines for drinking water quality, although this status is challenged by environmental degradation, watershed destruction, and pollution. For sewage disposal, the majority of the population (60%) is served by on-lot septic systems, while 10% is served by central sewage treatment plants, and 30% by pit latrines (*24*).

Demographics, Mortality, and Morbidity

The population of Trinidad and Tobago is ethnically diverse, with 41% being of East Indian descent, 40% of African, and 19% of other groups, including Chinese, European, and Middle Eastern. Over the last 20 years, the proportion of the population under age 15 declined, while the portion of those 60 years old and older increased. Twenty-one percent of the population falls within the 0–14-year-old age group, 71% in the 15–64 age group, and 8% is 65 years old and older. The country is in a stage of advanced demographic transition, with a low birth rate and decreased fertility rates, resulting in a low population growth rate. Mid-year population estimates indicate a crude birth rate of 14 per 1,000 population and a population growth of 0.3 per 1,000 population for 2000–2005, with a declining trend expected over the next decade. The population structure, by age and sex, for 1990 and 2005 is shown in Figure 1.

The total fertility rate began to decline in the 1970s, and in 2005 was estimated at 1.75 children born per woman, thus placing the country below population replacement level. The decline is principally due to the external migration of nationals in pursuit of better job markets. The net migration rate was –10.87 migrants per 1,000 population for 2005. The life expectancy estimate at birth in 2005 was 71 years for the total population, with 69 for males and 74 for females. Ninety-four percent of households are located in Trinidad, with an average size of 3.7 and a total fertility rate of 1.4 children per woman. Colonial historical roles influence the geographical distribution of ethnic groups, with those of East Indian descent residing predominantly in rural and agriculturally oriented localities, while those of African descent tend to live in urbanized environments, where they principally are employed in the service industries sector and government-related entities (*24–26*).

General mortality data is available up to 2001, at which time the crude death rate was 8 per 1,000 population. Maternal mortality was 39 per 100,000 live births and infant mortality 19 per 1,000 live births in 2001 (Figure 2). That same year, total deaths increased by 3% in comparison to 2000, with males accounting for 56%; the 50–74-year-old age group accounted for 40% of all deaths. In 2000, heart diseases, diabetes, malignant neoplasms, and cerebrovascular diseases together accounted for 61% of all deaths (*25*, *26*). The 10 leading causes of mortality for 2001 are presented in Table 1.

Over little more than a decade, mortality rates among infants for conditions originating in the perinatal period more than doubled, from 678 per 100,000 live births for the period 1984–1986 to 1,368

FIGURE 1. Population structure, by age and sex, Trinidad and Tobago, 1990 and 2005.

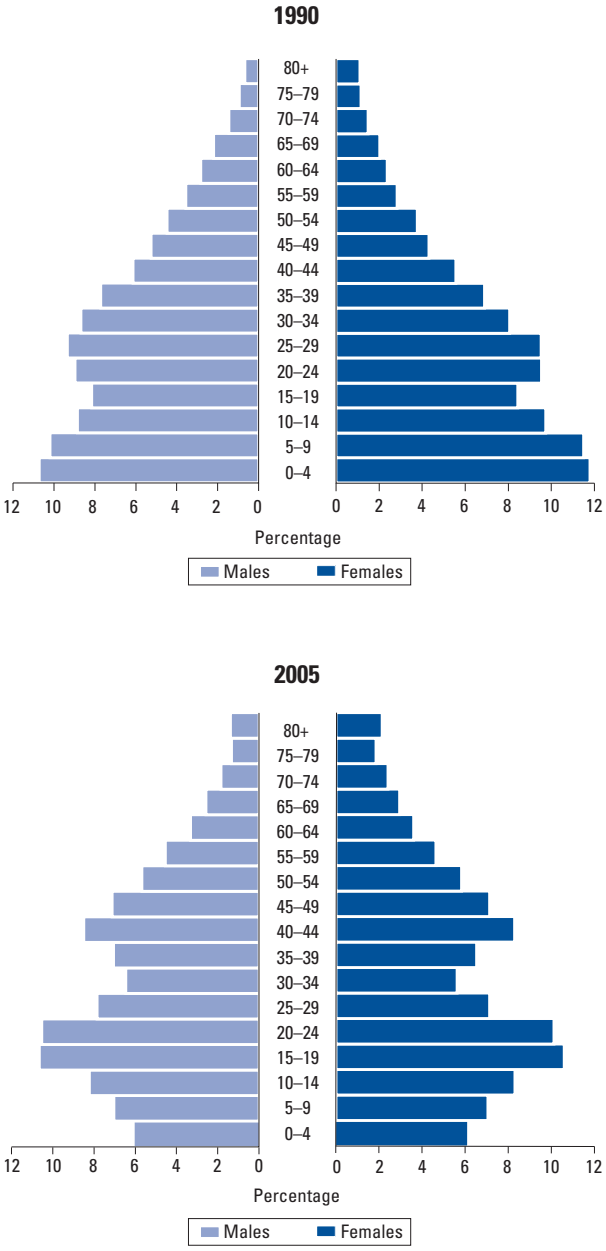


FIGURE 2. Maternal and infant mortality rates, Trinidad and Tobago, 1990–2001.

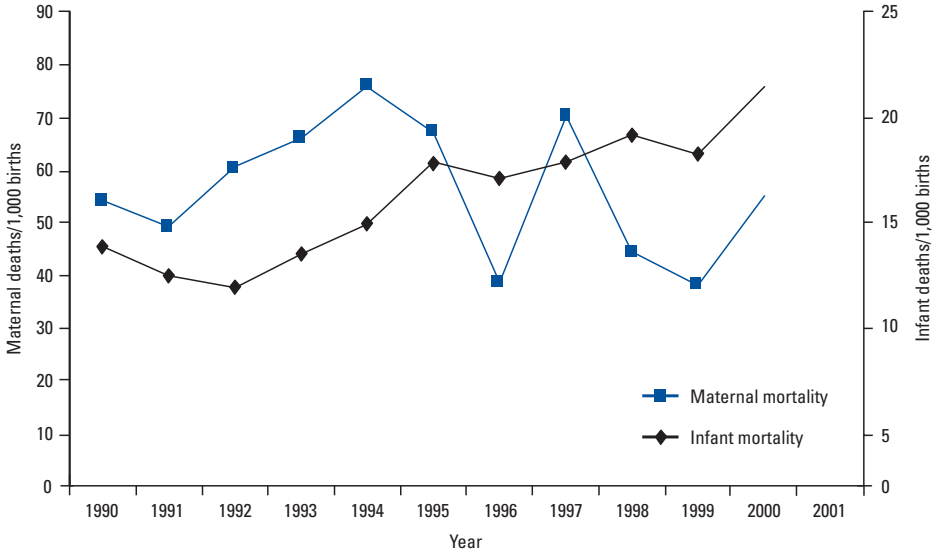


TABLE 1. Leading causes of death, by rank, number of deaths, percentage of total deaths, and cumulative percentage, Trinidad and Tobago, 2001.

Causes of death	Rank	Number	% of total deaths	Cumulative %
Ischemic heart diseases	1	1,631	16.7	16.7
Diabetes mellitus	2	1,340	13.7	30.4
Malignant neoplasms	3	1,211	12.4	42.8
Cerebrovascular diseases	4	972	10.0	52.8
External causes	5	569	5.8	58.6
Human immunodeficiency virus (HIV) disease	6	541	5.5	64.1
Hypertensive diseases	7	406	4.2	68.3
Other heart diseases	8	330	3.4	71.7
Certain conditions originating in the perinatal period	9	224	2.2	73.9
Renal failure	10	173	1.9	75.8

Source: Population and vital statistics report, Central Statistical Office. Ministry of Planning and Development, Government of Trinidad and Tobago.

per 100,000 live births for the 1998–2000 period. This increase is attributed to problems related to the quality of prenatal care and to early detection of high-risk conditions during pregnancy. External injuries accounted for the highest number of deaths in both sexes among the 15–24-year-old age group for the 2000–2005 period. Between 2000 and 2004, mortality rates due to motor vehicle accidents grew from 12 to 19 per 100,000 population. Fatal accidents took place most frequently during weekends and evening hours; in 2004, 87% occurred among the 15–44-year-old age group. Suicide is most prevalent among the population of East Indian descent, with pesticide ingestion being the most frequent mode.

Records from CAREC show that case numbers for some diseases preventable by immunization—chicken pox, meningitis, mumps, rubella, and tetanus (excluding neonatal)—have decreased. Episodes of other diseases or conditions that have also decreased include acute flaccid paralysis, foodborne illnesses, leptospirosis, salmonellosis, scabies, shigellosis, all forms of hepatitis, and viral encephalitis. The diseases that have shown increases are acute hemorrhagic conjunctivitis, dengue in all its forms, gastroenteritis, gonococcal infections, influenza, Hansen's disease, syphilis, and all forms of tuberculosis. During the 2001–2005 period, there were no reports of cases of cholera, ciguatera

poisoning, pertussis, human rabies, neonatal tetanus, typhoid fever, and yellow fever (*27*, *28*).

HEALTH OF POPULATION GROUPS

Children under 5 Years Old

There were 383 deaths among children under age 1 in 2000, with leading causes attributed to conditions originating in the perinatal period such as respiratory disorders (intrauterine hypoxia and birth asphyxia) and congenital anomalies. These deaths are related to flaws in the quality of prenatal care provided at all levels of the health system and, consequently, to poor early detection of high-risk conditions. The mortality rate for the 1–4 age group was 8 per 1,000 population in 2000.

Six percent of under-5-year-olds are estimated to be underweight, while 4% were estimated to be stunted or with evidence of wasting. In 2002, exclusive breast-feeding practices were 44%, 33%, and 27% at 1, 2, and 3 months of age, respectively. The Ministry of Health is pursuing a "Baby-friendly" hospital initiative nationwide in order to encourage the establishment of enabling environments for breast-feeding in health facilities and among the population. The number of children ages 1–4 seen at primary health care facilities declined from 4,128 in 2000 to 3,783 in 2003. The five leading hospital discharge diagnoses for the 1–4 age group were diseases of the respiratory system; injury, poisoning, and certain other consequences of external causes; symptoms, signs, and abnormal clinical and laboratory findings; certain infectious and parasitic diseases; and diseases of the digestive system, with a higher prevalence among males. During 2003–2004, 9% of infants were born to HIV-infected mothers.

Children 5–9 Years Old

There were 36 deaths among this age group in 2000, with a slight predominance among males; the major causes were external causes, followed by injury, poisoning, and certain other consequences of external causes; diseases of the nervous system; diseases of the circulatory system; and certain infections and parasitic diseases. Although chronic malnutrition is rare among students in this age group, there are nonetheless pockets of nutritional deficiency, based on reports of protein-energy malnutrition and iron deficiency, together with rising levels of obesity. Violence and early sexual initiation, together with cigarette and drug use, are reported among students and represent challenges to be addressed by the school health services. The Ministry of Health reports that sickle cell, chronic conditions (largely asthma), and external causes and injuries are the major causes of morbidity and mortality among students. A 2004 baseline survey of blood lead levels conducted on 1,761 children in the 5–7 age group on both islands showed levels ranging from < 1 µg/dL to 29 µg/dL. Only three children in Trinidad met the U.S. criteria for lead poisoning (blood lead level ≥ 20 µg/dL). There were no significant differences by age, sex, ethnicity, or income group (*29, 30*).

Since 2005, institutional priority has been placed on early detection and resolution of vision and hearing impairments for 100% of children enrolled in primary schools. Of these, 10% received screening during 2005, and 20% failed the first screening.

Adolescents 10–14 and 15–19 Years Old

Mortality rates in 2000 for the age groups 10–14 and 15–19 were 0.49 and 0.87, respectively, per 1,000 estimated mid-year population and were higher among males in both age groups. A 2005 review of services provided to 112 adolescents aged 10–19 nationwide at the country's only public child guidance clinic indicated that depression (33%) was the most prevalent disorder for which treatment was sought, followed by behavioral problems (13%), mental retardation (11%), substance abuse (10%), anxiety (9%), and psychosis (5%). Mental disorders were more prevalent among females than males and among 15–19-year-olds with no difference as to their area of residence; nevertheless, a larger number of cases were children coming from socially and/or economically unstable family environments and residing in underserved areas.

The 2000 Global Youth Tobacco Survey, a school-based study supported by the World Health Organization that collected data from adolescents aged 13–15, showed that 19% of adolescents smoked their first cigarette before they were 10 years of age, with no significant difference between genders; of the representative sample from all secondary schools, 40% of students had smoked cigarettes at least once in their life, which is 5% higher than the number found in a similar prevalence study conducted in 1988. Smoking was more prevalent among males than females and increased in frequency among the older age groups. A similar prevalence pattern was observed among current smokers, with an increase of 11% in 1998 to 14% in 2000. Eighty-four percent of those surveyed reported exposure to tobacco advertisements (*31*).

The Ministry of Education reported a surge in violent behaviors, including discipline problems, among secondary school students for the 2000–2003 period, with a higher proportion of disruptive behaviors occurring among male students. Pregnancies to mothers ages 13–19 accounted for 15% of live births in 2000. That same year, a representative study related to the sexual health needs of secondary school-age adolescents in Tobago identified the priority concerns driving early initiation of sexual practices as unemployment, drug use, and limited access to educational and developmental opportunities. Other factors, such as poverty, unstable home environments, and seeking multiple sexual partners, further increased their vulnerability to risky behaviors (*25*, *32*, *33*).

Adults 20–59 Years Old

Mortality rates are available only for 2000 for this age group; rates range from 2.0 per 1,000 estimated mid-year population among those 20–24 years old to 14.0 among those 55–59 years old, with a higher predominance in both cases among males. The major causes of death were diseases of the circulatory system, followed by neoplasms; certain infections and parasitic diseases; and injury, poisoning, and certain other consequences of external causes. Young males are the population group most affected by deaths due to violence and external causes. The 2004 pilot behavioral risk factor survey by CAREC found that females have a more consistent pattern of health-seeking behaviors than do males; women and older adults were the groups which were the most consistent in monitoring their blood pressure and glucose levels; adults, principally those with higher educational levels, more closely monitored cholesterol levels; only 50% of women in the 35–54 age group reported having had a Pap smear; and more males than females reported always using safety seat belts (*18*).

Men, youth, and young adults of lower educational levels were the groups that most frequently engaged in physical activities. Males and females were considered slightly obese with an average BMI of 27 for those aged 33–44 and with a normal BMI for those 18–24 years old; the latter younger group consumed fewer fruits and vegetables, with no gender difference observed. Men smoked more than women, particularly those aged 45–54, as well as those of lower education levels; women, however, made more attempts and experienced greater success in their smoking cessation efforts. Marijuana use was not affected by educational levels, with women reporting more frequent use; use of cocaine was insignificant (*18*, *26*).

Older Adults 60 Years Old and Older

By 2000, the size of the population aged 60 and over had increased by 345% over 1985 figures. This age group represented 10% of the total population in 2000, of which 53% were males; among the age group 80 years old and older, females represented 58%, a lesser predominance when compared to the 1985 figure of 63%, thus indicating a gain in life expectancy among older males. This trend in population aging highlights the need for social programs; it is estimated that for 2025, the size of the population 60 years old and older will be larger than that of those under age 18. According to the 2000 census, there were 38 persons over 60 years of age for every 100 children, a situation that will cause a consistent rise in dependency ratios over the next decade. More than two-thirds of older adults receive pension benefits provided by the government; it is estimated that the majority of the population aged 60 and older are inadequately prepared financially for retirement and depend on other sources of income, principally from family members. Older females have lower income levels and fewer employment opportunities than males. Of the total noninstitutional population 65 years old and older, only 9% were represented in the 2001 labor force. The 2000 population census showed that the highest educational attainment for 67% of persons aged 60 or older was at the primary level. In 2001, the mortality rate for the population aged 50 or older was 32 per 1,000 population. Males predominated in the number of deaths, but females 80 years old or older had a higher percentage (79%) of total female deaths registered. The main cause of mortality was heart diseases, followed by diabetes mellitus, malignant neoplasms, cerebrovascular diseases, and diseases of the respiratory system. Public hospital discharge records show no differences by gender but identify the most frequent discharge diagnoses as those related to heart diseases and diseases of the digestive system, followed by injury, poisoning, and cerebrovascular diseases, with the last cause occurring slightly more frequently among females. Based on the 2000 population census data, 40% of persons aged 60–69 years reported having a disability or chronic illness, with a predominance among males; while among those 70–79 years old, the figure was 36%, with males again predominating; and for those aged 80 and older, it was 24%, with a predominance of females (*34–37*).

The Family

According to the 2000 population census, the average number of persons living in 94% of the households in the country was 2.64 persons, a situation that does not portray households with high occupancy located in marginalized areas. For the same period, the number of marriages decreased by 7% and divorces by 62% when compared with the previous two decades. Sixty-nine percent of households are headed by males; of the 31% of female-headed households, 19% were single mothers. In 2000, 96% of institutional births were assisted by skilled attendants; in 2002, there were 36 births per 1,000 women aged 15–19, a situation that highlights the need to address sexual and reproductive health-related issues in the family environment. The prevalence of contraceptive use, regardless of method, was an estimated 38% in 2000. Domestic violence is a growing public health concern; in 2000, 87% of the victims were females and males were principally the perpetrators. Women and children subjected to abuse of any nature may access a nationwide network of 13 shelters; no similar services currently exist for males. Counseling is offered to the affected women and their intimate partners through NGOs and various public mental health services, or as mandated by the family court system (*15*, *24*). During 2001–2002, there were 17 deaths among adults and 4 among minors associated with domestic violence.

Workers

Over the 2001–2005 period, the National Insurance Board, which provides insurance coverage for more than 50% of the labor force, reported 13,092 workplace-related injury claims, and 2,496 disablement claims. There were 22 deaths due to

occupational incidents in 2004 and 57 in 2005. More than 80% of all injuries and disablements recorded occurred to males, while less than 20% occurred to females, although females comprised 39% of the employed for the period under review. Since males predominate in the country's construction and heavy industry labor force, they are more at risk of facing injury or death due to unsafe and/or unhealthy working conditions. For the same period, of the 239 occupational-related registered deaths, only 3% were female. It is estimated that 2%–4% of children aged 5–14 perform some type of labor, with an estimated 1% receiving remuneration in 2000. An International Labor Organization Rapid Assessment Survey conducted in 2002 in Trinidad identified the following areas as those in which children and young workers are engaged: scavenging and agricultural, domestic, and commercial sexual activities (*22*, *38*, *39*).

HEALTH CONDITIONS AND PROBLEMS

COMMUNICABLE DISEASES

Vector-borne Diseases

In 2000, 2001, and 2003, the Ministry of Health reported more than 2,000 annual cases of classical **dengue**. In 2002, however, there were 6,000 cases coinciding with the reentry of dengue serotype III. During 2004 and 2005, 400 and 519 cases of classical dengue were reported, respectively. In 2002, there were 218 cases of dengue hemorrhagic fever (DHF) and no cases in 2005. This reduction does not necessarily reflect a trend since all four serotypes of dengue and the *Aedes* mosquito are endemic. There were 45 registered deaths due to DHF during 2000–2002, with a predominance of male deaths in all years. No deaths were registered in 2003–2005 for DHF in the public health system. **Malaria** was declared eradicated in 1965; however, annual reports of imported cases and of a small number of indigenous cases of *P. malariae* in southern Trinidad persist. For the 2001–2005 period, 29 imported cases and 13 indigenous cases were recorded, with no fatalities.

There have been no cases of **yellow fever** since 1979 nor any **lymphatic filariasis** (LF) cases during the 2001–2005 review period. The former is largely due to widespread immunization and the latter to mass chemotherapy in previously affected locations. Ongoing surveillance suggests that there has been successful interruption in transmission of LF, and the country is now pursuing LF-free certification (*27*, *40*).

Vaccine-preventable Diseases

In 2000, hepatitis B and *Haemophilus influenzae* type b (Hib) vaccines were introduced into the national immunization schedule as a part of the pentavalent combination vaccine DPT/HepB/Hib. To extend coverage, vaccines included in the Expanded Program on Immunization are administered at public health centers and by private doctors free of charge. National coverage rose from 90% in 2000 to 94% in 2004, and all health personnel, including medical interns, involved in the Program are trained on an annual basis. There have been no outbreaks of vaccine-preventable diseases in the pediatric age group, although one isolated case of **diphtheria** was reported in 2002 (*41*).

There were no cases of **polio**, **rubella**, or **measles** reported in the country between 2000 and 2005.

Intestinal Infectious Diseases

Gastroenteritis, age unspecified, was the most frequently reported disease to the National Surveillance Unit over the 2000–2005 period. Since 2004, age-specific incidence has shown a discrete drop for the 0–5-year-old age group even though there was no national intervention targeting preschoolers. Changes are attributed to improvements in household safe water sources and health promotion and prevention initiatives, including the "Baby-friendly" hospitals initiative. There are no national-level **helminthes infestation** deworming programs, nor are detailed data by age or sex available, but the National Surveillance Unit registry shows a decrease in the case frequency from 315 in 2000 to 285 in 2005 (*42*).

Chronic Communicable Diseases

Tuberculosis (TB) shows a higher prevalence of cases among males of African descent and the 25–44-year-old age group, with incidence rates fluctuating over the 2000–2004 period from 16 in 2001 to 18 in 2002 per 100,000 population. In 2004, the annual notification rate was 12 per 100,000 population. TB/HIV comorbidity was 26% in 2004, with an increasing trend when compared to 12% in 1990; other major comorbidities identified with TB are substance abuse (35%) and diabetes (13%). The National Tuberculosis Program reported a 70% cure rate with 15% defaulters and 10% mortality in 2004. **Hansen's disease** (leprosy) prevalence was 0.44 per 100,000 population with a new case detection of 0.24 in 2003. Cases were more prevalent among males than females and showed no ethnic or age group differentiation pattern (*28*, *43–45*).

Acute Respiratory Infections

According to CAREC surveillance reports, over the 2000–2005 period there was an epidemic of acute respiratory infections among the 5-years-and-under age group, with 15 confirmed cases in 2000 and 12,064 cases in 2005. At the same time, suspected **influenza** cases decreased from 41,125 in 2000 to 23,511 in 2005. Surveillance for respiratory diseases increased over the period and continues due to the threat of **SARS** and **avian influenza** outbreaks. Ministry of Health reports for the 2000–2003 period place diseases of the respiratory system among the leading five to 12 hospital discharge diagnoses. The main causes are **asthma**, other acute upper respiratory infections, **pneumonia**,

other diseases of the respiratory system, and bronchitis, emphysema, and others.

HIV/AIDS and Other Sexually Transmitted Infections

Over the period 2000–2004, the cumulative number of HIV infections reported in public health facilities since the beginning of the epidemic in 1983 increased by 37%, while the number of new AIDS cases decreased by 34%. Sexual transmission remained the predominant mode of transmission among newly identified cases. The male-to-female ratio for new infections decreased from 1.6:1 in 2000 to 1.2:1 in 2004, with the majority of new infections occurring among females, especially in the 15–49-year age group, which showed an increase over the period of 67% in 2000 and 70% in 2004. AIDS deaths per annum in public facilities declined over the 2000–2004 period, a phenomenon which may be attributed to the provision of antiretroviral therapy free of cost in all public HIV treatment centers. Data from the year 2000 show a slight increase in the number of deaths from 519 in 1999 to 535 in 2000. Sixty-five percent of these deaths occurred among males in the 30–39-year-old age group and predominantly in urban areas (*26*, *46*).

In an effort to raise the population's awareness regarding the importance of knowing individual HIV status, the public health sector scaled up voluntary counseling and testing (VCT) services through the introduction of a National Prevention of Mother-to-Child Transmission (PMTCT) Program for HIV testing of all pregnant women attending public antenatal care clinics; the provision of HIV testing at national clinics for the treatment of sexually transmitted infections (STIs); and the establishment of VCT clinics within selected health centers. As a result, during the 2000–2004 period, samples submitted for HIV testing by public facilities increased by 35%. The improved availability and access to HIV testing by pregnant mothers provided by the PMTCT Program led to an increase in testing from 78% in 2000 to 96% in 2003. The prevalence rate in this group ranged from 19.3 per 1,000 in 2000 to 10.9 per 1,000 in 2003. Access to antiretroviral therapy for HIV-positive mothers is provided free of charge. Follow-up care for all HIV-positive mothers and their infants includes testing of HIV-exposed infants, post-delivery counseling on the importance of breast-feeding avoidance, and the provision of nutritional replacement therapy (baby formula) free of charge for the first six months following birth (*47*).

Seven HIV treatment centers provide antiretroviral treatment and care for adults, including pregnant women and children; two of the centers are located in Tobago. All HIV-positive individuals have access to diagnostic tests, including CD4 and viral load, and a ready supply of antiretroviral medications. HIV drug resistance testing is not conducted nationally, but there is evidence of resistance to first-line medications at some treatment centers. In 2004, 40% of the newly reported cases of HIV-positive adults and children were receiving treatment and care in public health facilities and 23% were receiving antiretroviral therapy. Ninety-five percent of those receiving treatment and care resided in Trinidad. A 2005 assessment of one of the country's public care and treatment centers highlighted various obstacles to coverage extension. These included a shortage of trained personnel and multidisciplinary teams for in- and outpatient clinics, along with confidentiality issues related to service provision and stigma and discrimination (*48–52*).

The Queens Park Counseling Center and Clinic is the national health facility for the treatment and care of all conventional STIs through a national network of seven satellite facilities. Over the 2000–2004 period, there was a reduction in the case numbers of **syphilis** (42%), **acute gonorrhea** (42%), **genital warts** (41%), **trichomoniasis** (76%), and **bacterial vaginosis** (53%), while case numbers of **herpes genitalis** increased by 25%. For the same period, there was a higher incidence among females of syphilis, trichomoniasis, and bacterial vaginosis, while males were predominantly affected by acute gonorrhea and genital warts. STI data for Tobago for the 2003–2004 period show a reduction in case numbers for acute gonorrhea (17%) and syphilis (14%), together with an increase in the number of blood specimens testing positive for HIV (88%) (*53*, *54*).

The HIV/AIDS National Strategic Plan for 2004–2008 has targeted various vulnerable and/or high-risk groups for the promotion of healthy sexual attitudes, behaviors, and practices. Specifically, this HIV prevention strategy will focus on young women, youths in or out of school, men who have sex with men, commercial sex workers, the prison population, and substance users (*48*).

Over the period 2000–2004, the reported cases of HIV show young people in the productive age group to be increasingly affected by the epidemic, with the 25–34-year-old age group recording the highest numbers of new HIV infections per year followed by the 15–24-year-old age group (*46*). Females continue to be increasingly infected with HIV owing to biological factors as well as social factors, including domestic and sexual abuse, economic dependency on men, commercial sex work, and reduced power to negotiate safe sex. Females had the highest incidence of HIV in the 15–24-year-old age group over the 2000–2002 period while males dominated the 24–34 age group. This gender division quickly changed for the period 2003 and 2004 when females in both age groups represented the highest number of new infections of HIV (*46*).

At the same time that men who have sex with men are being highlighted internationally for their increasing vulnerability to HIV/AIDS, this group continues to face high levels of stigma and discrimination. Drawing from national statistics on sexual exposure among HIV-positive cases, 3%–5% in this group classified themselves as men who have sex with men and 1%–3% identified themselves as men who have sex with both men and women (*46*).

The current environment of stigma and discrimination inhibits individuals from identifying themselves as men who have sex with

men or bisexual, and, as a result, presents obstacles for securing an accurate and reliable assessment of the extent of risky sexual behaviors associated with these groups. Nationally, prevention efforts among men who have sex with men have been minimal.

Since commercial sex work is illegal in Trinidad and Tobago, the activities related to its practice usually are of an underground or covert nature and occur within the context of massage parlors, modeling agencies, tour groups, and night clubs. A study of commercial sex work in the country revealed the range of sex work targeting predominantly young women to include high school and university students and involve street solicitation, escort services, work in locally produced pornographic films, sex tourism involving entertainers and local and foreign female club and casino employees, and commercial sex work among men who have sex with men (*49*).

Not only do these activities increase the vulnerability of young commercial sex workers to HIV infection, but their human rights are not promoted or protected due to the concealed and unlawful nature of their work.

The prison population in Trinidad and Tobago, as in other countries, continues to face the risk of increased exposure to HIV infection. The Ministry of Health and other national stakeholders have developed a comprehensive health plan to mitigate the spread of various communicable and noncommunicable diseases, including HIV/AIDS, STIs, and TB in national prisons.

According to an NGO Needs Assessment conducted by the National AIDS Coordinating Committee, nongovernmental organizations have been involved in a host of prevention activities at the local and national levels. These activities include school and workplace sensitization on HIV/AIDS prevention and control, condom distribution, and the dissemination of information on STIs and sexual and reproductive health issues. Some of the challenges facing NGOs, however, include lack of training in NGO governance and in human resources, financial, and project management. Monitoring and evaluation skills among NGOs working in HIV/AIDS-related issues are also limited, resulting in difficulty assessing the impact of civil society initiatives (*55*).

Zoonoses

For 2000–2005, annual reported cases of **leptospirosis** ranged from a high of 161 in 2002 to a low of 102 in 2005. In 2000, there were 29 fatalities, 83% of which occurred in persons over 40 years of age with no deaths reported for the under-15 age group; 76% were males and 24% were females. Similarly, during 2001 there were 16 deaths (9 males and 7 females), with 69% of the fatalities occurring among the over-40 population age group. Since the 1960s, leptospirosis has transitioned from being a disease concentrated in agricultural areas to one that is now common in urban settings. There were no reported cases of rabies for the 2001–2005 period. In 2004, several horses and birds were found to be seropositive for the **West Nile virus**. Since then, all dengue and unspecified fever blood samples are being screened for West Nile virus, with no human cases reported up to the end of 2005 (*28*).

NONCOMMUNICABLE DISEASES

Metabolic and Nutritional Diseases

Endocrine, nutritional, and metabolic disorders occupy places ranging from 1st to 12th among the most frequent diagnoses at discharge from 80% of hospitals nationwide, with **diabetes** being the first cause during the 2000–2003 period. Mortality data available for 2000 shows rates for endocrine, nutritional, and metabolic diseases at 112 per 100,000 population with higher rates (118) among females than males (108). In 2000, diabetes accounted for 14% of total deaths (*26*, *56*).

Cardiovascular Diseases

The mortality rate in 2000 for diseases of the circulatory system was 279 per 100,000 population, with a higher rate among males (293) than females (264). **Cerebrovascular diseases**, **hypertension**, and other heart diseases follow ischemic heart diseases, with males accounting for a higher frequency than females in all causes. Despite this, the 2004 CAREC behavioral risk factor study profile showed that both sexes shared various risk factors, such as smoking, sedentary lifestyles, and improper diet (*18*, *26*, *56*).

In 2000, hypertension accounted for 4% of total deaths (*26, 56*). That same year, ischemic heart diseases were the leading hospital discharge diagnosis at 80% of hospitals nationwide; this cause also accounted for the highest proportion of total deaths (17%).

Malignant Neoplasms

The mortality rate of malignant neoplasms per 100,000 population was 99 in 2000, with males accounting for a rate of 104 and females with a rate of 94. According to the National Cancer Registry 2000–2004, at the national level the leading sites of neoplasms overall were prostate, followed by breast, colon and rectum, cervix uteri, and bronchus and lung, while for females they were the breast, followed by cervix uteri, colon and rectum, corpus uteri, and ovary. Over the period 2000–2003, the leading cancers responsible for mortality were those of the prostate (28%), followed by breast (14%), colon and rectum (13%), bronchus and lung (11%), and leukemia (7%). The same site distribution is seen for males and females excepting the breast and with the stomach being the fifth-leading site; 90% of neoplasms of the prostate occurred among the age group 65–85 or older. Among females in the 25–85 and older age group, more than half of all deaths were due to neoplasms of the breast (23%), cervix uteri (11%), colon and rectum (11%), and corpus uteri and ovary (8%) (*26*, *56*, *57*).

Other Health Problems or Issues

Disasters

For the period 2000–2005, the Office of Disaster Preparedness and Management reported that localized and island-wide flooding was the main emergency problem, causing disruptions in transportation, agricultural losses, and property damage. In September 2004, landslides related to Hurricane Ivan claimed the lives of three persons in Tobago (*12*, *16*).

Mental Health

There is no community-based national mental health program, but three Regional Health Authorities (RHAs) offer some community-based services through outpatient clinics and primary health care centers where substance abuse services are included. Data on the country's mental health profile is limited, but overall estimates indicate that depression, schizophrenia, suicides, and substance abuse are the most prevalent issues.

Addictions

The Government of Trinidad and Tobago signed and ratified the WHO Framework Convention for Tobacco Control in 2003 and 2004, respectively. Within this context, the Ministry of Health informs all prospective job applicants of its no-smoking policy, has made all publicly funded health organizations and their motor vehicles smoke-free, discourages sponsorship by the tobacco industry of health-related events, and regulates tobacco advertising, including the placement of health warnings on tobacco products. Due to its geographical location and accessible topography, its links to global markets provided through the tourism and maritime industries, and increased local production of cannabis, Trinidad and Tobago is widely viewed as a transshipment point for the international drug trade. The groups most vulnerable to drug use and involvement in narcotics trafficking are out-of-school and unemployed youth, those living below the poverty line, sex workers, and individuals living in unstable family environments. Higher use is reported among males (92%) (*32*, *58–61*).

Environmental Pollution

A five-year study on poisonings (2001–2005) conducted by the Ministry of Health's Occupational Health Unit and based on admission data from five major hospitals shows a total of 2,222 poison-related cases. Of these, 78% were suicide attempts and 21% accidental poisonings, while only 1% were documented as workplace-related events. Four percent of all the reported incidents resulted in deaths. Females accounted for 54% of the poisoning cases. The main poisoning agents were agro-chemical (35%), pharmaceutical (34%), household (21%), and industrial (4%). There is no specific official information available on the status of environmental pollutants, but with the closure of secondary lead-smelting facilities and the removal of lead in gasoline in 2004, it is expected that lead exposure levels will decline significantly (*62*).

Oral Health

A national oral health survey conducted in 2004 with schoolchildren in the 6–8-, 12-, and 15-year-old age groups in 18 primary schools and 19 secondary schools showed significant improvement in the oral health of 12-year-olds when compared to the previous survey conducted 15 years earlier. With the current decayed, missing, and filled teeth (DMFT) index being 0.6, the country surpassed the WHO goal of 3.0 by the year 2000. The oral health of 15-year-olds was good, with a DMFT score of 1.0. However, for the 6–8-year-old age group, it was poor compared to secondary students (DMFT = 2.54). The presence of caries was detected in 62% of the 6–8-year-old age group, 38% of 12-year-olds, and 43% of 15-year-olds. Ongoing research at the University of the West Indies (UWI) School of Dentistry suggests there may be low awareness among parents of the importance of primary teeth and appropriate preventive dental care for young children. Primary school students had higher treatment needs than those in secondary, reflecting a low caries experience among older age groups. Overall, 72% of students aged 6–8 years had some treatment needs, compared with 59% of 12-year-olds and 65% of 15-year-olds. Almost half of the overall sample required fillings, 38% required fissure sealants, and 12% required extractions (*63*).

RESPONSE OF THE HEALTH SECTOR

Health Policies and Plans

The National Health Services Plan of 1994 remains in force. In the context of the Vision 2020 National Strategic Plan developed for the health sector and discussed earlier, the core principles of affordability, equity, and accessibility will guide ongoing health sector reform activities and help define the future role of health care services. The Health Sector Reform Program (HSRP) has pursued fundamental changes through the strengthening of leadership in the Ministry of Health, development of health systems, and implementation of the Regional Health Authorities Act of 1994. There are currently five RHAs. In order to improve the performance of the essential public health functions, the Ministry of Health is working to strengthen its leadership role and transform itself into an effective policy, planning, and regulatory organization.

Vision 2020 seeks to improve the health status of the population by unifying and enhancing the performance and quality of the health care delivery system and services; strengthening health research systems for evidence-based decision-making, policy formulation, new learning, and development; and creating a client-focused health care environment. Achievement of these goals will depend upon the ability of national authorities to optimize and

sustain intersectoral collaboration, which in turn will harmonize the HSRP (*64*).

In this regard, a pivotal element will be the development of a comprehensive network of new or upgraded primary health care facilities that focus on the promotion of equity, accessibility, community involvement, self-reliance, sustainability, and relevance of services delivery. The HSRP envisaged that a shift would occur from a reliance on secondary level services to primary level and community services, outpatient surgery and care programs, and home care initiatives, with particular emphasis on the primary level management of chronic diseases. However, there is a difference between the building and refurbishment of the primary health care infrastructure and the development of health systems and of skilled human resources to achieve the desired improvements in outcomes of care. Referral protocols require strengthening among the network of providers and with other sectors, such as education and social services.

Trinidad and Tobago's existing legal framework discourages all known forms of discrimination against women, and many provisions are in place based on the Convention on the Elimination of All Forms of Discrimination against Women. These include policies for gender and domestic violence now being implemented, the Married Persons Act, the Status of Children Act, and the Family Law, among others. Women enjoy the same rights as men to enter the labor force, perform public functions at all levels of government, hold political office, and initiate legal action when they feel their rights have been violated. Workplace legislation also is in place to protect women's rights.

The 2004 national plan of action for children addresses maternal and child health, family planning, basic education and literacy, children in special circumstances, and supporting educational goals based on the United Nations' 1990 World Declaration on the Survival, Protection, and Development of Children. All international and regional conventions and accords related to child health have been ratified. To enhance the quality and timeliness of data, the government is taking steps to improve monitoring and response to the priority needs of children. At the same time, the Ministry of Health is finalizing the national school health policy and modernizing the school health program so that clinical and teaching staff will be better able to address hearing, vision, dental, immunization, and psychological needs of all students entering and leaving the educational system. A network of student support services initiated by the Ministry of Education in 2004 seeks to address the concerns identified by guidance officers based on high numbers of events related to attitudinal problems, peer conflicts, learning difficulties, physical and sexual abuse, pregnancy, and substance abuse.

The Mental Health Act of 1975 is currently under review, and the 2000 Mental Health Plan developed by the Ministry of Health was implemented in the national psychiatric hospital and several primary health care centers in three RHAs during the 2001–2005 period.

A research study undertaken in 2002 by the National Drug Council on the impact of drug trafficking on Trinidad and Tobago society underscored the potential capacity of this problem to undermine the political stability of the country and damage the country's international image. The assessment addresses the diversion of national resources to mitigate the negative impact of the drug trade, ongoing practices of bribery and money laundering, and the emergence of a parallel economy outside policymakers' control. The drug trade also contributes to a rise in serious crimes nationwide and aggravates racial tensions and poverty-related issues, thereby introducing a negative dimension into the sociocultural fabric of Trinidad and Tobago society. Stringent controls and intervention measures are being implemented to undermine and discourage the local production of marijuana and all other illicit practices associated with the drug trade.

Organization of the Health System

The health sector is comprised of public and private entities. The foundation of the health sector is the public health system, which includes a network of three tertiary level hospitals, three district hospitals, three specialized long-stay hospitals, and a series of primary health care facilities—3 district health facilities, 67 health centers, and 36 outreach centers—with the district health facility serving as the hub. Persons from other CARICOM islands also come to Trinidad and Tobago seeking tertiary medical care, particularly in the areas of oncology and cardiac surgery. Currently, some publicly funded health institutions outsource some of their health and ancillary services to private providers as a short-term measure to reduce the time spent on waiting lists to receive care in public facilities. The private sector includes private practitioners, hospitals, clinics, pharmacies, biomedical laboratories, and radiological-image diagnostic services; it remains highly unregulated. Several private companies provide health services benefits, with the most common form being that of group medical insurance coverage provided by employers to their employees. In late 2004, a National Health Insurance Steering Committee was established, and a model was prepared and presented to the Cabinet for approval in 2005.

The Regional Health Authorities Act of 1994 defines the Ministry of Health's role as being that of a "purchaser" of health care services and the RHAs being the providers. The Private Hospitals Act, which was amended in 1989, regulates the licensing and oversight of private hospitals. Regulation of health care providers in both the public and private sectors is governed by various health professional acts, including those for the Pharmacy Board, the Medical Board, registration of nurses and midwives, and the dental profession. Dual work practices, which allow many senior public service physicians to work in both the private and public spheres, have resulted in the limitation of their public sector work hours to the detriment of those population segments unable to pay for private sector services. The Ministry of Health has em-

Health Is Critical in the Push to Achieve Developed-nation Status

Trinidad and Tobago's Vision 2020 ushers in comprehensive improvements for the country and its citizens. In preparation for the Plan, Trinidad and Tobago passed fair-trade and anti-dumping legislation, focused on increasing access to technology and services, reduced the debt-service ratio, and boosted social assistance programs for the elderly and the poor. The Plan's health sector goals include improving the performance and quality of health systems and services and promoting patient-centered health care.

barked on a comprehensive Quality Improvement Program as a key strategy for its health sector reform agenda to enhance the country's performance of the essential public health functions. The concepts of total quality management and continuous quality improvement were adopted as strategic management tools to foster effective teamwork, the reengineering of systems and processes, and the improvement of outcomes and efficiency. Accreditation of health institutions is a key element in the Ministry of Health's quality improvement strategy. In July 2002, the Ministry of Health formally issued an accreditation standards manual for the health sector to the heads of health institutions. In order to implement a successful national health insurance system as projected during 2007, all elements in the design and implementation phases, including accreditation of health institutions, will need to be carefully planned. Internal surveys are used to redesign systems and processes to assess and improve services quality, with the intent of achieving a state of readiness for external audits of health facilities in 2007. Infection prevention and control for all health care facilities is a focus of the accreditation standards, and in 2006 the Ministry of Health produced a Manual of Infection Prevention and Control Policies and Guidelines.

Public Health Services

The population-based health services and programs under the responsibility of the Ministry of Health include the Public Health Laboratory, Hansen's Disease Control Program, National Tuberculosis Program, Expanded Program on Immunization, National Surveillance Program, National Population Program, Veterinary Public Health Program, National AIDS Program, National Oncology Program, and School Health Program, among others.

Epidemiology is a weak area in the public health system. The National Surveillance Unit, a centralized service of the Ministry of Health, captures data from the country's primary health care services and hospitals but maintains a passive surveillance system. The National Surveillance Unit depends on the Trinidad Public Health Laboratory and other institutional laboratory facilities for confirmation of outbreak events, but the RHAs and their network of health services are directly responsible for implementing immediate outbreak control measures as needed, with support from the Ministry of Health. A limited number of trained surveillance nurses and epidemiologists, the latter with both medical and nonmedical specializations, perform these functions and produce monthly reports on the case frequency of specific communicable diseases for which notification is mandatory and surveillance and outbreak control measures are deemed necessary at the RHA level. The system is cumbersome and challenged with partial, untimely reporting, resulting in a passive and poorly informed response capacity. The HSRP envisions decentralizing the system and organizing surveillance units at the RHA level in order to improve quality, data audits, needs assessment, monitoring, and evaluation, as well as to enhance response capacity for surveillance, improve analysis, and ensure the adequate application of strategic information to policy development and planning in the sector.

The Vision 2020 National Strategic Plan articulates environmental policy as "the sustainable use and conservation of the environment for the promotion of social and economic development in order to improve the quality of life of all citizens" (*64*). Demand on the country's natural resources is increasing at an exponential rate, with increasing exports of natural gas and oil. Increased revenues are fueling the construction of new public buildings, industrial estates, and housing. There is a standing debate between environmentalists and the Government of Trinidad and Tobago over various conservation, pollution, and land use issues. Environmental health services within the Ministry of Health traditionally focus on inspections, registrations, and licensing for food safety, public sanitation, and vector control, with the municipalities sharing responsibilities with the Ministry of Health in the major cities and boroughs. The Pesticide and Toxic Chemicals Board and laboratory are situated within the Ministry of Health. The establishment of the Environmental Management Authority (EMA) in 2000, the passage of legislation protecting the environment, and the implementation of environmental impact assessments have facilitated increased participation by the citizenry in decision-making regarding major new developments that impact not only on the natural environment, but also on human health. Enacted noise pollution rules are in place and enforced under EMA legislation, while water pollution rules are in the introduction phase. The Government of Trinidad and Tobago

ratified the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the Stockholm Convention on Persistent Organic Pollutants, and it is currently in the process of ratifying the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. The country's Public Health Ordinance and the Municipal Corporations Act are under review and will be updated in keeping with modern environmental health practices. The Government of Trinidad and Tobago has made a commitment to invest TT$ 1.2 billion over the 2006–2009 period for the purpose of upgrading the quality of water services.

In the absence of a national policy on waste management, the Ministry of Public Utilities and the Environment has overall responsibility for the management of solid and hazardous wastes. Independent contractors employed by local governments collect municipal solid waste, but industrial and hazardous waste treatment and disposal are not adequately supervised. The major landfill sites are operated by the government, and they all would require extensive upgrading in order to be classified as sanitary landfills. A Code of Practice for Biomedical Waste Management was adopted by the Ministry of Health in 2005 and is being implemented in the public health institutions. However, this Code still lacks the necessary supportive legislation to ensure its complete implementation.

The country's energy-based economy benefited from an increase in industrial investments and construction activities beginning in 2003. Between 2001 and 2005, unemployment figures decreased while occupational injuries and deaths increased. There is limited laboratory and testing equipment to monitor occupational health conditions. The Occupational Safety and Health Act (2004) mandates the establishment of an Occupational Safety and Health Authority and an agency responsible for policy development and legislation implementation, to be supported by the Ministries of Labor and Health.

Trinidad, and, to a lesser extent, Tobago, were spared the ravages of hurricanes during the active 2004–2005 seasons. In recognition of the need to strengthen the country's preparedness and emergency response capacity to natural disasters, in 2005 the government replaced the National Emergency Management Agency with an Office of Disaster Preparedness and Management. This office is expected to prepare and introduce new national emergency legislation.

During 2000–2005, the Ministry of Health strengthened its outbreak response capacity with the incorporation of preparedness plans for the West Nile virus, severe acute respiratory syndrome (SARS), and avian influenza A (H5N1). The Ministry of Health adheres to the International Health Regulations and is taking the necessary steps to adequately face the challenges posed by global trade and development—particularly the increased risk of disease transmission—by strengthening institutional response and human resources competencies.

Individual Care Services

Efforts are under way at the RHA level to increase access to and utilization by males of health services in response to the growing prevalence of chronic noncommunicable diseases, as well as to raise awareness among this group regarding common risk factors for these diseases and STI/HIV/AIDS. In 2004, the Ministry of Health approved a new sexual and reproductive health policy that will foster a more comprehensive and gender-based approach to the needs of families and individuals of all ages.

The Ministry of Social Development, Youth, and Sports (MSDYS) holds responsibility for implementing overall policy regarding youth health education and has appointed a national youth council to drive this process. The Ministry of Education provides student support services and counseling in schools nationwide, with individual care being provided on a needs basis; NGOs such as the Family Planning Association of Trinidad and Tobago (FPATT) provide peer counseling services, and a network of youth programs is available through the MSDYS at the community level. To address growing concerns regarding HIV/AIDS stigma and discrimination, the Ministry of Education is implementing the Health and Family Life Education curricula at the primary school level. Sex education and abstinence, values, and morals programs are currently being developed, even though only 7% of schools nationwide have teachers trained in life skills-based HIV education; the Ministry of Health, together with UWI, are training and integrating school health nurses into the system to develop the national program.

A 2004 rapid assessment of the national drug supply system highlighted the need to ensure a constant flow of antiretroviral medications through timely distribution mechanisms which would allow drug delivery directly from suppliers to pharmacies, especially in Tobago. At the same time, there is a need for training of pharmacists to facilitate their increased involvement in the response to HIV/AIDS, particularly as regards encouraging treatment adherence and the provision of first-line counseling to clients. An assessment of STI services identified issues affecting services quality, including the lack of standardized treatment protocols; health, safety, and quality control guidelines; and other quality assurance mechanisms. Clinic services also need to include laboratory facilities for herpes, chlamydia, and HIV testing, to provide continuous training for staff, and to transition from being a strictly vertical STI program into a more holistic, integrated sexual and reproductive health service that facilitates such services as cervical cancer screening and enhances contact-tracing and follow-up of clients (*48*).

The Ministry of Health is currently implementing a Directly Observed Treatment, Short-course (DOTS) program in two pilot sites, with plans to scale up the program nationwide and thus improve institutional response to tuberculosis.

The Ministry of Health provides institutional care free of cost for all those affected by Hansen's disease.

The National Blood Transfusion Service, with satellite sites at major hospitals, is responsible for screening all blood and blood products and for setting standards for their collection and distribution. All blood donations are obtained on a voluntary basis; screening for HIV is conducted in 100% of all donations.

Intensive care units, including neonatal, are available in the public sector only at the three major hospitals. Individual services include emergency, outpatient, and institutional care for mental health, surgery, oncology, tuberculosis, and substance abuse, together with primary health care preventive and outreach services. General dental services by dental surgeons and dental nurses are provided countrywide free at the point of delivery in primary health care facilities. In 2000, the Emergency Health Service transport system was established and made available free of cost at the point of delivery to persons seeking emergency transfer to a public hospital under the supervision of trained staff. A private emergency health transport system also exists to transfer individuals to private hospitals; however, individuals using these services must pay all expenses out of pocket. Plans are under way to consolidate the Public Health Laboratory; the Chemistry, Food and Drug, Vector Control, and Nutrition and Metabolism Laboratories; and the Queens Park Counseling Center and Clinic into one organization, since the physical infrastructure of these laboratories has deteriorated over time, compromising their ability to render adequate service despite high ongoing maintenance costs. Currently, these facilities operate independently of one another, although some consultants are shared among them. In 2005, the Ministry of Health established a National Laboratory Advisory Committee to oversee the operations of the country's medical laboratory network.

Primary and secondary health care facilities provide health promotion interventions and preventive care and treatment for metabolic diseases, with particular focus on diabetes, hypertension, and cancer. Screening for chronic noncommunicable diseases is available free of cost. The Ministry of Health is currently reformulating its national noncommunicable diseases policy and designing an integrated approach-based program to address common risk factors for the country's major morbidity and mortality causes. Primary health care facilities are now furnished with exercise equipment to encourage increased physical activity, and the RHAs are actively pursuing the implementation of prevention screening in community fairs. The Trinidad and Tobago Diabetes Association has also supported health promotion and education interventions by providing voluntary services at primary health care facilities.

The needs of persons with disabilities are addressed through the Disability Assistance Grant Program, which operates under the purview of the MSDYS. Financial assistance is provided to individuals with medically certified permanent disabilities who are unable to earn an independent livelihood. The Disability Assistance Fund was established in December 2003 to meet the needs of persons with disabilities and/or organizations associated with those who do not qualify for assistance in the existing schemes offered by the Ministry. The main objectives of this program are to support and empower civil society groups that focus on the needs of persons with disabilities and to create the institutional and organizational environment necessary for the easy integration of persons with disabilities into society. Program participants receive assistance to purchase therapeutic aids, devices, and equipment.

There are 9.47 hospital beds per 10,000 population, with only a 0.55 bed ratio in general hospitals; human resources for these services are scarce, with 1 psychiatrist, 0.3 psychologists, 11.4 psychiatric nurses, and 1.64 social workers per 100,000 population. There is only one child guidance clinic unit in the country. The health system offers therapeutic services in psychopharmacology, group and individual psychotherapy, occupational therapy, psychosocial rehabilitation, and behavioral therapy. Current services include training for nurses and mental health assistants and the development of research, even though the information system is inadequate and epidemiological surveillance in mental health is limited. There are several NGOs addressing the consequences of Alzheimer's disease and child autism; there is one center for children with mental retardation and one national mental health association.

The Human Tissue Transplant Act was enacted in 2000, with approval of the accompanying regulations occurring in 2004. A National Unit is being established for the procurement, storage, and distribution of tissues for corneal and kidney transplants; these will be provided free of charge at the point of service together with immunosuppressive drugs for the transplant recipient; during the current phase, kidney transplantation will come from living donors only. Between 1993 and 2003, 17 patients had kidney transplants, and the number of kidney recipients who traveled abroad for transplant operations rose. All public health facilities provide cancer screening services for reproductive organs, but unresolved issues remain regarding response efficiency and quality of care. NGOs such as the FPATT and the Cancer Society of Trinidad and Tobago also provide services. The government is currently planning the construction of a National Oncology Center and establishing a national cancer program, with funding and technical support from the Government of Canada.

Health Promotion

The Ministry of Health, within the framework of the 1993 Caribbean Charter for Health Promotion and the HSRP, adopted health promotion as the principal strategy to improve quality of life and well-being among the population. The strategy addresses individual, social, and environmental risk factors in order to modify individual and collective behaviors that in turn will positively influence health determinants. The process encourages a participatory approach by all stakeholders and the development of policies and strategic plans in the areas of sexual

and reproductive health, school health, noncommunicable diseases prevention and control, and HIV/AIDS/STIs, among others. Health promotion programs and efforts to enhance human resources competencies and institutional strengthening are being decentralized to the RHA level, with the purpose of stimulating the creation of healthy settings supported by the basic primary health care principles of accessibility, quality, and equity. The Directorate of Health Promotion and Public Health guides these activities nationwide. A multisectoral National Health Promotion Council was also appointed by the Cabinet in 2001; nevertheless, establishing effective and sustainable mechanisms for intersectoral collaboration between the public and private sectors remains a challenge. In 2000, the Ministry of Health institutionalized the annual observance of Health Promotion Month in April to encourage the participation of community organizations and NGOs and actively advocate for personal responsibility in health by the population, including the adoption of healthy lifestyle practices and a reduction in behavioral risk factors that negatively impact health determinants. The primary health care network is slowly being reoriented, in part through improvements in physical infrastructure that are more conducive to the development of promotional activities and the availability of physical exercise equipment for use by staff and clients. Community health fairs are organized periodically with community organizations, NGOs, and corporate partners that focus on health education activities, voluntary counseling and testing for HIV/AIDS, monitoring common risk factors for noncommunicable diseases, healthy lifestyle counseling, and walks for health. Health promotion activities are reinforced at all levels by sustained, aggressive public awareness campaigns led by the Ministry of Health. A healthy community movement (HCM) initiative is being implemented in three RHA pilot sites with active community participation in the identification of priorities and partnerships with governmental and nongovernmental organizations, including international cooperation agencies. HCM components include local resource mobilization, improving social services' access and quality, developing life skills among vulnerable groups, and strengthening local competencies to enhance intervention planning, implementation, monitoring, and evaluation. The HCM initiative encompasses the development of health-promoting schools; the first phase consists of scaling up school health screening programs and building synergy with similar ongoing programs already existing in the Ministry of Education, as well as through partnerships with NGOs, corporate bodies, civil organizations, and cooperation agencies (*65*).

Human Resources

While neither the private nor public health sector undertake systematic workforce planning, this activity is conducted to some extent at the unit or departmental levels. Such planning usually occurs in response to the need to fill the requirements of a newly created component within an existing program and does not necessarily form part of a long-term strategy to identify and respond to future health needs. The HSRP, however, has attempted to correct this situation by developing a detailed plan to move human resources from hospitals and health institutions into community services (district health facilities and health centers). This shift supports the Ministry of Health's policy of greater adherence to primary and preventive health care and of encouraging the population at large to assume greater responsibility for individual health by adopting healthy lifestyle practices. There is the need to strengthen the dialogue in strategic human resources planning between the Ministry of Health and other health stakeholders, such as UWI; the National Institute of Higher Education, Research and Technology; and other professional bodies. The public health sector has experienced a chronic shortage of personnel—nurses in particular—since 1996 resulting in the need to contract professionals from abroad. During the review period, nurses and pharmacists were recruited from the Philippines, as were health personnel from Cuba.

Health Supplies

There is only limited medicines production capability. The National Drug Policy, which covers both the public and private sectors, has evolved into an open formulary that is a valuable drug information resource. However, health professionals do not uniformly apply the formulary protocols and guidelines in their daily practice due to infrequent revisions of the formulary and a lack of formal incentives that would encourage better compliance. In addition, there is a Vital, Essential, and Necessary (VEN) list currently purchased by the government on a needs basis when ordered by a public health facility. Purchasing of drugs is through a tendering process based on best value in therapeutic class. Since 1993, the National Insurance Property and Development Company (NIPDEC) has been contracted by the Ministry of Health to procure, store, and distribute pharmaceutical and non-pharmaceutical items on a monthly basis to public health institutions. A Comprehensive Audit Report of the Central RHA in 2000 identified several concerns, including the lack of tracking of drugs once they are dispensed to units outside the pharmacy department (excepting narcotics and other controlled substances) and the over-inflation of orders to NIPDEC in order to receive quantities as close as possible to the required amount by health facilities (*66–68*).

The Ministry of Health's Chronic Disease Assistance Plan provides prescription drugs free at the point of delivery to patients with specific chronic diseases, using a range of pharmaceuticals that are listed on the drug formulary. Since fiscal year 2005, the program allows universal coverage of the population eligible for benefits once they are diagnosed at a health care institution with any of the following diseases: diabetes, asthma, hypertension, arthritis, glaucoma, cancer of the prostate, mental depression,

some cardiac-related diseases, and benign prostatic hyperplasia. The Ministry of Health is upgrading the information system to manage and monitor the program.

Vaccines are acquired through the PAHO Revolving Fund for Vaccine Procurement. In 2003, the Government of Trinidad and Tobago signed a memorandum of understanding with PAHO enabling the country's participation in the Regional Revolving Fund for Strategic Public Health Supplies.

Research and Technological Development in Health

The HSRP includes a plan to develop technology assessment and management capacities and systems, including the accreditation of health care facilities as a way to strengthen health information technology infrastructure and integrated information systems for improved evidence-based planning, policy development, and managerial decision-making. Specialized technology is available in both the public and private sectors. Computerized axial tomography and hemodialysis are available in both sectors, while magnetic resonance imaging is available only in the latter.

The virtual health library was launched in December 2005 as a network of health information sources universally accessible on the Internet and compatible with international databases. The library's goal is to promote universal and equitable access to health, scientific, and technical information and to facilitate the management of essential technologies for achieving equitable access to health information. Developing and strengthening the health research system to facilitate evidence-based decision-making, policy formulation, and new learning and development is one of the seven goals identified by the Vision 2020 Sub-Committee on Health, as well as an essential public health function needed to improve the performance of the public health system. The Ministry of Health plays a major governance role in health research and works in partnership with the Essential National Health Research Council. Established in 1995, the Council holds responsibility for directly developing, or stimulating the development through others, of health research policies and instruments, with special emphasis on research to support equity in health and improve health systems.

Health Sector Expenditures and Financing

There is a need to scale up coverage and increase expenditure; generate and maximize revenue; and improve quality in spending, in terms of efficiency and equity. The source of government health expenditure is general taxation revenues; a health surcharge is deducted from the monthly salaries of all wage earners; however, it is not directed to a fund for health care but to a government consolidated fund.

Total health expenditure as a percentage of GDP was 4% for the 2000–2003 period. General government expenditure on health as a percentage of total expenditure on health decreased over the 2000–2003 period from 40% to 38%, while in the private health sector expenditures increased from 60% in 2000 to 62% in 2003. General government expenditure on health as a percentage of total government expenditure was 6% over this same period. The total per capita expenditure on health at an average US$ exchange rate increased over the 2000–2003 period from US$ 235 to US$ 316; during this same period, governmental per capita expenditure on health at an average US$ exchange rate also increased from US$ 157 in 2000 to US$ 201 in 2003 (*69*).

Technical Cooperation and External Financing

A variety of United Nations agencies, bilateral agencies, financial institutions, and NGOs partner with the Government of Trinidad and Tobago utilizing a diversity of technical and economic mechanisms to further the development agenda set by the Vision 2020 National Strategic Plan. Two prominent international financial institutions working in the health sector are the Inter-American Development Bank and the World Bank; the first provided a loan for the development of the HSRP until 2006 and the latter for the HIV/AIDS Prevention and Control Program for the period 2004–2008. The European Union provides a grant in support of HIV/AIDS prevention activities and to ensure a well-coordinated implementation of the HIV/AIDS National Strategic Plan for the 2005–2010 period. The International Labor Organization contributes to health with its project on HIV/AIDS in the workplace (*55*).

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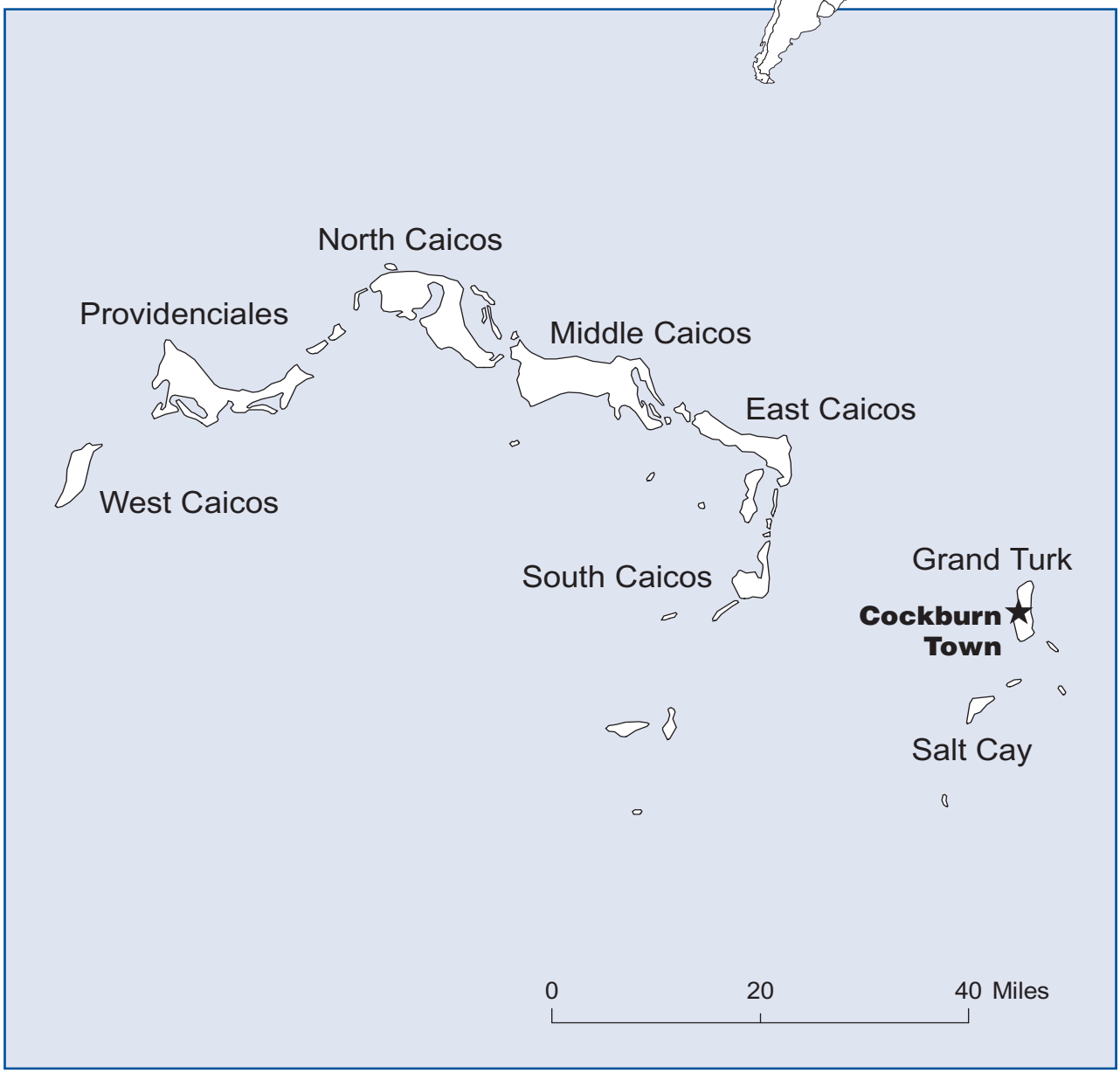
TURKS AND CAICOS ISLANDS



The Turks and Caicos Islands is one of the United Kingdom Overseas Territories in the West Indies. The territory is an archipelago consisting of seven large inhabited islands and many smaller cays as part of a total of 40 islands and cays. The Turks group includes Grand Turk, Salt Cay, and various smaller cays. The Caicos group includes South Caicos, East Caicos, Middle Caicos, North Caicos, Providenciales, West Caicos, Pine Cay, and Parrot Cay.

GENERAL CONTEXT AND HEALTH DETERMINANTS

The total landmass of the territory is 430 km^2. The archipelago is located to the southeast of the Bahamas and north of Hispaniola. Because of the Turks and Caicos' geographic layout, communication and transportation are important issues. Air transportation between the main islands of Grand Turk, Providenciales, North Caicos, Middle Caicos, South Caicos, and Salt Cay is regular but costly. There is a ferry system between Grand Turk and Salt Cay and between Middle Caicos and North Caicos. Small boats also provide inter-island services. The telecommunication links through telephone and electronic mail greatly facilitate the communication process.

Social, Political, and Economic Determinants

Cockburn Town, on Grand Turk, is the capital and the seat of government. The Governor represents the Queen of England; the Premier, appointed by the Governor, is the head of government. The legislature consists of a unicameral Legislative Council. Government ministries are directed by a minister (political) and a permanent secretary (administrative). Quasi-governmental institutions are often managed through an executive management team led by a general manager or director.

According to the Turks and Caicos Department of Economic Planning and Statistics, the estimated population of the territory in 2005 was 30,602. It was evenly distributed between males and females and mainly concentrated on the island of Providenciales, the commercial and business center, which had 22,296 residents, compared to 13,021 in 2001. Grand Turk had a population of 5,186 in 2005. Parrot Cay, which up to 1999 was uninhabited, had a population of 60 persons in 2005 due to the construction of a luxury hotel, which in turn provided employment and prompted the need for housing and related facilities. Figure 1 shows the population distribution of the Turks and Caicos Islands, by age and sex, for 1990 and 2005.

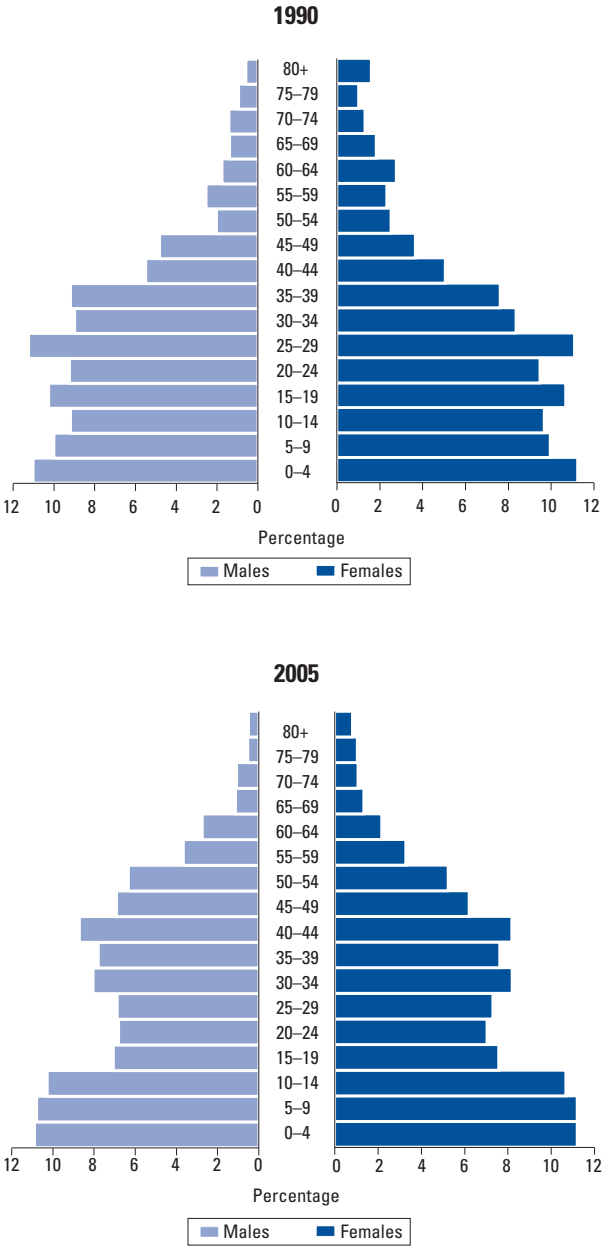
The term "Belonger status" refers to any person who was born in the Turks and Caicos or who was born outside the islands but has at least one parent who was born in Turks and Caicos. It also includes those who are born outside the islands but are adopted by someone with Belonger status and those granted residency status by the territories' Governor. Belongers accounted for 37.4% of the population in 2005, which represents a 2.6% increase over 2004.

Those who do not meet Belonger requirements (i.e., are not citizens by parentage or birth or through naturalization) are called non-Belongers. The population is comprised mainly of non-Belongers who accounted for approximately 62.6% of the total population in 2005, representing a 17.2% increase over 2004. The growth in the non-Belonger population is due mainly to immigration by non-nationals to the islands for employment purposes. Non-Belongers with illegal immigration status pose a significant challenge for the health system—particularly as regards the prevention and control of communicable diseases—since they usually seek to avoid using government health services for fear of possible deportation.

The five principal activities, which together contributed approximately 75% to the GDP, were hotels and restaurants; construction; transport, storage, and communications; real estate, renting, and other business activities; and financial intermediation. Tourism was the mainstay of economic growth, followed by fishing and offshore financial services. Although tourism is beneficial to the country, it also has brought numerous social challenges related to drug trafficking, substance abuse, and illegal immigration.

Over the last few decades, the archipelago has experienced a rapid economic growth of 9% per annum. This growth has been fuelled by large inflows of foreign capital, labor, and entrepreneurial skills. Following a 7.4% fall in 2002, output of hotels and restaurants surged to 15.5% in 2005 as tourist arrivals increased by about the same rate. Tourists' expenditures are more evident in the value-added growth of restaurant activity, which was 23.7% in 2004 and another 15.0% in 2005. The output of the financial intermediation sector leaped to 24.4% in 2004 and another 18.8% in 2005, reflecting an increased demand for financial services. As businesses and households took advantage of favorable lending terms, loans and advances to clients reached nearly US$ 400 million in 2005.

FIGURE 1. Population structure, by age and sex, Turks and Caicos Islands, 1990 and 2005.



Since 2003, positive per capita GDP growth rates have been recorded. These continued through 2005, when there was a 5.5% growth over 2004 in current market prices and 2.3% in constant (2000) market prices. This was equivalent to US$ 18,636 and US$ 15,683, per capita in current and constant (2000) market prices, respectively. This economic growth placed increasing demands on the government to expand both the public health infrastructure and health services, mainly to provide for those who cannot afford private health care services.

Three industries—hotels and restaurants, public administration and defense, and construction—accounted for 41.4% of the employed population. In 2005, 81% of the employed population was in the private sector compared to 11% in the government sector; 8% are self-employed.

There was a decrease in the unemployed labor force from 2004 (9.9%) to 2005 (8.0%). Though still relatively high, the rate was reflective of and consistent with the slight economic upturn that occurred in 2004 (11.4% growth) and 2005 (14%).

The literacy rate in 2001 was estimated at 97.5%. Education for all children of school age is mandatory and free in public schools. In the school year 2005–2006, there were 82% males and 80.3% females, with an overall enrollment of 81.1%. These rates declined from those of the 2004–2005 school year, in which overall primary school enrollment was 83.4% (males 83.8% and female 83.0%). During this time, the gender gap in primary school enrollment rates is apparent, with rates for females being slightly lower than those of their male counterparts. Gender parity in secondary enrollment showed a male-female ratio of 100:97 for the 2005–2006 school year; it had been 100:92 for 2004–2005.

It is important to note that there has been an overall increase in secondary enrollment over the years. In contrast to primary and secondary education, female enrollment in tertiary education surpassed that of men. The gender gap was clearly reversed at the tertiary level when the male-female ratio was 100:206 in 2002 and 100:302 in 2003.

In 2001, most households had private catchments of water (68%) or water piped into their dwellings (22%). In 2001, there were more households with water-closet cesspit/septic tanks (68%) compared to 1999 (56%). Fewer households had pit latrines in 2001 (28%) than in 1999 (34%). However, as the number of households increased during the 1999–2001 period, the percentage of households without sanitation facilities grew (from 1.3% in 1999 to 4% in 2001).

The Turks and Caicos Islands face a variety of environmental inadequacies as regards solid waste disposal, liquid waste management, water quality control, food safety, and institutional hygiene. Solid waste management remains a major challenge on Providenciales, as does pest infestation in areas of the islands where garbage collection systems are poor. The proper inspection of imported food presents difficulties for port health services due to the lack of a port health officer. This situation has led to food inspections being conducted once foodstuffs already have been stored in warehouses or placed on the shelves of retail establishments. In many instances, contaminated or expired food items have been seized from these facilities and destroyed. On occasion, however, this action occurred too late to prevent consumers from purchasing these items. Generally speaking, food handlers

have not received training in proper hygiene and food handling techniques.

Demographics, Mortality, and Morbidity

In 2004–2005, there were more births of females than of males, when compared to other years when this trend was reversed. Census data for 2001 estimated life expectancy at 77.5 years. Of the 318 births which occurred in 2005, about 85% (270) were registered. In 2000–2002, the leading causes of death from defined causes and the corresponding number of deaths were: hypertensive diseases (25); HIV/AIDS (16); accidental drowning and submersion (the majority of deaths were due to illegal immigrants entering on sloops) (11); and diabetes (8). There were 213 deaths from defined causes during the 2001–2005 period. The crude death rate was higher in 2005 for males (2.10) than for females (1.37). There were no maternal deaths during the 2001–2005 period. In 2001, the age-specific fertility rate for the population aged 30–34 was 7.2 births per 1,000 population; the total fertility rate was 3.1 for females of childbearing age (15–45 years).

HEALTH OF POPULATION GROUPS

Children under 5 Years Old

The Primary Health Care Annual Report for 2005 indicated that the majority of infants seen at 3 months were partially breast-fed—that is, mostly being given formula with some breast-feeding. Of the 1,563 children seen in child health services in 2005, 68 were overweight and two were below normal weight.

During the 2001–2005 period, there were 1,255 live births. Thirteen deaths occurred in the age group of 0–4 years. Of these, 7 deaths (5 boys and 2 girls) were under age 1. Asphyxia and slow fetal growth were the major contributors to death. There were two deaths due to HIV/AIDS in the under-1 age group. Intestinal infections and acute respiratory infections accounted for 59% of hospital discharge diagnoses for infants.

There were 6 deaths (3 boys and 3 girls) in the 1–4 age group. Causes of death were HIV/AIDS and external causes. Intestinal and acute respiratory infections and external causes accounted for 47.7% of hospital discharge diagnoses. Of the 371 cases of gastroenteritis that were reported in 2004, 132 were in the under-5-year-old population.

Children 5–9 Years Old

There were seven deaths in this age group in the period 2001–2005. Of the six deaths known by cause, two were from HIV/ AIDS, and one each was due to congenital heart diseases, intestinal infectious diseases, drowning, and acute respiratory infections. The most frequent hospital discharge diagnoses were respiratory illness, intestinal infectious diseases, appendicitis, and hernia.

Adolescents 10–14 and 15–19 Years Old

During the 2001–2005 period, there were two adolescent deaths in this age range, both from external causes. The leading hospital discharge diagnoses were external causes, appendicitis, diseases of the nervous system, and asthma. Complications of pregnancy accounted for 8% of all discharges in the 15–19-year-old age group. Of the total number of births in 2002 and 2003, 10.0% and 13.5%, respectively, were to teenagers ages 15–19. Teenagers accounted for 12% and 13% of medical abortions in 2004 and 2005, respectively. The reporting of abortions is not a requirement in the Turks and Caicos Islands, and the only data available on medical abortions reflect those performed in hospitals.

Adults 20–59 Years Old

During the 2001–2005 period, there were 65 deaths in this age group. The leading causes of death were diseases of the circulatory system, injuries and external causes, malignant neoplasms, communicable diseases, and suicide. Data for the 2000–2002 period showed that the leading causes of death were HIV/AIDS (12), hypertensive diseases (6), and accidental drowning and submersion (5).

Diseases of the circulatory system accounted for 30% of all hospital discharge diagnoses. Other causes included endocrine, nutritional, and metabolic diseases; external causes; and complications of pregnancy. Thirty-one abortions occurred in the under-40-year-old age group.

Older Adults 60 Years Old and Older

The 2001 census showed that there were 2,065 persons in this age group, representing 10.4% of the total population. A growth in the elderly population has implications for increased spending on health care and treatment at home and abroad due to chronic diseases. In 2001–2005, there were 125 deaths in this age group. Cardiorespiratory arrest, ischemic heart diseases, diabetes, and malignant neoplasms were the major contributors to mortality.

The principal hospital discharge diagnoses for this age group were hypertension, diabetes mellitus, diseases of pulmonary circulation, cerebrovascular diseases, other diseases of the digestive system, injuries, and acute respiratory infections.

The Family

In 2001, there were 7,254 households, and 30.8% were headed by females. The average income for male-headed households was US$ 30,461, compared to US$ 21,916 for female-headed households.

At the end of 2005, the Social Development Department registered 77 children who had lost either one parent (45 children) or both parents (32 children) to HIV/AIDS. While most were being cared for by extended families, there were several who entered

the foster care system and whose upbringing may be negatively impacted by this situation.

In 2005, the Primary Health Care Department of the Ministry of Health reported that most clinic attendees stated that they were unable to breast-feed exclusively due to the necessity of returning to work. Maternal grants (a one-time payment of US$ 400) are provided to all mothers for each live birth when they produce a birth certificate to the National Insurance Board, which provides a variety of social security services to all employed and self-employed persons through compulsory participation. Maternity allowances (60% of average weekly earnings for a 12-week leave period) are awarded to those who have satisfied contribution requirements.

Persons with Disabilities

In 2001, the Population and Housing Census estimated that there were 337 persons living with a disability. Of these, 28.5% had a visual disability, 18.7% a mobility disability, 15.7% a hearing disability, 8.9% mental retardation, 8.3% a speech disability, and 19.9% reported other types of disability.

HEALTH CONDITIONS AND PROBLEMS

COMMUNICABLE DISEASES

Vector-borne Diseases

In the period 2001–2005, there were four imported cases of **malaria**. There was one imported case of **dengue** in 2005.

Vaccine-preventable Diseases

There were no cases of **measles**, **rubella**, **diphtheria**, **pertussis**, **neonatal tetanus**, or **tetanus** during the 2001–2005 review period. Annual mop-up campaigns are conducted in schools and work sites to identify and vaccinate those in the population over age 5 who have missed routine vaccination and previous campaigns. In 2001, the DTP-HB/Hib pentavalent combination vaccine (primary doses) was introduced into the routine child health schedule, with the first of three dosages to be administered at 6 weeks of age. In 2005, the schedule was changed to commence at 2 months. Children were immunized against measles, mumps, and rubella (MMR); diptheria, pertussis/whooping cough, and tetanus (DPT); poliomyelitis (OPV); and tuberculosis (BCG).

The vaccination coverage for administered antigens for the period 2001–2005 was maintained above 90%. For 2005, vaccination coverage for antigens stood as follows: DPT3, hepatitis B, and Hib (95%); OPV3 (97%); and BCG (100%).

Intestinal Infectious Diseases

In 2001–2005, there were 592 cases of **gastroenteritis** in children under 5 years of age and 675 cases in persons over 5 years old. In the same period, there were 201 confirmed cases of foodborne diseases, the majority caused by ***Salmonella***, ***Shigella***, and **ciguatera poisoning**.

Chronic Communicable Diseases

In the 2001–2005 period, there were four new cases reported of **Hansen's disease** (leprosy). Of the 21 cases of **tuberculosis** during this period, 7 were coinfected with HIV/AIDS. Between 2003 and 2005, there were 29 cases of **hepatitis B**.

Acute Respiratory Infections

Primary health care data for 2003–2005 showed 4,080 reported cases of acute respiratory infections in children under age 5. Notable increases in these infections normally occur in the months of October through March.

HIV/AIDS and Other Sexually Transmitted Infections

HIV and AIDS remained a challenge for the Turks and Caicos Islands over the 2001–2005 period. The first case was diagnosed in 1985 and up to 2005, there were a total of 732 HIV-positive individuals. The principal mode of transmission is heterosexual. In the period 2004–2005, there were 41 newly reported HIV cases (21 males and 20 females). The majority of these cases were among nonresident work permit applicants, and most of these individuals no longer reside on the islands. The island of Providenciales, which has the largest population, accounted for more than 50% of the HIV-positive cases. Although the data were not disaggregated by sex and age, the trend tended toward more males than females testing positive. Given that the persons living with AIDS were of various nationalities, prevention and care initiatives were challenged to adequately respond to language issues and cultural beliefs, address stigma and discrimination issues, and introduce measures to discourage a general relapse or complacency about minimizing risk behaviors.

The HIV/AIDS surveillance system also faced a number of challenges. Chief among these is a mistrust by some individuals regarding the system's ability to ensure confidentiality given the islands' small population size. This fear resulted in some persons refusing to be tested or in their seeking testing abroad.

There were 21 deaths due to AIDS during the 2000–2003 period and five deaths in 2004–2005. This decrease in case numbers was due to the introduction of an improved treatment and care program and scaled-up access to antiretroviral drugs commencing in January 2003.

The number of reported cases of **syphilis** rose from 13 in 2003 to 35 in 2005. The rise in numbers was attributed to increased detection in persons undergoing testing to acquire work permits.

Other Communicable Diseases

Over a three-year period, **acute hemorrhagic conjunctivitis** contributed substantially to morbidity with 842 cases in 2003,

49 in 2004, and 124 in 2005. The etiology for the outbreak in 2003 was suspected to be a Coxsackie virus but this was unconfirmed. **Influenza-like illness** is one of the most frequently reported health conditions, with 2,809 cases being reported during the 2001–2005 period.

Noncommunicable Diseases

These diseases are managed as part of the primary level of health care services offered at health centers and hospitals. In 2001–2005, the majority of patients were seen for conditions related to **hypertension**, **diabetes** and related complications, and **malignant neoplasms**. This trend was supported by morbidity data that confirmed hypertension (1,367), diabetes (499), **heart disease** (174), **obesity** (84), and cancer (39) as the leading health problems reported by the health services in 2004.

Other Health Problems or Issues

Mental Health and Addictions

A psychiatrist and mental health nurse provide mental health-related services to the inhabited islands at the primary, secondary, and tertiary levels, and make patient referrals to the Bahamas for care as needed. Data available for 2003 showed that 76 patients were seen, of which 64.5% (49) were males and 35.5% (27) were females. Most of the patients were seen on Grand Turk (27.6%) and Providenciales (21%).

The data also showed that 63% of those seen were in the 20-to-49-year-old age group, while only 9.2% were 19 years of age or younger. The main diagnoses were schizophrenia (28.9%), substance abuse (15.8%), psychosis not specified (7.9%), seizure disorders with psychological problems (7.9%), bipolar affective disorder (6.6%), and adjustment disorder with depressive or anxiety symptoms (6.6%). Visits to mental health clients in the prison population are conducted on a regular basis. Challenges affecting the delivery of mental health services during the 2001–2005 review period included outdated legislation and policies and insufficient human resources to guide services delivery.

Oral Health

Dental health services are provided on all six of the main inhabited islands. There is a school dental program on Providenciales. There were no x-ray machines on the other islands; therefore, no surgical extractions and root canal treatments were carried out.

Similarly, no orthodontic and prosthetic services were offered, as there was no dental laboratory, dental technician, or orthodontist consultant. There was also no dental assistant in the program. As a result, dental nurses are being underutilized, and this adversely affects services delivery.

RESPONSE OF THE HEALTH SECTOR

Health Policies and Plans

The government recognizes health as a basic human right and works to ensure equal access for its residents to health care as needed. The 2005 Five-year Strategic Health Plan takes into consideration the overall vision and mission of the Ministry of Health, provides a framework upon which the Ministry's various departments can develop and implement equitable health programs, and is evaluated and revised on an annual basis.

The 2005 Five-year Strategic Health Plan also serves as the framework to guide and direct the delivery of equitable health services. It includes a restructuring of the Ministry of Health in order to strengthen health planning, systems development, financial management, essential national health research, health promotion, and capacity to regulate public and private health sector activities. Under the Plan, the post of Director of Health Services was created, and the incumbent has overall responsibility for the health status of the country and for developing and directing health policies in the Ministry of Health. The Permanent Secretary chairs the Senior Management Team and is responsible for personnel and fiscal management functions.

Organization of the Health System

The Ministry of Health is responsible for the provision of efficient and effective preventive and curative health care through the health departments. The Ministry's activities are carried out in partnership with the community, the private sector, and overseas providers.

The private health sector is limited mainly to outpatient care and is focused on general practice, although some secondary care services are also offered. The public hospital network consists of Grand Turk Hospital and the Myrtle Rigby Health Complex, located on Providenciales. These are the only two hospitals which offer secondary health care services and some tertiary care services. The Grand Turk Hospital has 21 acute care beds and 10 chronic care beds for geriatric patients. The Myrtle Rigby Health Complex has 10 acute care beds. There is an operating theater in both facilities with full surgical care capabilities to respond to major emergencies and undertake all elective procedures except for those requiring postoperative intensive care, or specialized equipment or personnel not available locally. Both hospitals have maternity units for cases not requiring advanced neonatal care as determined by an antenatal risk assessment. The hospitals provide secondary health care in the areas of internal medicine, pediatrics, general surgery, obstetrics and gynecology, and anesthesiology. Some urological services are provided through collaboration with a private sector urologist. In 2005, there were four private clinics, seven primary health care medical centers, and seven family planning clinics.

Using Research to Assure Health Equity in Turks and Caicos

In an attempt to deliver health services equitably to every resident on the islands, the Government of the Turks and Caicos has crafted the 2005–2009 Five-Year Strategic Health Plan. As part of this plan, the National Epidemiology and Research Unit has been created, whose dual mission is to bolster disease surveillance efforts and respond more effectively to disease outbreaks. To this end, it conducts communicable disease workshops, coordinates efforts with other governmental entities, and informs the development of national health policies.

Public Health Services

The primary health care strategy continued to undergo reorientation to strengthen specific programs geared towards health promotion and management and disease prevention and control. There are primary health care clinics on the six main inhabited islands, and clients are treated regardless of their ability to pay. Primary health care services focus on maternal and child health, dental health, chronic noncommunicable diseases (diabetes and hypertension), communicable diseases, school health programs, safe food handling, and, to a limited extent, nutrition.

In 2005, the seasonal influenza vaccine was introduced among health care workers. The disease surveillance team and the National Epidemiology and Research Unit of the Ministry of Health conducted several workshops geared at completing the development of the national communicable diseases surveillance manual and stepping up the coordination and response to communicable disease outbreaks. Training provided by the Ministry of Health focused on promoting good hygiene practices in the hotel and hospitality industries and contributed to a reduction in the number of foodborne diseases in 2005 compared to previous years.

As regards services for those living with HIV, the government has committed itself to scaling up access to antiretroviral medications by allocating the necessary funds in the national budget for their procurement for all Belongers and non-Belongers with legal status requiring such treatment. These drugs are purchased through the National AIDS Program of the Ministry of Health of the Bahamas based on a contractual arrangement which also allows the Turks and Caicos Islands to benefit from HIV/AIDS laboratory services and staff training in that country. At the end of 2005, some 70 individuals were receiving antiretroviral therapy, and another 12 accessed treatment in the United States through the University of Miami's research program.

In 2005, six sites provided access for the population to prevention-of-mother-to-child-transmission services. Voluntary counseling and testing (VCT) are available at all clinics and public laboratories. HIV testing and counseling are offered on an informed basis as a matter of routine to all women attending prenatal clinics. During 2000–2005, four pregnant women tested positive. Due to the nature of their immigration status, migrant women may not access these services at an early stage out of fear of being deported. Thirty-five VCT providers were trained in 2005 as part of ongoing efforts to scale up these services and improve their quality. Several additional services are available for persons living with HIV/AIDS. Programs such as Buddy Support and People for Positive Action as well as the Center of Love and Hope (an AIDS hospice) lend support, supervise and monitor drug adherence, and provide information and links to additional community resources. The Social Development Department provides counseling services and welfare grants in addition to foster care services to children orphaned by HIV/AIDS or others needing assistance to meet their basic needs.

During 2001–2005, staff were assigned to implement programs for food safety, water quality, liquid and solid waste management, vector and pest control, institutional hygiene, veterinary public health, occupational health and safety, cemetery management, vaccine-preventable childhood illnesses case investigations, and premises inspection/residential sanitation.

With the increasing volume in air and sea traffic and the persistent threat of hurricanes, the Turks and Caicos Islands are vulnerable to disasters and mass casualties. The health sector, in collaboration with other government and nongovernmental agencies, increased its capacity to manage major emergencies and decrease the impact of disasters. In 2005, staff from health facilities on Grand Turk and Providenciales participated in aircraft simulation exercises. A plan for improvements in the management of disasters was also prepared; it included the conducting of mass casualty training exercises involving first responders from all sectors. During the 2001–2005 review period, the Ministry of Health created an Emergency Preparedness and Response Unit to coordinate disaster responses.

Individual Care Services

The Ministry of Health is responsible for providing affordable and efficient health services to all residents. However, the fee structure for Turks and Caicos nationals (Belongers) is less than that for non-Belongers.

Accessibility to secondary and tertiary care services is difficult in emergency situations due to the geographic dispersion of some of the islands and cays. At present, the government holds

the principal market share in providing hospital services to the population even though many individuals travel abroad for diagnostic and hospital care.

The Medical Treatment Abroad Program (MTA) continues to be the single largest recurrent health expenditure line item. Patient travel costs and overseas treatment accounted for approximately 7.3% of the government's recurrent expenditure in the 2004–2005 budget. Treatment may be accessed in the Bahamas and Jamaica, even though the majority of individuals prefer to seek treatment in the United States. In 2005, a total of 456 patients were referred abroad resulting in 730 treatment episodes (patient visits). Of these, 302 had one visit, and the remainder had two or more visits. Twenty-seven cases of cancer were referred abroad for treatment, which accounted for approximately 50% of the total treatment-abroad expenditure. Subsequently, the government introduced a number of strategies to increase the effectiveness of case management for patients referred abroad. These include improvements in monitoring the length of hospital stay and the need for follow-up visits, as well as negotiating for larger discounts for the medical services provided and with third-party administrators for management fees to be placed at fixed rates, as opposed to being based on percentage of savings.

The Visiting Medical Consultant Program continued to be of substantial value for patients in need of subspecialist medical care in the areas of orthopedic surgery, ophthalmology, neurology, dermatology, nephrology, and audiology.

In 2002, a patient satisfaction survey conducted for Grand Turk Hospital showed the quality of services and overall rating to be very high. The Myrtle Rigby Health Complex on Providenciales introduced a system of triaging, in which priority outpatients were given a red card to ensure prompt attention to their health needs. An appointment system also has been set up to reduce the outpatients' waiting time.

Two laboratories are operated by the public sector within the hospital facilities, and there is one privately operated laboratory on Providenciales. Diagnostic services are limited to basic hematology, chemistry, microbiology, and serology. All histopathology and cytology specimens are sent abroad for analysis. Basic radiological, ultrasound, mammography, CT scan, colposcopic, and endoscopic procedures are performed locally. There are two blood banks which operate on a donor-directed or donor-replacement system; both are characterized by a limited blood storage capacity and the unavailability of blood components. The types of surgical procedures that may be performed locally, therefore, are limited by the availability of blood.

There is one dialysis unit on Grand Turk; it is highly dependent upon the blood banks; in 2005 it served 10 chronic renal failure patients. Five of these patients flew three times weekly from Providenciales to Grand Turk for dialysis treatment.

In 2005, the first mobile dental unit on Providenciales was launched at Clement Howell High School. This unit provides preventive and curative services to schoolchildren. There is an ongoing project on the islands of North Caicos and South Caicos in which children are examined and given appointments to dental clinics for conventional and specialized treatments.

Geriatric care services are provided on Grand Turk and South Caicos. The Grand Turk facility houses 14 clients, and the Wellness Center on South Caicos accommodates six in-patients.

Health Promotion

Health promotion activities included such targeted initiatives as the Rapport Youth Peer Education program and the Creole Peer Education program, as well as the development of public service announcements and media campaigns.

Human Resources

In 2005, there were 14 general physicians (7 public and 7 private), 7 dentists (2 public and 5 private), and 16 specialist physicians (14 public and 2 private). Around 80% of the professional staff employed are foreign nationals on contract. Staff turnover is high, since most contracted staff leave the islands after a stay of two or three years.

The rapidly growing population fuels the demand for health care personnel. Government efforts to provide incentives to nationals to return to work in the public sector upon graduation through the granting of scholarships have not reduced the need for international recruitment. At the same time, many trained health care staff have been lost through nonrenewal of their contracts. The constant turnover of professional staff has greatly affected continuity in patient-health care professional relationships and treatment regimens. The Ministry of Health has a small pool of staff upon which it draws for succession planning as a result of this staff turnover. Despite this, a number of health personnel posts remain vacant for long periods of time, thus affecting the delivery of health care services.

In the period 2001–2005, based on per capita needs, there was a shortage of public health nurses and midwives. Nurses are the most vulnerable to migration pressures due to high regional and international demands for their services. Nevertheless, the nursing staff constituted the largest portion of health care workers on the islands. In 2005, the expenditure on human resources represented about 45% of public health sector expenditure. In 2005, the government prepared a Strategic Plan for the Development of Nursing Services as an integral component of the overall strategic plan for human resources development in the health services area.

Health Supplies

Frequent turnover of health professionals has also affected the area of pharmacy, since prescribing habits by physicians tend to be influenced by cultural beliefs and background. This has led some professionals to not prescribe certain drugs even if they

form part of the approved national formulary and are widely available. At the same time, the geographic spread of the Turks and Caicos results in long-distance supervision of pharmacists, as there are only two trained pharmacists to cover the entire island population. Pharmaceutical drugs are available in the public sector free of cost for schoolchildren and those over age 55 and for a nominal cost to the rest of the population.

The rotavirus and influenza vaccines were introduced into the Expanded Program on Immunization during the 2001–2005 period.

Research and Technological Development in Health

The National Epidemiology and Research Unit was created in 2005 as part of the restructuring component of the Ministry of Health's Five-year Strategic Health Plan. It is headed by a National Epidemiologist/Chief Medical Officer to enhance disease surveillance and disease outbreak response and to support research activities related to health policies development. In addition, a National Research Committee was created and Ministry of Health staff received training in research ethics. The Ministry continued its consultations with the Caribbean Health Research Council for the establishment of an ethics review board and committee.

Health Sector Expenditures and Financing

Government expenditure (both recurrent and capital) on health services increased in the 2001–2005 period. In 2001–2002, the recurrent expenditure on health was 19% of the total government recurrent expenditure. In the 2003–2004 fiscal year, recurrent expenditure on health was US$ 17,285,202 (per capita expenditure of US$ 790).

In 2005, the Ministry of Health was allocated US$ 19.6 million, which represented 15.9% of the 2005–2006 recurrent expenditure budget. Actual expenditure for the 2005–2006 fiscal year for all health departments (inclusive of environmental health, but excluding the Ministry of Health headquarters) was US$ 27.2 million, with 46.3% and 29.6% of this corresponding to the MTA and human resources, respectively.

The factors contributing to rising health services expenditures included rapid population growth, the introduction of additional secondary and tertiary care services, and increased demands for medical supplies, medications, and staff. The government continued to provide 100% of the recurrent expenditure for HIV/ AIDS treatment. The increase in expenditure on the MTA was the single most important contributing factor to the general increase in government expenditure on health. In 2001, the MTA expenditure was US$ 6.4 million, with one catastrophic case costing US$ 1.5 million. In 2003, expenditure on primary health care services was estimated at US$ 4 million, while that spent on secondary and tertiary care was US$ 13.5 million. The treatment-at-home program and better enforcement of the MTA policy achieved the objective of reducing the total government expenditure on health services.

The Turks and Caicos' public health services charge user fees in a system in which fees for non-Belongers are much higher than those paid by Belongers. This particularly affects access for non-Belongers to secondary care services. Some categories of users are exempt from these fees: adults over age 55, welfare recipients, the economically indigent, prisoners, schoolchildren of Turks and Caicos nationals under age 18, government employees, and contract workers and their dependents.

Private sector health services are financed by out-of-pocket payments from clients or through private health insurance. In 2005, it was estimated that 20% of the population had private health insurance while the rest of the population was covered by the Ministry of Health or through out-of-pocket expenditure.

Technical Cooperation and External Financing

The Ministry of Health developed various partnerships to improve the delivery of health care services through community participation. These include collaborations with the National Kidney Foundation in the development of a dialysis unit on Providenciales and with the National Cancer Society for the procurement of a mammogram machine and the provision of mammography services at the Myrtle Rigby Health Complex. Other sustained partnerships included those with the Turks and Caicos AIDS Foundation and the Turks and Caicos Cancer Foundation.

The Ministry of Health also continued its collaborations with the Pan American Health Organization and procured the rotavirus and influenza vaccines through the PAHO Revolving Fund. Other key subregional and international partners included the Caribbean Epidemiology Center; Caribbean Community; European Union; Global Fund to Fight AIDS, Tuberculosis, and Malaria; and the Clinton Foundation.

UNITED STATES OF AMERICA

Throughout the 1990s and early 2000s, the United States experienced economic growth, although inequalities in earnings also widened in those years. Summary health indicators improved, but health differences between population groups persisted. The age structure of the population continued to change during this period, which shifted the population's health needs and the provision of health services.

GENERAL CONTEXT AND HEALTH DETERMINANTS

Macroeconomic, Political, and Social Issues

In 2003, about half the population in the United States lived in large metropolitan areas and only 20% lived in micropolitan areas (smaller urban areas with an urban core of at least 10,000 but less than 50,000) or in rural counties. This distribution is far from static, however. In fiscal year 2003 some 40 million persons (about 14% of the total population) moved, although most did so for only short distances. Non-Hispanic Whites moved less (12%) than either Blacks or Hispanics (around 18%). (See Figure 1 for the country's population structure.)

The country's real gross domestic product (GDP) grew by 37.6% from 1995 to 2005 (Figure 2), despite an eight-month recession in 2001. The percentage of the population living in poverty declined from 13.5% in 1990 to 11.3% in 2000, but increased thereafter, reaching 12.6% in 2005.

Female-headed households with children (a subgroup of all female-headed households) are one of the groups most vulnerable to poverty. The poverty rate for this subgroup followed a trend similar to that of the overall poverty rate during this period, but at a much higher level—36.2% of these families were below the official poverty line in 2005. This "feminization" of poverty has been partially linked to differences in the earnings of employed men and women. In 2005, women with paid work earned considerably less than men—men 15 years old and older earned a median US$ 34,349 per year, whereas women earned only US$ 23,074, or 33% less than men, in part because women tend to be concentrated in lower-paid occupations. In 2005, 20% of working women were in service occupations, while only 13% of men were in these lower-paid jobs; similarly, 22% of working women were in office and administrative support positions compared to 6% of their male counterparts.

Hispanics and Blacks also are among the groups most vulnerable to poverty. Poverty rates for these groups followed trends similar to the overall poverty rate during this period, but at a much higher level; 2005 poverty rates for these groups were 21.8% and 24.9%, respectively.

As the GDP grew in recent decades, so did inequalities in personal income distributions, as measured by the Gini index. Although there have been intervals of stability or decline in the Gini index, such as in 1993–1998, the long-term trend since the mid-1970s has been upward. Over the past 10 years, the Gini index has risen 4.2%, from 0.450 to 0.469.

This widening of the earnings gap has been linked to structural changes in the U.S. labor market, whereby more highly skilled persons in the upper income percentiles experienced real gains in wages, while less-skilled workers experienced real wage losses. This has been explained by an industrial shift towards technical services and retail sales, as well as more frequent use of temporary workers, a proportional drop in union membership, a real-value decline of the minimum wage, and increased global competition and immigration.

In 2005, 16% of the population, or 46.6 million people, had no health insurance coverage, up from 14.2% in 2000. Among those living in poverty, 32% had no health coverage, despite the existence of government health insurance targeting the poor, such as Medicaid. Blacks, Asian/Pacific Islanders, Hispanics, and foreign-born persons had a relatively high risk of lacking health insurance coverage. These groups, except for Asian/Pacific Islanders, also had elevated rates of poverty. The lowest health insurance coverage was in the South and the West, both at around 18%, and in the Midwest and the Northeast with coverage levels between 12% and 14%. Not surprisingly, the regions with the highest poverty rates also had the lowest coverage.

The proportion of children without health insurance declined in the early 2000s, falling from 11.9% in 2000 to 11.2%, or 8.3 million children, in 2005. A decline in health insurance coverage by private insurance was more than offset by an increase in Medicaid coverage; 19% of children in poverty were uninsured.

Demographics, Morbidity, and Mortality

The country's population grew 13% in the 1990s, rising from 249 million people in 1990 to 281 million in 2000 and 296 million in 2005. Some of this growth was due to immigration: in 2000, 11% of the population (about 30 million people) was foreign-born,

FIGURE 1. Population structure, by age and sex, United States of America, 2005.

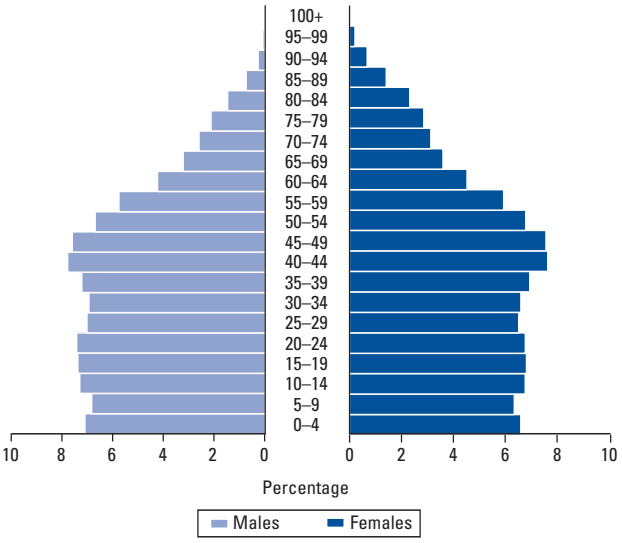
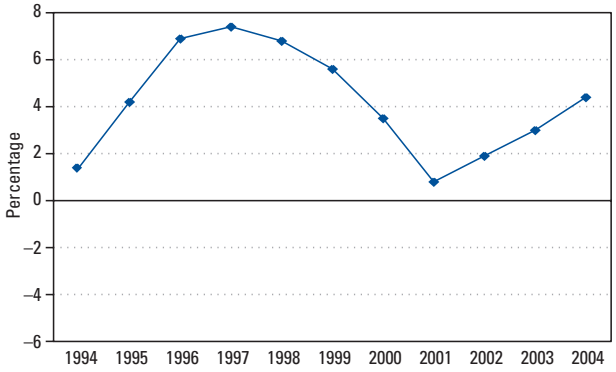


FIGURE 2. Gross domestic product, annual growth (%), United States of America, 1994–2004.



which represents a substantial increase from the 8% figure (almost 20 million persons) in 1990. Many of these immigrants came from Latin America. In fact, throughout the 1990s, the proportion of Hispanics in the country's population changed and increased the population's ethnic makeup. For example, in fiscal year 2004, Mexico had 175,364 immigrants coming to the U.S., ranking it first among the ten countries providing the most immigrants. Also included among the top ten were the Dominican Republic and El Salvador, providing 30,492 and 29,795 immigrants, respectively; other Latin American countries that ranked high included Colombia, Cuba, and Guatemala. The Hispanic population's high fertility rate also contributed to the rapid growth of the Hispanic population in the United States. Hispanic women's fertility rate far exceeds that of any other ethnic group in the country—in 2004, Hispanic women in the United States had a fertility rate of 97.8 live births per 1,000 women, compared to White non-Hispanic women, who had a rate of 58.4. In 2004, Latinos made up 14.0% of the population, and are now the largest minority group in the country. Of children aged 5–17 years old, 18% spoke a language other than English with their families; for nearly 7 out of every 10 of these children, the language was Spanish.

From 1998 to 2004 the crude birth rates and the fertility rates remained relatively unchanged. Crude birth rates varied between 14.0 live births per 1,000 population and 14.8, and fertility rates fluctuated between 64 and 66 live births per 1,000 women aged 15–44 years. In every ethnic group, women delayed having children until increasingly older ages. From 1998 to 2004, birth rates for teenagers dropped steadily and rates for women in their early 20s generally declined.

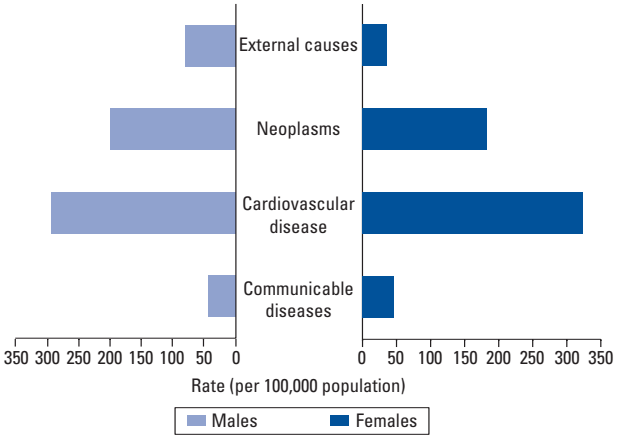
Life expectancy continues to improve, with people aged 65 and over comprising 12% of the U.S. population in 2003. In 2003, life expectancy was 77.5 years, compared to 75.8 in 1995. Women's life expectancy was 5.3 years longer than men's in 2003. Although life expectancy for Blacks also improved throughout the past decade, in 2003 they lagged 5.3 years behind Whites. The growth rate of the older population is expected to continue until 2030, when the last Baby Boomers enter the ranks of the older population. The U.S. Census Bureau projects that the population of the oldest, those aged 85 and older, could grow from 4.2 million in 2000 to nearly 20 million by 2050.

The expected growth of the older adult population over the next 50 years will have an extraordinary impact on the U.S. health care system. The supply and demand for health care workers will be particularly affected. On the one hand, the supply of health care providers may decrease, as large numbers of workers retire or reduce their working hours. On the other, older adults consume a disproportionate share of health care services, so demand will grow. The aging of the population also will affect the type of services used and the preparation of the workforce needed to provide those services.

In 2003, the crude death rate in the United States was 841.9 per 100,000 population, a 1.4% decline from the 2000 rate of 854.0 (Figure 3). The age-adjusted death rate (which adjusts for the aging of the U.S. population) declined by 4.2%, dropping from 869.0 in 2000 to 832.7 in 2003. Death rates increased for people aged 40–49 years old. Death rates for persons aged 65–74 years old decreased by 2.6%, the largest decrease of any age group. Death rates also decreased for age groups 55–64, 75–84, and 85 years and over.

In 2003, the leading causes of death for both men and women, in rank order, were diseases of the heart; malignant neoplasms; cerebrovascular disease; chronic lower respiratory diseases; unintentional injuries (accidents); diabetes mellitus; influenza and pneumonia; Alzheimer's disease; nephritis, nephritic syndrome, and nephrosis; and septicemia. The age-adjusted death rate for

FIGURE 3. Estimated mortality, by broad groups of causes and sex, United States of America, 2003.



heart disease in women was 33.6% lower than that for men. The rate for cancer was 31.0% lower for women than men, mainly because more males smoked tobacco, the leading cause of lung cancer and other respiratory cancers. Males also were almost twice as likely to die in accidents, more than four times as likely to commit suicide, and more than three times more likely to be a victim of homicide than females. The overall crude death rate for women was considerably lower than that for men throughout the 1990s but was about the same in 2003.

Death rates varied substantially between rural and urban areas, and these differences also varied from one geographical region to another. From 1994–1996 to 2000–2002, overall age-adjusted death rates declined in each geographical region and in each category of urbanization. The overall age-adjusted death rates for the most urbanized, large central metropolitan counties dropped substantially, from 902.5 deaths per 100,000 population to 833.1. Rates in the most rural, non-metropolitan counties declined less, dropping from 945.8 per 100,000 to 914.3. The South, which had the highest age-adjusted death rates in the most rural counties, also had the least decrease in rates in these same counties between 1994–1996 and 2000–2002. In 2000–2002, the South's age-adjusted death rate for large central metropolitan counties settled below the rate of its most rural counties. In the Midwest, the 2000–2002 age-adjusted death rates for the large central metropolitan counties remained higher than the more rural counties.

HEALTH OF POPULATION GROUPS

Children under 5 Years Old

For young children, mortality, morbidity, and access to quality health care are greatly affected by poverty, which explains many of the differences between race and ethnic groups. One-fifth of all children under the age of 6 lived below the poverty threshold in 2005. (In 2005, the official poverty threshold for a family of four was just under US$ 20,000.)

The infant mortality rate dropped throughout the latter part of the 1990s, but rose in 2002. In 1995, infant mortality was 7.57 deaths per 1,000 live births. More recently, the infant mortality rate was relatively stable, fluctuating around 6.84 deaths per 1,000 live births in 2001, 6.95 in 2002, and 6.84 in 2003. The five leading causes of death in infants in 2003 were congenital anomalies (20% of all infant deaths); disorders relating to short gestation and unspecified low birthweight (17%); sudden infant death syndrome (8%); maternal complications of pregnancy (6%); and newborn affected by complications of placenta, cord, and membranes (4%). Non-Hispanic Blacks, who had substantially higher infant mortality rates than any other ethnic or racial group, experienced a decrease in rates, dropping from 14.65 deaths per 1,000 live births in 1995 to 13.60 in 2003. In 2003, as was the case in previous years, infant mortality rates varied widely by state. In general, states in the Southeast had higher rates, while those in the West and Northeast had lower rates.

Neonatal mortality followed a similar pattern. From 1995 to 2001, neonatal mortality rates decreased from 4.92 deaths per 1,000 live births to 4.54; this rate increased in 2002, to 4.67, and was 4.63 in 2003. Non-Hispanic Blacks, again with the highest rate of any ethnic group, dropped from 9.65 per 1,000 live births in 1995 to 9.22 in 1997, and then increased 9.40 in 1998, and 9.57 in 1999. The rate in 2003 was 9.26. For children aged 28 days to 11 months, mortality rates dropped from 2.65 deaths per 1,000 live births in 1995 to 2.27 in 2000. From 2000 to 2003 the rate remained relatively unchanged. American Indians and Alaskan Natives shared the highest postneonatal mortality rates with non-Hispanic Blacks, at 5.00 deaths per 1,000 live births in 1995; in 2003, the rate dropped to 4.18 for American Indians and Alaskan Natives, and 4.34 for Blacks.

Death rates for children 1–4 years old consistently declined throughout the 1990s and early 2000s. In 2003, the death rate in this age group was 31.5 deaths per 100,000 children aged 1–4 years; the highest rate was among Black children, at 46.8 deaths per 100,000. The leading cause of death for these children in 2003 was unintentional injuries, at 10.9 deaths per 100,000 children aged 1–4 years, or 34.6% of all deaths in this age group. More than half of these deaths were related to motor vehicle traffic accidents, many of which could have been prevented—most of the children who died in motor vehicle accidents were not restrained by children's safety seats or seat belts. The second leading cause of death for this age group was congenital malformations, at 3.4 deaths per 100,000, and representing 10.9% of all deaths. Both of these two cause-specific death rates declined substantially throughout the 1990s. The next three leading causes of death for these children were cancer (7.9% of all deaths in 1–4-year-olds), homicide (7.6%), and heart disease (3.7%). The sixth leading cause of death was influenza and pneumonia, representing 3.3% of all the deaths in this age group.

Children 5–9 Years Old

In 2000, children aged 5–9 years old made up a little over 7% of the country's population. Children in this age group had the lowest death rate of any age group, and this rate dropped slightly from 16.4 deaths per 100,000 children aged 5–9 years in 2000 to 14.7 in 2003. The leading cause of death for this group was unintentional injuries, with most deaths due to motor vehicle accidents.

Two of the chronic morbidities seen in these children—asthma and lead poisoning—are more likely to affect children living in poverty. In 2004 about 12% of children of all ages had ever been diagnosed with asthma, with children living in poverty having a slightly higher likelihood of developing asthma (14%). Asthma is believed to be the most common reason for school absenteeism. In 2000, about one million of the country's children under age 6 had high enough lead levels in their blood to adversely affect their development, behavior, and ability to learn; a disproportionate number of them were living in poverty. Problems caused by lead poisoning begin to surface at the time children enter school. Lead-based paint used in older homes was the usual source for the poisoning.

Adolescents 10–14 and 15–19 Years Old

Adolescents living in poverty are at greater risk for poor health. Adolescents who did not live in poverty were 15% more likely to report very good or excellent health than those living in poverty. In 1998, 17% of adolescents came from families living in poverty, and another 20% came from families living in near poverty. Moreover, 40% of all adolescents who lived in families headed by women were living in poverty.

Initiating smoking during adolescence is a good indicator of future smoking rates and smoking-related disease trends. Based on a national survey of adolescents, the percentage of 13–14-year-old eighth graders who had smoked in the previous 30 days dropped from a peak of 19% in 1997 to 9% in 2005. In the same time period, the prevalence of smoking among 17–18-year-old high-school seniors dropped from about 37% to 23%. In 2005, 50% of all 12th-grade students had tried smoking. Rural students smoked more than their urban counterparts.

Under-age alcohol use and most illicit drug use among adolescents declined moderately between 1997 and 2005. In 2005, marijuana was the most commonly reported illicit drug used by adolescents: 38% of 17–18-year-old high-school males and 30% of females reported having smoked marijuana. For 13–14-year-old eighth graders, illicit drug use reported for the 30 days prior to the survey dropped from 13% to 8.5% between 1997 and 2005. Among 17–18-year-old high-school seniors, illicit drug use in the past 30 days dropped from 26% to 23% between 1997 and 2005. Lifetime use of methylenedioxymethamphetamine (MDMA), known as ecstasy on the street, increased between 1997 and 2001 for both groups, however, before beginning to decline. In 1997, 3% of eighth graders had used MDMA, rising to 5% in 2001 before falling back to 3% in 2005. High-school seniors experienced a similar trend, with rates of MDMA use rising from 7% to 12% between 1997 and 2001, and then falling to 5% in 2005. Adolescent alcohol use is of particular importance because of its association with increased vehicular injuries and fatalities. Use of alcohol among high-school seniors in the 30 days before the survey dropped from 53% to 47% between 1997 and 2005. Likewise, binge drinking (defined as five or more drinks in a row in the last two weeks) by high-school seniors declined from 31% to 28% in the same period. From 1997 to 2005, drug and alcohol use among eighth graders generally followed the same trends, with the prevalence of drug and alcohol use being roughly half that of high school seniors. The exception was in the use of inhalants, which were used by eighth graders at rates twice those of high-school seniors. Rates of inhalant use in the year prior to the survey decreased for both groups between 1995 through 2003. However, in 2003 and 2004 inhalant use increased for both age groups. Alcohol use by eighth graders in the 30 days prior to the survey dropped from close to 25% to 17% between 1997 and 2005; binge drinking in this group dropped slightly, from about 15% to about 11%.

Through the late 1990s through the early 2000s, boys consistently reported using drugs and alcohol at a higher prevalence than girls. In recent years, eighth- and sometimes tenth-grade girls have had higher rates of alcohol and illicit drug use than boys. Boys have higher rates of marijuana use than girls in all grades. Non-Hispanic Whites reportedly used drugs and alcohol at a higher prevalence than Blacks.

Weight issues also plagued adolescents in the United States during the reporting period. Adolescents, along with the rest of the country's population, were increasingly overweight. In 1976–1980, 5% of all 12–19-year-olds were overweight. By 1988–1994, almost 11% were overweight, and by 2003–2004 more than 18% were overweight.

In 2005, nearly one-half (47%) of all high-school students surveyed reported being sexually active: 14% of them reported having had four or more sexual partners and 37% reported not using a condom in their last sexual encounter. Nationwide, almost 8% of high-school students reported that they had had intercourse at least once against their will. Regarding sexually transmitted infections among adolescents, chlamydia and gonorrhea were relatively common and syphilis relatively rare in 2004. Females aged 10–14 and 15–19 years old were estimated to have rates of chlamydia infection close to 132 per 100,000 and 2,762 per 100,000, respectively. Gonorrhea rates among females in these two age groups were 37 per 100,000 and 611 per 100,000, respectively. Males in those two age groups had chlamydia rates of 11 and 458, respectively, and gonorrhea rates of almost 6 and 253, respectively. In 2004, females 15–19 years old had the highest reported rates of both chlamydia and gonorrhea of any sex and age group in the country. Differences in reported STI rates between adolescent females and males were largely attributed to the fact that fe-

males are tested and screened more often than males, so detection of sexually transmitted infections is more common among the former. Insufficient funds for services, lack of transportation, and lack of confidentiality made access to STI prevention services more difficult for active adolescents than for older age groups.

From 1997 to 1998, new AIDS cases in 13–19-year-old females dropped by 17%; for males of the same age group they dropped by 22%. By 1999, however, while AIDS cases in adolescent males had declined again, new cases in adolescent females increased by 17%. However, beginning in 2000, the number of new cases for males between ages 13 and 19 began rising at a faster pace than new cases for females. By 2002, the number of new cases was comparable for males and females, and in 2003 males had far more new cases reported than females, at 249 and 209 new AIDS cases, respectively.

In 1991, more than one-quarter of all high-school students reported carrying a weapon. In 2005, nearly 19% of all high school students 14–18 years old reported carrying a gun, knife, or club in the month prior to the survey, and almost 7% reported bringing a weapon to school. With each national survey between 1991 and 1999, fewer high-school students reported carrying a weapon, although there was no change in the rates between 1999 and 2005. Between 1993 and 2003, smaller percentages of high-school students reported carrying a weapon to school in the last 30 days, although there was no difference in this percentage between 2003 and 2005. In addition, in 2005, 43% of male high school students and 28% of female students were involved in a physical fight in the 12 months prior to the survey. Between 1993 and 2003 adolescents also were more frequently the victims of violent crimes than adults. Compared to adults, adolescents reportedly were victimized at rates three times higher for simple assault, two times higher for aggravated assault, two times higher for robbery, and 2.5 times higher for rape and sexual assault. There were more adolescent males who were victims of violent crimes than females.

Adolescent victimization rates increased with age for females, but decreased for males. In 2003, there were reportedly 32 female victims of violent crime per 1,000 females aged 12–15 years and 70 male victims per 1,000 males aged 12–15 years. In 2003, there was an annual rate of 38 female victims per 1,000 females aged 16–19 years and 68 male victims per 1,000 males aged 16–19 years. The overall nonfatal violent victimization rate for youth ages 12–17 decreased by half between 1993 and 2003. Females aged 12–19 years old were more than twice as likely to be victims of reported sexual assault and rape than all other age groups of females.

Many adolescents suffered from depression and many of them were suicidal. In 2005, 17% of all high-school students surveyed reported that they had seriously contemplated suicide. Suicide was reportedly attempted by 8% of all 14–18-year-old high school students in the 12 months prior to the survey. Female high school students were more likely to seriously consider suicide than males.

Adults 20–59 Years Old

This age group makes up most of the country's population. Mortality patterns change drastically from one end to the other of the age range: for example, in 2003, there were 3,250 deaths due to diseases of the circulatory system among 25–34-year-olds, but there were 37,732 deaths due to this cause among 45–54-year-olds. That same year, deaths due to cancer totaled only 3,741 among 25–34-year-olds, but reached 49,843 among 45–54-year-olds. Cause specific death counts for such diseases as Alzheimer's and diabetes followed similar patterns.

Older Adults 60 Years Old and Older

The rapid growth in the proportion of the elderly in the population is challenging health and long-term care service systems, because the elderly require more frequent and more expensive care. In addition to the many distinctive health problems the elderly face, access to health care also complicates the provision of health services for many. Disproportionate numbers of the elderly live in more rural areas where there are greater distances to travel to reach health care facilities and fewer physicians per population.

Older adults suffer from more chronic health problems than other age groups, problems such as heart disease, hypertension, arthritic symptoms, diabetes, and osteoporosis. Women report higher levels of hypertension, asthma, chronic bronchitis, and arthritic symptoms, while men report higher levels of heart disease, cancer, diabetes, and emphysema. The prevalence of some conditions is increasing over time. In 1997–1998, 47% of people older than age 65 reported having hypertension; in 2003–2004, nearly 52% did. During the same period, the percentage reporting diabetes went from 13% to 16%. Roughly half of the elderly showed reduced hip-bone density between 1988 and 1994.

Mental health issues were also particularly important among the elderly—with aging, the incidence of memory impairment due to Alzheimer's disease and other dementias increases. The prevalence of moderate or severe memory impairment is six times as high for people age 85 and older as it is for people age 65–69. In 2002, the proportion of people age 85 and older with moderate or severe memory impairment was 32%, compared to 5% of those age 65–69.

Compared to most other age groups, a disproportionately high percentage of the elderly fall prey to depression, and suicide also is relatively more common among them. In 2002, 16% of women and 10% of men age 65–69 reported depressive symptoms; for those age 85 and older, 22% of women and 15% of men reported such symptoms.

In 1999, approximately 6.6 million Americans aged 65 and older used assistive devices and/or received personal care for a

chronic disability. Slightly more than one-half of these persons (3.4 million) relied on help for their long-term care needs from unpaid caregivers, usually family members and friends. The other half either received paid care exclusively while living in their home (314,600), used assistive devices only to maintain independence (1.3 million), or lived in an institution, such as a nursing home or some other type of long-term care facility (1.6 million).

The leading risk factors that contribute to poor health and quality of life among the country's elderly are overweight (in 2003–2004, nearly 30% of those over age 65 were obese and close to three-fourths were overweight), diets deficient in fruits/vegetables and milk products, lack of physical activity (in 2002 only 21% of those over age 65 reported engaging in regular leisure time physical activity), and smoking. The percentage of older Americans who smoke has declined dramatically over the past 37 years.

The leading causes of death for the elderly in 2002–2003 were heart disease (1,632 deaths per 100,000 elderly) and cancer (1,100 per 100,000), which account for more than one-half of all deaths in this group. Additional leading causes of death in this age group were cerebrovascular diseases (stroke; 404 elderly deaths per 100,000 elderly), chronic lower respiratory diseases (301 per 100,000), influenza and pneumonia (155 per 100,000), and diabetes (151 per 100,000). The importance of influenza and pneumonia as a cause of mortality indicates the crucial role vaccines can play in preventing these diseases in this population.

Family Health

According to the Census Bureau's Current Population Survey, in 2000, women heading households with children represented nearly one-quarter of all families in the United States. More than two million of these women were grandmothers who were the primary caregivers for children in their homes, and almost one-fifth of these grandmother-headed families lived in poverty at some time in the 12 months prior to the survey.

Poverty was the most important determinant for family health. Despite attempts by federal, state, and local governments, as well as non-profit organizations, to provide a safety net to protect the health of the most vulnerable families, poor health conditions persisted. Although improvements were seen in child mortality rates, other health indicators often associated with poverty worsened. For example, the proportion of low-birthweight newborns (under 2,500 g) increased from 7.4% in 1996 to 8.1% in 2004. Likewise, the percentage of births with very low birthweight (under 1,500 g) increased from 1.37% to 1.47%. Among mothers 20 years of age and older, low-birthweight rates were highest for those who had not completed high school and lowest for those who had more than a high school education. Non-Hispanic Black mothers, dealing with much higher levels of poverty, were especially vulnerable, with 13.7% of all live births for non-Hispanic Black women having low birthweights in 2004.

Children of families who came off the welfare rolls after the 1996 reforms potentially faced reduced access to health care. The creation of the State Children's Health Insurance Program (SCHIP) in 1997 helped to minimize the number of children who lost health coverage. Poor children (under 100% of the federal poverty guidelines) are largely eligible for Medicaid, and the percentage of poor children who were uninsured fell from 24% to 19% between 1997 and 2005. For near-poor children (between 100% and 200% of the federal poverty guidelines), who are largely eligible for SCHIP, the decline was more significant. The percentage of near-poor children who were uninsured fell from 24% in 1997 to 16% in 2005.

Workers

Occupational risks of death varied by gender and age: men were 10 times more likely to die than women during work, probably partially reflecting the differences in occupation. Workers 35–64 years of age had the highest work-related fatality rate.

From 1980 through 2005 there were 150,799 work-related deaths in the United States. The number of deaths due to injuries at work went from 5,430 in 2000 to 5,702 in 2005. Since 1992, rates have shown corresponding changes, from a high of 5.3 deaths due to injuries at work per 100,000 employed workers to the current rate of 4.0 per 100,000. Leading causes of job-related deaths during this period were motor vehicle accidents, homicides, machine-related accidents, falls, electrocutions, and being struck by falling objects. Risks of death varied by gender and age; males were 12 times more likely to die during work than women, reflecting in part the differences in occupation. Workers 65 years old and older had the highest work-related fatality rate of any age group (11.8 work-related deaths per 100,000 workers 65 years and older, a rate 2.9 times greater than the overall workplace fatality rate for all workers).

In 2005, 60% of women 18 years old and older were either employed or looking for work, and 3.5 million women held more than one job at the same time. In 2005, median weekly earnings were US$ 713 for men 16 years and older vs. US$ 580 for women, approximately 81.3% of male weekly wages. Working women suffered more musculoskeletal disorders such as sprains, strains, carpal tunnel syndrome, and tendonitis than men. In 2004, 34% of all work-related injuries and illnesses suffered by women were musculoskeletal, compared to 30% among men. Women also were the victims of 64% of nonfatal assault injuries at the workplace; most assaults occurred in service occupations.

Persons with Disabilities

Disabilities affected every segment of the population, but those living in poverty are disproportionately affected. According to a Census Bureau survey, 51.2 million people, or 18% of Amer-

icans, reported a disability in 2002 and 32.5 million (12%) reported a severe disability. In the adult population, 20% of women and 17% of men reported a disability. Among children under 15 years of age, boys are more likely than girls to report a disability (11% versus 6%, respectively).

From 12% to 23% of children under age 18 have a special health care need—a chronic condition with a functional limitation or other negative consequences. Among the most prevalent conditions in 2002 were asthma (12% of children aged from birth to 17 years), respiratory allergies (12% of children aged from birth to 17 years), learning disabilities (8% of those aged 3–7 years), and attention deficit hyperactivity disorder (7% of those aged 3–17 years). About 12% of children ages 3–21 used special education services in 2003–2004, up from 11.7% in 1999–2000. State and federal government education departments spend US$ 50 billion per year for special education programs for 3–21-year-olds, compared to US$ 27.3 billion spent on regular education.

In 2002, people with severe disabilities were highly likely to have Medicare or Medicaid coverage, to live below the poverty level, to report their health status to be fair or poor, to receive public assistance, and to have a household income below US$ 20,000. The poverty rate for people age 25 to 64 years with no disability was 8%, compared to 11% for those with a non-severe disability, and 26% for those with a severe disability.

Among adults aged 21 to 64 years who had a disability, about 56% had been employed in the one-year period prior to the interview. People with a severe disability reported the lowest employment rate (42%), as compared to those with a non-severe disability (82%) and those with no reported disability (88%).

Disabilities affected every segment of the population, but adults 65 years and older struggled with an inordinate share of disabilities and impairments. According to a survey conducted in 2004, 19.7% reported a chronic disability. About 19% of women aged 65 and older and 14% of men aged 65 and older reported trouble seeing, even when wearing contact lenses or glasses. For women in this age group, 34% reported trouble hearing; for men in this age group, 48% did. Among this elderly population, 13.7% of men and 23.6% of women reported difficulty walking two to three blocks.

Indigenous Peoples and Other Ethnic and Special Groups

Blacks, Latinos, Native Americans, and Asian/Pacific Islanders in the country incur a disproportionate share of mortality, morbidity, disability, and adverse health conditions compared to non-Hispanic Whites. Life expectancy and infant mortality trends show a widening gap between majority and minority ethnic/racial groups, even as these health indicators improved for most groups over the 1990s. These overriding health differences between ethnic and racial populations were strongly related to socioeconomic differences and differences in the prevalence of poverty in each group.

The Latino population, the largest and fastest growing minority in the United States, comprised 12.5% of the population in 2000 and included persons of Mexican, Puerto Rican, Cuban, and South and Central American descent, among others. Health disparities within the country's Latino population—age-adjusted death rates were substantially lower for Latinos of Cuban descent than for those of Mexican or Puerto Rican descent—primarily reflected socioeconomic differences. Overall, health indicators for Latinos improved during the 1990s and early 2000s.

African-Americans, who made up more than 12% of the population in 2000, have three times the portion of their population living in poverty than do non-Hispanic Whites; one-third of all Blacks live in poverty. Half of the Black population lives in urban areas often typified by inadequate housing, poorly funded schools, lack of living-wage employment opportunities, and violence. African-American death rates were higher than those for Whites for most leading causes of death. For African-Americans 15–24 years old, homicide was the leading cause of death for males and the second leading cause of death for females. But Blacks had lower age-adjusted death rates for suicide, chronic lower respiratory diseases, Alzheimer's disease, chronic liver disease and cirrhosis, and Parkinson's disease than Whites. Overall, many health indicators improved for Black communities in the 1990s and early 2000s; colorectal, respiratory, and breast cancer death rates dropped, and there were gains in leading health indicators such as infant mortality and overall death rates.

Asian/Pacific Islanders, who speak more than 30 different languages and originate from a variety of very different cultures, represented almost 4% of the country's population in 2000. Overall, they had roughly the same socioeconomic and health status as the majority White population. Some in this group had been in the United States for generations, but others had arrived more recently. Given its diversity, health challenges in this population varied substantially from group to group. Southeast Asian men suffered more lung cancer than the majority male population, and older Filipino men living in California had greater rates of high blood pressure than other California men of the same age. Southeast Asian immigrants are 40 times more likely to have tuberculosis and hepatitis B than the general population.

In 2000, those who reported themselves as only American Indian or Alaskan Native made up 0.9% of the population, accounting for 2.5 million persons, and those reporting as Native American or Alaskan Native plus at least another race represented 0.6% of the population, or 1.6 million persons. This minority resides primarily in urban areas or on reservations, and many receive their health care through clinics and hospitals provided by the federal government's Indian Health Service. The population is very young, partly because many die before reaching old age. This native population was much more likely than

the general population to die from diabetes mellitus related to obesity and from liver disease due to alcohol abuse. Accidents and violence (homicides and suicides) are leading causes of death among Native Americans and Alaskan Natives. Alcoholism, which contributed to many of the major causes of death, is a leading health and social problem in this community. Smoking prevalence also is higher among them, increasing risk for smoking-related diseases.

In 2004, nearly 54,000 refugees were admitted into the United States, representing a significant increase from the previous two years of relatively low admissions following the terrorist attacks in 2001 (27,000 in 2002 and 28,000 in 2003). There were two principal groups of refugees admitted in 2004, Somali Bantu from Kenya (totaling about 12,000) and Hmong from Thailand (totaling about 14,000). In addition to these refugees, about 23,000 Cuban entrants were also admitted in 2004. Refugees and entrants often have health problems that need to be addressed as part of their initial resettlement, and federal and state governments provide health care coverage for these new arrivals through Medicaid (if they meet that program's eligibility criteria) or special refugee health coverage available for their first eight months in the country (if they do not meet Medicaid criteria).

HEALTH CONDITIONS AND PROBLEMS

COMMUNICABLE DISEASES

Vector-borne Diseases

Most **malaria** cases reported in the United States were acquired outside of the country. The few that were acquired domestically were due to blood transfusion, congenital transmission, or undetermined mode of transmission. Of the 1,337 cases of malaria reported in 2002, only 5 were domestically acquired: one person acquired malaria from blood transfusion, one from congenital transmission, and three from an undetermined mode of transmission.

In 2004, there were 1,324 cases of malaria reported, representing a 3.6% increase from 2003 (1,278 reported cases). Approximately 50% of the cases reported in the United States in 2004 were due to *Plasmodium falciparum* and 24% of cases were attributed to *Plasmodium vivax*.

In 2005, there were 3,000 cases of **West Nile virus** reported, representing a 15.4% increase from 2004. Of these, 1,294 were West Nile encephalitis or meningitis, 1,607 were West Nile fever, and 99 were unspecified.

In 2004, 19,804 cases of **Lyme disease** were reported, for a national average of 6.7 cases per 100,000 persons. In the 12 states where Lyme disease is most common, the average was 27.4 cases per 100,000 persons.

Most other vector-borne diseases are acquired outside of the country, with the exception of **tularemia** and **arboviral encephalitis**, which are endemic in the United States. **Plague** is extremely rare in the United States, with an average of only 10–15 cases reported each year.

Vaccine-preventable Diseases

Life threatening or debilitating diseases which were once common in the United States, now remain at sustained low levels thanks to the widespread use of vaccines, particularly among children. In 2004, there were no cases of **diphtheria**, **paralytic wild-type polio**, or **congenital rubella syndrome**; there were fewer than 12 cases of **measles** and **tetanus** reported in the country. In March 2005, the U.S. Centers for Disease Control and Prevention announced a major public health milestone, the elimination of rubella virus in the United States.

In 1983, vaccines for seven diseases were available and recommended for routine use in the United States. By the summer of 2006, vaccines for 16 diseases were available and recommended for children and adolescents. Since 2000, pneumococcal conjugate vaccine; meningococcal conjugate vaccine; a comprehensive booster for tetanus, diphtheria, and pertussis; universal use of hepatitis A vaccine; rotavirus vaccine; human papillomavirus vaccine; and a routine recommendation for influenza vaccination for children 6 to 59 months of age have been added to the routine immunization recommendations in the United States. These new vaccines have great potential to reduce the burden of diseases preventable through vaccination, but their use requires a large investment of resources, infrastructure development, and public and provider education.

An economic evaluation of the impact of seven vaccines—diphtheria-tetanus-acellular pertussis (DTaP); tetanus; *Haemophilus influenzae* type b (Hib); polio; measles-mumps-rubella; hepatitis B; and varicella routinely given as part of the childhood immunization schedule—found them to be enormously effective. Routine childhood vaccination with these vaccines, which prevent nearly 14 million cases of disease and more than 33,000 deaths over the lifetime of children born in any given year, resulted in an annual cost saving of US$ 9.9 billion in direct medical cost and an additional US$ 33.4 billion in savings in indirect costs.

Childhood vaccination coverage rates are at record high levels for every vaccine and for all vaccination series measures, and have generally improved since 2000. In 2000, 73% of children aged 19–35 months had received four doses of DTP vaccine, three doses of polio vaccine, one dose of measles-containing vaccine, and three doses of Hib and hepatitis B vaccine. In 2004 this combined coverage improved to 81%. Vaccine coverage also has greatly improved for some new vaccines. During the 1990s, approximately 11,000 hospitalizations and 100 deaths occurred annually due to **varicella**. Great progress was made in educating health care providers and the public about the benefits of varicella vaccine, and coverage in 2004 reached 88%.

Unfortunately, the burden from vaccine-preventable diseases among adults in the United States remains high. **Pneumonia** and **influenza** were the fifth leading cause of death in all persons aged 65 and older, based on 2000 national mortality data. Although vaccines are available for adults against these two diseases, in 2004 only 65% of persons 65 years of age and older reported having had an influenza vaccination, and 57% of persons 65 years of age and older reported having a pneumococcal vaccination. A critical challenge in the United States is extending the successes in childhood immunization to adults.

Diseases Preventable by Blood Screening

Before being released for use in patients, blood donations are screened for hepatitis B and C viruses; human immunodeficiency virus (HIV 1 and 2); human T-lymphotropic virus, types I and II; and the bacterium that causes syphilis.

Intestinal Infectious Diseases

Foodborne diseases cause an estimated 76 million illnesses, 325,000 hospitalizations, and 5,000 deaths in the United States each year. Known pathogens account for an estimated 14 million illnesses, 60,000 hospitalizations, and 1,800 deaths. Three pathogens, *Salmonella, Listeria*, and *Toxoplasma*, are responsible for 1,500 deaths each year, more than 75% of those caused by known pathogens; unknown agents account for the remaining 62 million illnesses, 265,000 hospitalizations, and 3,200 deaths.

Escherichia coli O157:H7 is estimated to cause 73,000 illnesses in the United States annually. From 1982 to 2002, 49 states reported 350 outbreaks, representing 8,598 cases, 1,493 hospitalizations, 354 hemolytic uremic syndrome cases, and 40 deaths. The transmission route for 183 of the cases was foodborne, 74 unknown, 50 person-to-person, 31 waterborne, 11 animal contact, and 1 laboratory-related. The food vehicle for 75 foodborne outbreaks was ground beef; produce was responsible for 38 outbreaks.

In the United States, contaminated drinking water in homes and businesses is usually a result of water main breaks or other emergency situations. Parasites cause the majority of problems. During 1999–2000, 39 outbreaks associated with drinking water were reported by 25 states. These outbreaks caused illness among an estimated 2,068 persons and were linked to 2 deaths. Of the 39 outbreaks, 28 (71.8%) were linked to groundwater sources, and 18 (64.3%) of those were associated with private or noncommunity wells that were not regulated by the United States Environmental Protection Agency.

Chronic Communicable Diseases

In 2000, 16,309 new **tuberculosis** (TB) cases were reported, for a rate of 5.8 new cases per 100,000 population. By 2004, new tuberculosis cases had dropped to 14,517, for a rate of 4.9 per 100,000. Although tuberculosis disease rates continued to decline between 2000 and 2004, TB continues to be an important endemic disease in the United States. Most cases were among younger and middle-aged adults. In 2004, 34% of the cases were among 25–44-year-olds and 29% among 45–64-year-olds; only 11% were in children under 15 years old. Moreover, between 2000 and 2004 the number of cases among U.S.-born persons decreased from 53% of all cases to 46%, while the number of cases among the foreign-born population increased from 47% of all cases to 54%. Because the U.S.-born and the foreign-born population both increased, new tuberculosis cases had a net decrease from 2000 to 2004 among both populations, from 3.5 to 2.6 new cases per 100,000 for the U.S.-born population and from 25.3 to 22.8 per 100,000 among the foreign-born. In 2004, California, New York, and Texas accounted for 42% of the overall national case total. The District of Columbia, Hawaii, California, Texas, New York, and Alaska had the highest rates, followed by southern states. As did tuberculosis incidence rates, tuberculosis death rates also declined through the early 2000s. In 2000 the tuberculosis-specific death rate was 0.3 per 100,000 population; according to preliminary data, by 2003, this rate had dropped to 0.2 per 100,000.

The decline in tuberculosis rates has been attributed to increased efforts to identify and promptly treat cases and to ensure treatment compliance, to improved infection controls in institutional settings, to a decrease in the incidence of AIDS, and to the declining frequency of multi-drug resistant cases.

Leprosy remains relatively uncommon in the United States. In 2002, 96 cases were reported in the country.

Acute Respiratory Infections

Pneumonia and influenza were two of the leading causes of death in the United States in the early 2000s. The age-adjusted death rate for **influenza** and **pneumonia** was 21.8 per 100,000 population in 2003. Although influenza vaccine is provided widely to the public during flu season, production delays have led to vaccine shortfalls in three of the last five influenza seasons (2000–2001 through 2004–2005).

HIV/AIDS and Other Sexually Transmitted Infections

At the end of 2004, there were more than 944,305 cumulative AIDS cases and 529,113 AIDS deaths in the country. Approximately 415,193 persons were living with AIDS by the end of 2004.

AIDS incidence and mortality rates were both higher in men, with males accounting for 73% of all adult and adolescent HIV/AIDS cases in 2004. From 2001 to 2004, the estimated number of HIV/AIDS cases decreased 2% among males and 15% among females. During this period, the estimated number of HIV/AIDS cases increased among men who have sex with men and decreased among injection drug users, heterosexual adults, adolescents, and children. Women were especially at risk of acquiring HIV infection through heterosexual sex and subsequently developing AIDS, since it is easier for women to sexually acquire HIV from male partners than for males to acquire it from female partners. An estimated 10,410 women became newly in-

fected with HIV in 2004; approximately 68% of them were African-American, 16% were White, and 15% were Hispanic. An estimated three-quarters of all infected women were infected with HIV through heterosexual contact, and the majority of the remaining women were infected through injection drug use. Among men and women who inject heroin and cocaine, sharing HIV-infected needles is the primary means of transmission. HIV-infected women who inject drugs are more likely to develop AIDS from their infection than are their male counterparts with the same HIV concentration in their blood.

New pediatric AIDS cases have been declining steadily since 1994 when the government issued guidelines recommending testing and treatment of pregnant women and neonates to reduce perinatal HIV transmission. The vast majority of AIDS cases occur through perinatal exposure. In 2003, about 150 new AIDS cases were reported among children under age 13, compared with more than 700 cases in 1990.

AIDS is not uniformly distributed geographically: rates continued to be high in metropolitan areas in the country's Northeast, which had the second highest rate of any region in the U.S. This reflected the differential distribution between urban and rural areas—northeastern cities lie within the major drug-trade corridor that follows Interstate 95 and have disproportionately higher percentages of injection drug users. The South had the highest AIDS rates in the country in 2000–2004, which is attributable primarily to those areas with the greater concentrations of poverty, such as inner cities and the rural South.

Sexually transmitted infections take an especially heavy toll on women's health. Each year an estimated one million women in the United States suffer a symptomatic episode of **pelvic inflammatory disease**.

Every 7–10 years, drops in **syphilis** in the country have been followed by epidemics. The rate of primary and secondary syphilis reported in the United States decreased during the 1990s, and in 2000 was the lowest since reporting began in 1941. However, the rate of reported primary and secondary syphilis has increased each year since 2001, primarily among men. In 2004, reported primary and secondary syphilis cases increased to 7,980, from 7,177 in 2003, an increase of 11.2%. The number of reported cases in women increased for the first time in over a decade, though only slightly. Cases of congenital syphilis continued to decline; 353 cases were reported in 2004, down from 432 in 2003.

Reported **chlamydia** rates continued to increase from 2000 to 2004. In 2004, 929,462 cases of genital *Chlamydia trachomatis* were reported, an increase of 5.9% compared with the 2003 rate. These trends are probably due to continued expansion of screening programs for chlamydia, the use of improved diagnostic tests that have greater sensitivity, and improved surveillance systems for this disease. There were 330,132 cases of **gonorrhea** reported in the United States in 2004. Since 2000, the reported gonorrhea rate has decreased 15.2%, after a plateau in 1998 and 1999. Chlamydia was the most common of the three sexually transmitted infections, with reported rates of 319.6 cases per 100,000 population in 2004; gonorrhea ranked second, with 113 per 100,000; and syphilis was a distant third, with 2.7 per 100,000.

About 6.2 million Americans get a new genital **human papillomavirus** (HPV) infection each year. Approximately 10 of the 30 identified genital HPV types can lead, in rare cases, to development of cervical cancer. Research has shown that for most women (90%), cervical HPV infection becomes undetectable within two years. Although only a small proportion of women have persistent infection, persistent infection with "high-risk" types of HPV is the main risk factor for cervical cancer.

Sexually transmitted infection rates are disproportionately high among ethnic minorities, a disparity that is associated with these groups' higher levels of poverty and lack of access or failure to access health services.

Zoonoses

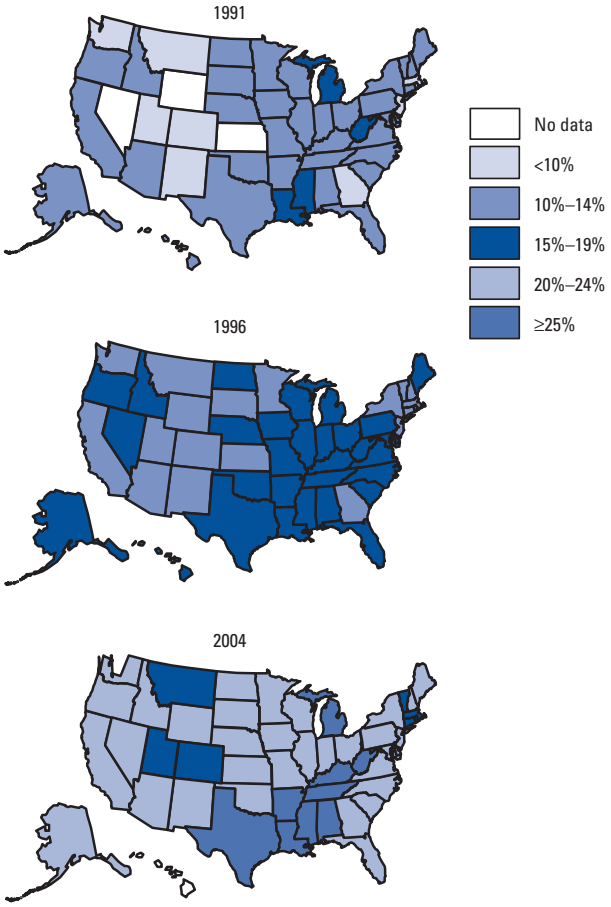
In 2001, 49 states, the District of Columbia, and Puerto Rico reported 7,437 cases of **rabies** in animals and no cases in humans to the Centers for Disease Control and Prevention (Hawaii is the only state that has never reported an indigenously acquired rabies case in humans or animals). The total number of reported cases increased by 0.92% from those reported in 2000 (7,369 cases). Wild animals accounted for 93% of reported cases of rabies in 2001. Raccoons continued to be the most frequently reported rabid wildlife species (37.2% of all animal cases during 2001), followed by skunks (30.7%), bats (17.2%), foxes (5.9%), and other wild animals, including rodents and lagomorphs (0.7%). Reported cases in raccoons and foxes decreased 0.4% and 3.5%, respectively, from the totals reported in 2000. Reported cases in skunks and bats increased 2.6% and 3.3%, respectively, from the totals reported in 2000.

NONCOMMUNICABLE DISEASES

Nutritional and Metabolic Diseases

In the 2000s, the country has continued to face an epidemic of **obesity**. In 1988–1994, the percentage of the adult population that was obese was 22.3%; by 2003–2004 the percentage had increased to 32.2%. An additional 34.1% of adults were overweight in the latter two years. The proportion of adults who are obese varies widely by state (Figure 4). Among children and adolescents aged 2–19 years, 34.8% were at risk of overweight in 2003–2004. A reported 27% of adults did not engage in any physical activity and only one-quarter consumed the recommended fruits and vegetables five or more times daily. Excessively overweight persons have higher mortality rates than those not overweight, being at higher risk for diabetes, cardiovascular disease, and certain cancers. Each year an estimated 300,000 adults in the country die prematurely of causes related to obesity. The total cost of obesity-related illness in the United States is about US$ 100 billion per year.

FIGURE 4. Obesity[a] trends among adults, United States of America, 1991, 1996, and 2004.



Source: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Behavioral Risk Factor Surveillance System (BRFSS).
[a]BMI ≥30, or about 30 lb overweight for a 5'4" person.

The proportion of the adult population with **diabetes** rose from 8.4% in 1988–1994 to 9.4% in 1999–2002. The rapid increase in obesity, an important risk factor for Type 2 diabetes, is an important factor in this increase. Rates of childhood diabetes also are increasing rapidly, due in part to increasing levels of childhood obesity. The direct and indirect costs associated with diabetes are estimated to be US$ 132 billion per year.

Cardiovascular Diseases

Cardiovascular disease, mainly heart disease and stroke, is a major cause of death in the country, accounting for 36.9% of all deaths in 2003. More than 24 million people in the United States are estimated to have some form of cardiovascular disease. In 2003, an estimated 6.8 million inpatient cardiovascular operations and procedures were performed in the United States. In 2006 the estimated direct and indirect costs of cardiovascular disease were estimated at US$ 403.1 billion.

Cardiovascular disease rates are not uniform across the United States. After adjusting for age, cardiovascular disease rates were highest in the South in 2003. Because cardiovascular disease rates increase with age and proportionately there are more elderly women than elderly men, the death rate from this disease was higher among women.

Malignant Neoplasms

Approximately one-quarter of all deaths in the country are due to cancer. The 2003 annual health care and loss-of-productivity costs of cancer morbidity and mortality are estimated at US$ 192 billion.

In 2006, it was estimated that 1.4 million new cases of invasive cancer, excluding skin cancer and carcinoma in situ, were diagnosed in the United States. Over 100,000 in situ cancers, primarily breast and melanoma, were estimated for the same year. Among men, the most common cancers diagnosed in 2006 were **prostate**, **lung and bronchus**, and **colon and rectum**. Prostate cancers represented one-third of all new cancers in men. Among women, the most common cancers diagnosed were **breast**, **lung and bronchus**, and **colon and rectum**; these cancer sites combined represented more than half of all cancers diagnosed in women. On average, there was a one-in-two chance that a man would develop invasive cancer over his lifetime, and a one-in-three chance for a woman.

The overall incidence of cancer was relatively stable between 1992 and 2003, although trends for women have shown a small annual increase of 0.3% since 1987. Breast cancer incidence rates increased slowly throughout the 1990s, but remained level during 2001–2003. Rates for colon and rectum cancers began to decline in the mid-1980s for both men and women, with decreases reported in the last ten years for most racial and ethnic populations. Lung and bronchus cancer incidence rates have declined for men for more than 20 years but continue to increase for women, though more slowly during the past decade. Prostate cancer incidence has increased since the mid-1990s.

Lung cancer was the leading cause of cancer deaths among men and women, and is primarily caused by smoking tobacco. In 2006, an estimated 90,330 men and 72,130 women died of lung cancer. Breast cancer deaths were second for women at 40,970, and prostate cancer was second for men at 27,350 deaths. There was an estimated total of 564,830 cancer deaths in the United States in 2006, with 291,270 occurring in men and 273,560 in women.

OTHER HEALTH PROBLEMS OR ISSUES

Disasters

The United States experienced a variety of natural disasters throughout the reporting period. Hurricanes on the Atlantic

coast, the Gulf of Mexico, and the Pacific coast; earthquakes near the San Andreas fault and other fault lines, especially on the Pacific coast; tornadoes in the Plains states; and floods in every section of the country have left in their wake loss of life, injuries, major disruptions in daily life, and extensive property damage. As was the case with many sectors, the public and private health care sectors were challenged to respond.

In 2005, 48 major disasters were declared. Winter storms caused major disasters to be declared in seven states. Puerto Rico and 20 states suffered seasonal storms, including tropical storms, and/or flooding, all leading to major disasters being declared. Three states declared major disasters due to tornadoes and 11 states sustained destruction due to fires. Major disasters were declared in American Samoa due to a cyclone and in the Northern Mariana Islands due to a typhoon. Hurricanes led to major disaster declarations in six states. Hurricane Katrina, a strong category 3 hurricane on the Saffir-Simpson scale, was one of the strongest storms to strike the United States coast in the last 100 years and ranks among the worst natural disasters in the country's history. The hurricane caused the city of New Orleans to be evacuated, marking the first time a major American city has been completely evacuated. Inland effects included high winds and some flooding in several states and widespread destruction in the states of Alabama, Florida, Louisiana, and Mississippi. The damage to individuals and to families torn apart by the hurricane was immeasurable, with estimates of over 1,800 deaths directly and indirectly due to Katrina—the highest total death count in the country due to a disaster since the 1928 major hurricane in southern Florida. Katrina's damage was compounded when Hurricane Rita made landfall soon after near the Texas-Louisiana border. The impact of these hurricanes highlighted the myriad of challenges posed by natural disasters, and the response to this disaster will help guide future public health and medical emergency preparedness response efforts. The importance of this cannot be underestimated since the Atlantic Basin is predicted to have an active hurricane phase during the next 10–20 years.

Violence and Other External Causes

In the United States, the home is the second most common site of unintentional fatal injuries; motor vehicles on the road is the first. More than 18,000 people in the United States die each year from unintentional injuries that occur in the home. Falls account for one-third of unintentional injury deaths in the home. Males experience substantially more fatal unintentional injuries at home than females. However, females experience slightly more nonfatal home injuries than males. Older adults experience the highest rates of unintentional home injury deaths among all ages, with persons at least 80 years of age experiencing injury death rates more than 20 times greater than their younger counterparts.

Victims of more severe injuries are seen in hospital emergency departments. In 2004, there were more than 41 million injury-related visits to emergency departments in the United States. Almost 21% of all injuries seen in hospital emergency departments in 2004 were the result of falls. Motor vehicle crashes accounted for almost 11% of injury-related emergency department visits. There were 2.3 million violence-related injury visits to emergency departments in 2004, with more than 75% of those resulting from an assault and about 23% of the violence-related visits resulting from self-inflicted injuries.

Violence is a significant problem in the United States. From infants to the elderly, it affects people in all stages of life. In 2003, 17,732 people died as a result of homicide and 31,484 died by suicide. The number of violent deaths tells only part of the story. Many more survive violence and are left with permanent physical and emotional scars. Violence also erodes communities by reducing productivity, decreasing property values, and disrupting social services.

In 2004, U.S. residents age 12 or older experienced an estimated 5.2 million violent crimes (rape/sexual assault, robbery, aggravated assault, and simple assault). For violent crimes overall, aggregated rates declined by 9% from 2001–2002 to 2003–2004. Taken together, the one-year (2003–2004) and two-year (2001–2002 to 2003–2004) change estimates indicate that crime rates remain stabilized at the lowest levels experienced since 1973. Of all violent crimes reported by victims in 2004, approximately 4.6 million were aggravated or simple assault, 600,000 were robbery, and 200,000 were rape/sexual assault. Males and youths—those who historically have been the most vulnerable to violent victimization—continued to be victimized at higher rates than others in 2004. During 2004, armed offenders were involved in 22% of all violent crime incidents. The presence of a weapon was related to the type of crime. For example, rape and sexual assault incidents (8%) were less likely than robberies (46%) to be committed by an armed offender. The type of weapon also varied by the type of violence: 19% of robbery incidents occurred with a firearm present, compared to 5% of assault incidents. The rate of firearm violence declined significantly from 1993 to 2004 (from 5.9 to 1.4 victimizations per 1,000 people aged 12 or older).

In 2003, the year for which the most comprehensive data are available, the FBI reported a total of 16,500 murders or nonnegligent manslaughters, a 1.7% increase from 2002. Although the rate of homicide changes year to year, the relationship between the victim's characteristics and the homicide tends to remain the same. In 2003, 78% of murder victims were male. When the race of the victim was known, just under 49% were White and the same number were Black, and less than 3% were other races. Murder is generally perpetrated between persons of the same race. Offenders were most often male (90%) and adult (92%). When information on the victim/offender relationship was available, 78% of the offenders were known to the victim; 29% of murders were triggered by an argument. Firearms were used in 71% of homicides.

The average annual number of rape victimizations for 2003–2004 was 65,510, a decrease of 27.9% from 2001–2002. Nationwide, almost 63 per 100,000 females reported being raped in

2000. Metropolitan areas had rates of 65 forcible rapes per 100,000, while rural counties had rates of 43. Cities saw an increase in reported rapes of 1.5% between 1999 and 2000, while suburban areas saw a decline of almost 1%. Rates in rural counties were virtually unchanged. Of all forcible rapes, 12% were perpetrated by juveniles.

There was a decline in the frequency of aggravated assaults reported to law enforcement in 2004. Non-metropolitan counties had the lowest rate of aggravated assaults, at 171 offenses per 100,000 inhabitants; cities had the highest, with 344; and suburbs ranked in the middle, with 234.

Oral Health

The nation's oral health is the best it has ever been, yet oral diseases remain common in the United States. The nation spends an estimated US$ 60 billion annually on dental services, including approximately 500 million visits to dental offices. Those who suffer the most from oral health problems include poor Americans, especially children and the elderly. Members of racial and ethnic groups also experience a disproportionate level of oral health problems. Those with disabilities and complex health conditions are also at greater risk for oral diseases, which may further complicate their health.

Most adults show some sign of gum disease. Severe gum disease affects about 14% of adults aged 45–54 years. More than one-third of adults living below the poverty level (18 years and older) have at least one untreated decayed tooth, compared to 16% of adults living above the poverty level. Older Americans who are economically disadvantaged, disabled, homebound, or institutionalized or lack insurance tend to have a greater risk for poor oral health.

Dental decay is one of the most common chronic infectious diseases among U.S. children. Among low-income children, almost 30% of tooth decay remains untreated. More than twice as many children and adolescents from low-income families had untreated decay (20%) as those from families with higher incomes (8%).

Each year, more than 30,000 new cases of cancer of the oral cavity and pharynx are diagnosed, and approximately 7,400 persons die of these diseases.

Emerging and Reemerging Health Threats

Emerging and reemerging infectious diseases pose a continuing threat in the United States. Although modern advances have conquered some diseases, outbreaks of severe acute respiratory syndrome (SARS) and monkeypox in 2003, and an observed increase in antimicrobial resistance, particularly of methicillin-resistant *Staphylococcus aureus* (MRSA), are recent reminders of the extraordinary ability of microbes to adapt and evolve.

During the 2003 outbreak of SARS, eight people in the United States had laboratory evidence of SARS caused by a new coronavirus (SARS-CoV). All of them had traveled to the U.S. from other parts of the world. That same year, there were 37 confirmed and 10 probable human cases of monkeypox in the country. Most of them got sick after having had contact with pet prairie dogs that were sick with monkeypox. This was the first time that there had been an outbreak of monkeypox in the United States.

In a recent study, almost 60% of skin infections in adult patients at emergency departments in 11 U.S. cities were caused by MRSA, and invasive MRSA infections (associated with health care facilities or spread within the community) are increasing in communities where these numbers are being tracked. Data suggests that 8% to 20% of clinical MRSA isolates are community-associated.

Global threats also have emerged, including the possibility of a highly pathogenic avian influenza that is capable of infecting humans through direct contact with infected birds. This influenza strain, influenza A (H5N1), first appeared in humans in Hong Kong in 1997 and, since then, has infected more than 200 people in the Eastern Hemisphere, with a mortality rate of over 50%. The threat of influenza A (H5N1) or another novel influenza virus causing an influenza pandemic has led the United States to undertake significant preparedness efforts aimed at preventing or slowing a potential pandemic.

Morbidity and mortality caused by chemical, biological, radiological, and nuclear agents also have emerged as health threats in the United States. In October 2001, the first inhalational anthrax case in the United States since 1976 was identified in a media company worker in Florida. A national investigation was initiated to identify additional cases and determine possible exposures to *Bacillus anthracis*. Surveillance was enhanced to identify cases, which were defined as clinically compatible illness with laboratory-confirmed *B. anthracis* infection. From October 4 to November 20, 2001, 22 cases of anthrax (11 inhalational, 11 cutaneous) were identified; 5 of the inhalational cases were fatal. Twenty (91%) case-patients were either mail handlers or were exposed to worksites where contaminated mail was processed or received. *B. anthracis* isolates from four powder-containing envelopes, 17 specimens from patients, and 106 environmental samples were indistinguishable by molecular subtyping. Illness and death occurred not only at targeted worksites, but also along the path of mail and in other settings. Since this incident, the United States has undertaken significant efforts to increase surveillance and develop and acquire countermeasures for threats from chemical, biological, radiological, and nuclear agents.

RESPONSE OF THE HEALTH SECTOR

Health Policies and Plans

There were no fundamental system-wide health reforms in the late 1990s, but there were some major adjustments and new commitments made to meet evolving needs.

Starting in 2006, Medicare beneficiaries were offered coverage for prescription drugs; by May 2006, 90% of Medicare enrollees

were receiving the coverage. Most people pay a monthly premium for this coverage, which is helping to lower prescription drug costs and helps protect against higher costs in the future. Medicare Prescription Drug Coverage is an insurance plan: private companies provide the coverage and beneficiaries choose the drug plan and pay a monthly premium.

In 2005, Congress and the Department of Health and Human Services took steps to address the rising cost of long-term care for people with disabilities (including the elderly). While the majority of those with long-term care needs rely on unpaid care from relatives and friends, the average cost for a private room in a nursing home is US$ 70,000 per year. The largest public payer for long-term care in the U.S. is the Medicaid program, a federal-state partnership that covers institutional and community-based care for low-income elderly and disabled persons. Medicaid long-term care expenditures were US$ 47.3 billion in 2004. Medicare, the health insurance program for the elderly and disabled, generally does not cover long-term care, with the exception of some time limited post-acute stays. A relatively new source of financing for long-term care is private long-term care insurance. Approximately 9.2 million long-term care policies were sold from 1987 through 2002, and nearly US$ 5.6 billion in benefits were paid out in 2004. Because Congress enacted several key reforms to encourage Americans to plan ahead for the possibility of needing long-term care (for example, by purchasing long-term care insurance), the number of private policy holders is increasing at a rapid rate.

Following the terrorist attacks of September 11, 2001, and reinforced by the hurricanes of 2005, emergency preparedness has become a critical area of focus at the federal, state, and community levels, and much progress has been made. In 2004 and 2005, the U.S. Department of Health and Human Services provided more than US$ 2 billion to states, territories, and localities to strengthen their capacity to respond to terrorism and other public health emergencies. The funds will be used to support the National Response Plan to upgrade infectious disease surveillance and investigation, enhance the readiness of hospitals and the health care system to deal with large numbers of casualties, expand public health laboratory and communications capacities, and improve connectivity between hospitals and local and state health departments to enhance disease reporting.

In 2003, the first-ever federal privacy standards to protect patients' medical records and other health information provided to health plans, doctors, hospitals, and other providers took effect. Developed by the Department of Health and Human Services, these new standards provide patients with access to their medical records and more control over how their personal health information is used and disclosed. They represent a uniform, federal level of privacy protection for consumers across the country by limiting the ways that health plans, pharmacies, hospitals, and other covered entities can use patients' personal medical information. Regulations protect medical records and other individually identifiable health information, whether it is on paper, in computers, or communicated orally. The law creating these privacy protections also encourages electronic transactions.

Finally, there is increasing recognition, in both the public and private sectors, that significant improvements in health care quality, continuity of care, and efficiency of care may be realized through implementation of health information technology. Several activities have been initiated to support its adoption. In April 2004, the President signed an Executive Order recognizing the need to develop and implement a nationwide interoperable health information technology infrastructure and establishing the position of the National Coordinator for Health Information Technology in the Department of Health and Human Services. It is anticipated that the new infrastructure will be developed as a joint public/private effort and that it will be decentralized by standards and address a variety of privacy and security issues.

Organization of the Health System

The United States' health system is actually a cluster of health systems of diverse complexity. Federal, state, and local governments have defined, often in concert with one another, their roles in protecting the public's health. State public health departments are not under the jurisdiction of federal health agencies and administrations, and, in many states, city and county local public health departments are not under the jurisdiction of state public health departments. As a rule, direct health care services are provided by the private sector. Many of these governmental and nongovernmental services share public funds, technical advice, regulatory standards, and health research provided by federal, state, and local governments.

The federal government manages various programs; oversees research; and provides technical advice and direction, training, funding, and other public health resources, mainly through the Department of Health and Human Services. The Department often works through state and local government programs and with other partners. Many other federal government organizations outside the Department's jurisdiction, such as the Environmental Protection Agency, the Social Security Administration, the Department of Agriculture, the Department of Transportation, and the Department of Homeland Security, also are active in securing the population's safety and health.

Responsibility for individual health care issues is much more decentralized. The government provides health insurance to highly vulnerable groups, such as some families in poverty, the disabled, and the elderly. Most persons, however, acquire private health insurance coverage through their employers or on their own.

Direct health care services, including primary, secondary, and tertiary care, are provided primarily by thousands of private-sector hospitals and clinics throughout the country. The federal government directly funds additional hospitals and clinics that care for military personnel and veterans and for American Indians and Alaskan Natives.

The Burden of the Obesity Epidemic

The United States is in the midst of an obesity and overweight epidemic. Between the two survey periods 1976–1980 and 2003–2004, the prevalence of obesity in adults and in children 2–5 years old more than doubled. Among 6–11-year-olds and 12–19-year-olds, it more than tripled. One of the health objectives set in the Government's Healthy People 2010 initiative is to reduce the prevalence of obesity among adults to below 15%, and the Steps Program is one of the most promising initiatives in the effort to achieve this goal. This program will provide grants to communities to implement chronic disease prevention and health promotion activities designed to address such issues as obesity, diabetes, physical inactivity, and poor nutrition.

Public Health Services

Universally available services such as potable water and municipal solid waste disposal are generally managed or regulated by local and state governments. Health issues that cross local and state boundaries—such as air pollution, food safety, and food supplementation for vulnerable populations—are typically regulated by federal and state governments. Quality of health care and credentialing of health professionals are generally the responsibility of nongovernmental, nonprofit organizations and state governments.

Among many other regulatory, administrative, and advisory roles, state and local governments have adopted responsibility for disease surveillance, drug safety regulations, device safety, workplace safety, air and water contamination standards, and safety behaviors such as seatbelt use and adherence to speed limits. The federal, state, and local governments also respond to disease outbreaks and other health emergencies, such as natural or human-caused disasters.

Health Promotion

The federal government continues to pursue its ambitious health promotion and disease prevention campaign. "Healthy People 2010" sets a comprehensive, nationwide agenda designed to improve the health of everyone in the United States during the first decade of the 21st century. "Healthy People 2010" is committed to promoting health and preventing illness, disability, and premature death. The initiative has two overarching goals: to help persons of all ages increase the quality and the number of years of healthy life, and to eliminate health differences, be they differences by gender, race or ethnicity, education or income, disability, geographic location, or sexual orientation.

"Healthy People 2010" encompasses nearly 500 objectives clustered in 28 focus areas. Many objectives focus on interventions designed to reduce or eliminate illness, disability, or premature death; others deal with broader issues such as improving access to quality health care, strengthening public health services, and improving the availability of health-related information. The campaign enlists communities, the nonprofit and for-profit private sectors, and government to reduce identified risk factors and enhance protective factors to decrease the incidence of unhealthy conditions and disease.

Human Resources

In 2004, there were more than 17 million jobs in the health sector or in health occupations outside the health sector, accounting for nearly 12% of the total U.S. workforce. Among these were approximately 2.4 million registered nurses, 1.45 million nursing aides, 1.3 million personal care or home health aides, 567,000 physicians, 230,000 pharmacists, and 150,000 dentists.

Noting that health care is the fastest growing employment sector in the country, the U.S. Bureau of Labor Statistics projected that between 2004 and 2014, the health care sector will grow by more than 27%, compared to a growth under 12% for all other employment sectors. Within health care, jobs in home health care and offices of health practitioners, particularly physician offices, are projected to grow the fastest. The health occupations projected to add the most new jobs over the 10-year period are registered nurses (703,000 new jobs), home health aides (350,000 new jobs), and nursing aides (325,000 new jobs). More than 200,000 physicians and 100,000 new pharmacists will also be needed to fill new jobs as well as replace those who leave existing positions.

Most sources acknowledge a serious nursing shortage, which may become more severe as the population continues to age. Reimbursement issues, working conditions, and regulatory requirements are cited as contributing factors.

Research and Technological Development in Health

The government and the private sector devote extensive human and financial resources to direct and indirect research on health, including such topics as biomedicine, pharmaceuticals, health systems and policies, food and product safety, and agricultural and environmental health. This work cuts across numerous governmental agencies, as well as the nonprofit and corporate sectors.

In 2005, the U.S. Department of Health and Human Services spent more than US$ 30 billion on research, demonstration, and evaluation, including investments for medical research, public health, and food and drug safety. The National Institutes of Health invests more than US$ 27 billion annually in medical research, 80% of which is awarded through almost 50,000 competitive grants to more than 212,000 researchers at more than 2,800 universities, medical schools, and other research institutions in every state and around the world. Another 10% of the Institutes' budget supports projects conducted in its own laboratories by nearly 6,000 scientists.

Within the Department of Health and Human Services, the Centers for Disease Control and Prevention (CDC) spends more than US$ 650 million on research to meet health and safety challenges, including public health research on emerging infectious diseases, environmental threats, the aging population, and lifestyle choices. Another Department component, the Food and Drug Administration (FDA), conducts research and carries out regulatory activities to ensure the safety of food, drugs, devices, and cosmetics. FDA spends over US$ 140 million on research. Other major areas of research within the Department of Health and Human Services include health care quality, aging, and mental health services.

Although basic research is conducted by the government, most pharmaceutical and medical device research is paid for by the companies that produce these products. A private organization representing the country's leading pharmaceutical research and biotechnology companies estimated that, industry-wide, research and investment reached US$ 51.3 billion in 2005.

Health Sector Expenditures and Financing

The U.S. spent US$ 1.9 trillion on health care in 2004. The health spending share of GDP grew 0.1%, to 16% in 2004. This was a smaller share increase than experienced in recent years, as economic growth in 2004 was the fastest since 1989. Per capita health expenditures increased from an annual US$ 4,539 in 2000 to US$ 6,280 in 2004. Health spending rose 7.9% in 2004, slower than the 8.2% growth in 2003 and 9.1% in 2002.

Although private spending continued to represent the lion's share of health spending in 2004 (US$ 1.03 trillion compared to total federal/state US$ 847 billion), federal and state spending for health care rose 8.2% in 2004. Public spending was dominated by Medicare (US$ 309 billion in 2004), with Medicaid spending close behind (US$ 291 billion).

The government provides health insurance coverage to qualified populations living in poverty (primarily through Medicaid) and to those 65 years and older (primarily through Medicare), as well as to the military. In 2004, about 88% of persons covered by private health insurance were on some kind of employment-based plan.

The proportion of the population with government health insurance coverage increased from 24.7% in 2000 to 27.3% in 2005. This change in government coverage was primarily due to the increase in the percentage of the population with Medicaid coverage, which rose from 10.6% in 2000 to 13.0%, or 38.1 million persons, in 2005. Medicare coverage for the elderly remained relatively stable throughout the reporting period, with 42.5 million beneficiaries in 2005. About nine million members of the U.S. military receive health care through the military health program, TRICARE.

In 2004, private payers played a greater role in slowing spending than public payers. Private spending growth slowed to 7.6% in 2004, compared with 8.6% in 2003. Out-of-pocket payments grew 5.5% in 2004, slower than aggregate health spending growth and slower than private insurance premiums, both in aggregate and on a per-enrollee basis. In 2004, the per-enrollee private health insurance premium grew by 8.4%, compared to 2002 growth of 11.5% and 2003 growth of 10.4%.

The share of personal health spending growth associated with prescription drugs has declined since 2000, coincident with a higher share of spending growth for hospital services. Prescription drugs accounted for a 23% share of personal health spending growth between 1997 and 2000, but accounted for only 14% by 2002–2004. Hospital spending, however, accounted for 28% of personal health spending growth between 1997 and 2000, but rose to 38% by 2002–2004.

Hospital spending represented nearly one-third of national health expenditures; the 2004 growth in hospital spending accounted for 33% of the overall increase in health spending. Spending for prescription drugs increased 8.2% in 2004, compared to a growth of 10.2% in 2003 and 14.3% in 2000–2002. In 2004, spending on prescription drugs accounted for nearly 11% of health spending. Spending for physician services constituted 21% of health spending in 2004. Total costs for long-term care of the elderly were US$ 211.4 billion in 2004.

URUGUAY


0
50
100 Miles
Artigas
Salto
Rivera
Paysandú
Tacuarembó
Cerro Largo
Río Negro
Durazno
Treinta y Tres
Soriano
Flores
Florida
Lavalleja
Rocha
Colonia
San José
Canelones
Maldonado
Montevideo
Montevideo

The Eastern Republic of Uruguay is bordered on the west by Argentina, on the north and northeast by the Federative Republic of Brazil, and on the east and south by the Atlantic Ocean and the Río de la Plata. It has a land area of 176,215 km^2 and a maritime area of 125,057 km^2. It has uneven terrain, with an average elevation of 117 m and a maximum of 514 m, and fertile lowlands along the coast. The climate is temperate, with four seasons during which there is occasional frost and hail, strong winds, droughts, and floods.

GENERAL CONTEXT AND HEALTH DETERMINANTS

The population is 3,241,003 (*1*) and is largely concentrated in the capital of Montevideo (41%). Males comprise 48.3% of the population, and 51.7% is female.

Uruguay is a representative democracy, with elections every five years. The country is divided into 19 departments, governed by Departmental Councils (31 members) and an Intendant. The national government is made up of the Executive Branch, consisting of the President and 13 ministers; the Legislative Branch, which has two houses—the Senate and the Chamber of Deputies; and the Judicial Branch, comprised of the Supreme Court of Justice and other courts. The 2004 national elections were won by a leftist coalition, for the first time in the history of the country, and the new government took office on March 1, 2005.

Social, Political, and Economic Determinants

Uruguay has a Human Development Index (HDI) of 0.838 and ranks 46th in the world (*2*). During 2000–2004, the economy went through a recession, and in 2002 suffered a severe economic crisis with a decline in employment and serious consequences to the financial system. The per capita gross domestic product (GDP) went from US$ 6,043 in 2000 to its lowest level in 2003 at US$ 3,309, and by 2005 was at US$ 5,081. The unemployment rate was 12.6% in 2000, rose to 16.9% in 2002, and was 12.2% in 2005. The fall of the GDP, the increase of the unemployment rate, and the indebting in dollars of the urban and rural population have made the situation of poverty more acute throughout the country. In 1999, 15.3% of the population lived below the poverty line, a level which rose to 32.1% by 2004, concentrated largely among children (56.5% of boys and girls between 0 and 5 years lived below the poverty line in 2004) (*3, 4*). The increase in poverty and the subsequent loss of social security generated direct impacts on the health system of the country. The population seeking care in the public sector increased without a corresponding increase in spending by sector type (either public or private). Approximately 5.4% of the population lives in informal settlements. Montevideo is the department that has the highest concentration of these informal settlements (10.1% of the population). The distribution by age of the population living in these settlements differs from the general distribution of the population: 26% of the population of these settlements is between the ages of 0 and 9 years, and 64% are adolescents or youth (*1*).

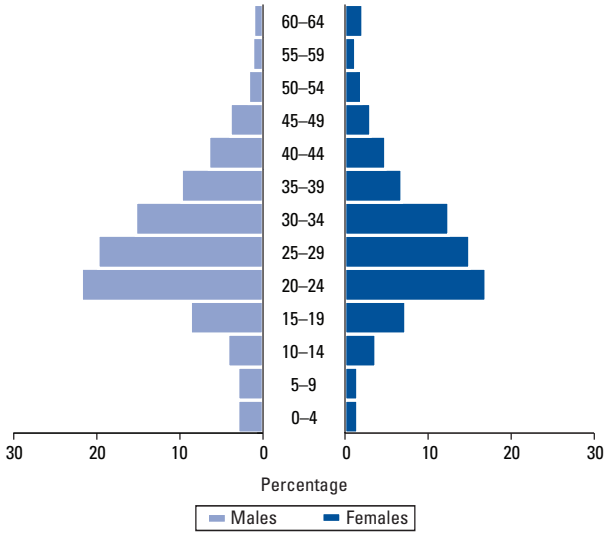
The economic crisis has also worsened international emigration, with many youth and adults emigrating to other countries, as shown in Figure 1. Between 1996 and 2004, 122,000 persons emigrated, representing one fifth of the average number of total annual births in that period.

In 2004, 27.1% of persons in the lowest income quintile had between 0 and 3 years of formal education, while 7.5% in the highest quintile had achieved the same number of years of education. In the lowest quintile, only 2.0% of people had finished 13 years or more of education, while 38% in the highest quintile reached this level (*5*).

Since 2003 it has been obligatory to complete 10 years of education (seven years of primary school and three of secondary school or technical education). According to 2004 data from the National Institute of Statistics (INE), the proportion of persons between 14 and 15 years of age who completed six years of study was 62.9% among men and 95.8% among women. Among those aged 20 and 21 years, the percentages who completed 12 years of education were lower: 32.3% of men and 42.7% of women.

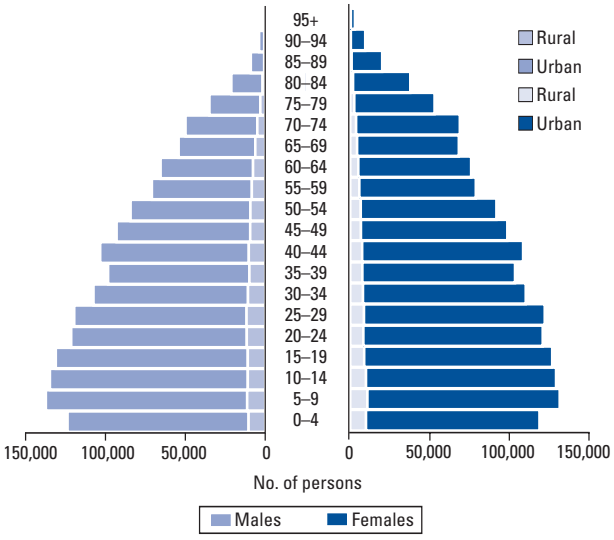
Illiteracy (quantified by the National Expanded Household Survey, 2006) (*6*) is 2.3% of the total population of the country (2.7% of men and 2.0% of women). However, in Montevideo, illiteracy is somewhat less than 2.0%, and in the smallest communities and rural areas it is almost at 4.0%. Illiterate men outnumber women in all ages, with the greatest difference in persons aged 65 years and older (5.6% of men and 4.4% of women).

FIGURE 1. Structure of the population emigrating from Uruguay, 1996–2004.



Source: Uruguay, Instituto Nacional de Estadisística, Censo 2004, Fase 1. Summary of results for the entire country.

FIGURE 2. Population structure, by age, sex, and geographic area, Uruguay, 2004.



Source: Uruguay, Instituto Nacional de Estadística. Censo 2004, Fase I, Síntesis de resultados.

Illiteracy among men who live in informal settlements is 6.1% while among women it is 4.7%.

While women have more years of education than men, the situation is completely the inverse in terms of their insertion in the workforce and remuneration. The rate of employment in urban areas in 2004 was 62.9% for men and 40.6% for women.

Demographics, Mortality, and Morbidity

The annual rate of demographic growth for the entire country (2005) was 0.6%. Ninety-two percent of the Uruguayan population lives in urban areas, and 8.0% live in rural areas. The urban population grows at an annual rate of 4.3% per 1,000 inhabitants, while the rural population decreases at an intercensal mean annual rate of 11.2 per 1,000 population.

By age distribution, persons aged 65 years and older constitute 13.4% of the population. As shown in Figure 2, those 80 years and older represent 3.2% of the total population in Uruguay.

In effect, the aging of the population is a demographic characteristic and the population pyramid (2004) takes the form of a spindle. Such aging is accompanied by a simultaneous decrease in births. The oldest population grows at an average annual rate of 8.5 per 1,000 while the rest of the age groups grow at a rate of 2.4 per 1,000.

As seen in Figure 3, the period 2001–2004 shows a decline in the number of births. The total rate of fertility dropped to 2.5 children per woman in 1996 to 2.1 children per woman in 2004. Adolescent pregnancies show clear differences based on the socioeconomic status of the mother. While in Montevideo (where 38% of all people are born) 4.8% of women of high socioeconomic level have their first child before turning 18 years of age, 30.7% of women of low socioeconomic level have their first child before turning 18. The crude birth rate was 15.1 live births per 1,000 population in 2004, which represents a decrease compared to previous years. Life expectancy at birth is 75.3 years on average for both sexes, with a difference of more than 7 years between the sexes: 78.9 years for women and 71.6 years for men.

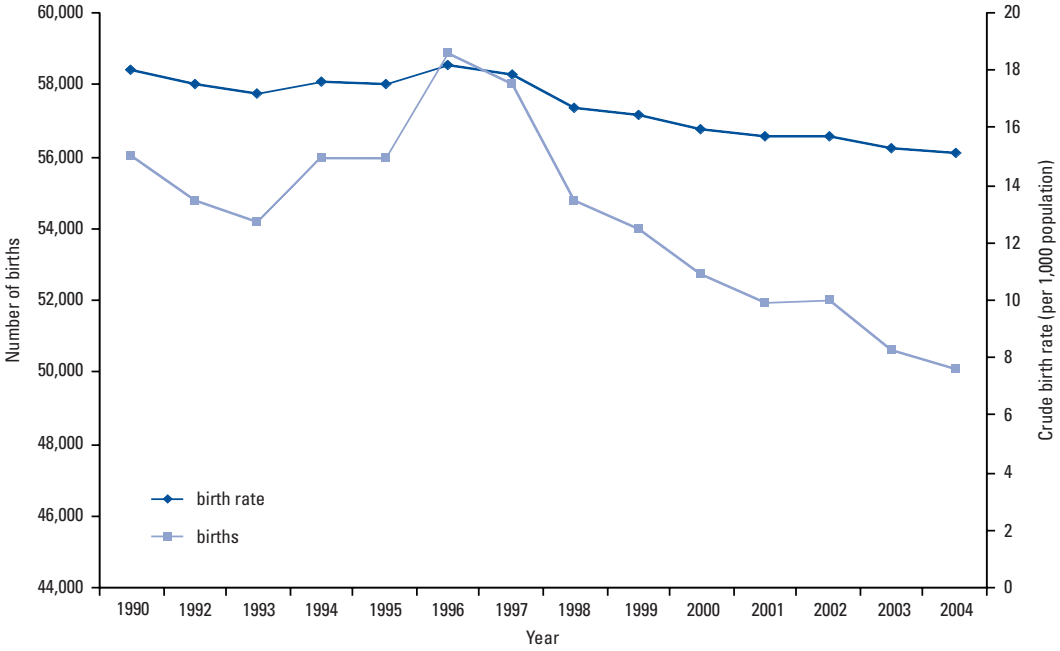
A national death registry exists, under the oversight of the Civil Registry Office, with data collected by the Ministry of Public Health. All death certificates must be signed by a physician (Law No. 5453, May 1942). In 1997, Uruguay began using the International Classification of Diseases, Tenth Edition (ICD-10). Approximately 65% of all deaths occur in hospitals or in other health institutions.

The crude mortality rate was 9.76 per 1,000 population in 2004 (32,220 deaths). According to available data from 2003 (*7*), 80% of the deaths were due to the following largest groups of causes (ICD-10): diseases of the circulatory system (33.6%); tumors (neoplasms) (23.4%); diseases of the respiratory system (9.4%); symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified (8.2%); and external causes (5.7%).

In 2005, the infant mortality rate was 12.7 per 1,000 live births, with a neonatal mortality rate of 7.1 per 1,000 live births and a post-neonatal mortality rate of 5.6 per 1,000 live births (*8*).

The rate of infant mortality dropped from 29.4 per 1,000 live births in 1985 to 12.7 per 1,000 live births in 2005. This decrease

FIGURE 3. Registered births and crude birth rate, Uruguay, 1990–2004.



Source: INE. Censo 2004, Fase 1, synthesis of results.

(56.8%) is principally due to the decrease in infant mortality of children receiving care in public sector health institutions (which decreased two-thirds, while in the public sector institutions infant mortality rate decreased one third). Between 1986 and 2001, the infant mortality rate decreased 44.3% in Montevideo, while in the rest of the country it decreased 53.9%. While the rates of infant mortality declined between 1997 and 2002, differences exist among the different departments: the highest rate of infant mortality was registered in the northeastern parts of the country (Rivera, Cerro Largo, Tacuarembó), while those located south of the Rio Negro presented lower rates (*9*). In Montevideo, those neighborhoods with poorer housing conditions, such as makeshift or precarious housing with poor access to sanitation facilities and maternal-child care, had higher rates of infant mortality.

HEALTH OF POPULATION GROUPS

Children under 5 Years Old

Since 1996, there has been a decrease in the number of births, with 50,051 births in 2004 (the crude birth rate declined from 18.2 per 1,000 in 1996 to 15.2 per 1,000 in 2004). Of births in 2004, 37.0% were in Montevideo and 63.0% in the rest of the country. Low-birthweight infants (less than 2,500 grams) comprised 8.6% of the newborns. Among children less than one year of age, congenital malformations were the principal cause of death (24.0%). The second most important cause of death was intrauterine hypoxia and other difficulties or respiratory conditions of newborns (13.0%), and bacterial sepsis was the third leading cause (9.0%). The number of cases of congenital syphilis notified and confirmed in 2005 in Uruguay was 29 (rate of 0.6 per 1,000 live births). It should be noted that there is an unquantified underregistration of cases. In the population of children 1–4 years of age, the three principal causes of death were accidents and adverse effects (23.9%), congenital anomalies (13.8%), and acute respiratory infections and pneumonia (11.0%).

Children 5–9 Years Old

In 2004, accidents were the cause of 39.5% of the deaths in this age group, followed by deaths due to tumors (17.3%). In 1999 the three pediatric departments of the School of Medicine of the University of the Republic incorporated into the curriculum a strategy on Integrated Management of Childhood Illness (AIEPI) for undergraduates in medical studies. In 2001, the Ministry of Public Health and the School of Medicine signed an agreement for its joint implementation into all primary care for the country. While several workshops and training courses have been conducted, so far the direct impact has not been measured to determine what they might have contributed to the decline in most common childhood illnesses.

Adolescents 10–19 Years Old

As with children between 5 and 9 years of age, in 2004, accidents were the principal cause of death for the group between 10 and 19 years of age (33.2% of the deaths in this group). The second most common cause was suicides (12.5%), followed by tumors (9.5%) and violence or homicides (9.1%). Adolescent pregnancy constituted 16.5% of the total number of pregnancies in 2001.

Adults 20–59 Years Old

Of the 32,220 deaths in 2004, 15% occurred in this age group. Sixty-nine percent of these deaths were due to three principal causes: tumors (30.0%), diseases of the circulatory system (20.0%), and external causes (19.0%).

In terms of maternal mortality, in 2005, 11 deaths were registered, four of those due to complications from abortion, for a maternal mortality rate of 23.3 per 100,000 live births.

Older Adults 60 Years Old and Older

The principal causes of death in this age group were diseases of the circulatory system (2,274 per 100,000 persons 60 years and older), tumors (1,405 per 100,000), and chronic diseases of the lower respiratory system, acute respiratory infections, and pneumonia (620 per 100,000).

Persons with Disabilities

The first National Survey of People with Disabilities was conducted between September 2003 and August 2004 (*10*). The principal results show a prevalence of disabilities of 7.6% in the general population (estimated 210,400 disabled persons). No significant differences in prevalence were found between the capital and the rest of the country. Women have a higher prevalence (8.2%) than men (7.0%). More than half of the persons with at least one disability (50.8%) were 65 years or older, followed by persons aged 50 to 64 years (18.4%) and by persons aged 30–49 years (12.9%). There is an increase in the prevalence of disability with age, with one of every four older adults developing a disability. The majority of the population with disabilities (66.0%) has only one disability, independent of gender. The survey participants attributed their disability in 51.0% of the cases to an illness, 21.0% to birth, 18.0% to aging, and 9.0% to an accident. Twenty-one percent of the disabled reported that they needed help in caring for themselves and 40.0% required assistance to leave their homes.

The main disabilities reported were difficulties in walking (33%), vision (25%), and hearing (13.6%). The proportion of persons with a disability with a low level of education (37.0%) is much higher than those who are not disabled (12.6%). Only 16.5% of economically active persons with a disability are employed, versus 53.4% of those without a disability.

HEALTH CONDITIONS AND PROBLEMS

COMMUNICABLE DISEASES

Vector-borne Diseases

One potential problem is the reintroduction of the *Aedes aegypti* mosquito, along with the possible appearance of cases of **dengue**, which was newly detected in 1997 after being absent since its eradication in 1958. Through a rigorous prevention plan, infestation is limited to certain geographic zones (basically to three cities: Salto, Mercedes, and Fray Bentos). No native cases of dengue have been notified (since August 2006), although some have been found in neighboring countries.

Uruguay has controlled **Chagas' disease** to a large extent. Its main vector, *Triatoma infestans*, was present in two thirds of the national territory, but by 1997, the specific vector control program, integrated in the Southern Cone Chagas Control Initiative, had managed to eliminate or minimize household infestation. Successive international evaluations in 1998, 1999, and 2000 certified this accomplishment, and Uruguay is the first endemic country to interrupt transmission. Surveillance and control currently continue in an effort to completely eliminate *T. infestans*.

The pulmonary syndrome of **hantavirus** was first seen in the country in 1997, and since then has maintained a low annual incidence (0.22 cases per 100,000 population) in the entire southern region of the country. Its average lethality was 24%, and 72% of the cases were among men (2006). The most important risk factor is living or working in rural areas. The wild rodent involved is the *Oligorzomys flavescens*.

The prevalence rate of **leprosy** for all of Uruguay in 2005 was 0.04 per 10,000 population. The highest rates were registered in two departments of the northeast coast, Artigas (0.53 per 10,000) and Río Negro (0.19 per 10,000). Montevideo had a rate of 0.01 per 10,000. The number of notified and confirmed annual cases of leprosy in Uruguay dropped from 628 in 1989 to 15 in 2002. Between 10 and 20 cases are notified and confirmed annually throughout the entire country.

Vaccine-preventable Diseases

Since the beginning of the 1980s, no cases of **poliomyelitis, neonatal tetanus**, or **diphtheria** have been found. In 1999, the last cases of **measles** were registered, and currently eradication is in process. No cases of **rubella** have been found since 2002 either. In 2005, an outbreak of **infectious parotitis (mumps)** in Montevideo occurred, largely affecting youth between 18 and 24 years of age, who had received only one dosage of the vaccine. More than 2,500 cases occurred, but no deaths were reported. Obligatory vaccination against **chickenpox** began in 1999.

Between 2002 and 2005, the vaccination coverage among children less than one year of age was greater than 95% for all the different vaccines included in the Expanded Immunization Program (EIP) (*11*), which in 2006 were: diphtheria, hepatitis b,

parotitis, poliomyelitis, rubella, measles, tetanus, whopping cough, tuberculosis, chickenpox, meningitis, and other infections such as *Haemophilus influenzae* type b.

The number of notified and confirmed cases of **viral hepatitis A** during 2005 was 2,877 (88.7 cases per 100,000 population); San José (633 cases per 100,000), Artigas (608 per 100,000), Canelones (89.9 per 100,000), and Montevideo (34.2 per 100,000) were the departments with the most cases.

Chronic Communicable Diseases

Since the mid-1990s, the incidence of **tuberculosis** cases has not shown substantial changes, with an average of 650 new cases being registered annually (annual rate of 20.0 per 100,000 population). However, 729 cases were registered in 2004 and 723 cases were registered in 2005 (rate of 22.3 per 100,000 population).

HIV infection has brought about an increase in the number of tuberculosis cases. On average, during 1994–2004, 10% of the cases of tuberculosis were among HIV/AIDS patients, and 12% of the cases registered in 2005 were carriers of the infection. The co-infected patients with tuberculosis and HIV/AIDS are largely young adults, especially between 25 and 34 years. A significantly larger number of patients with biologically unconfirmed pulmonary tuberculosis exists in relation to the HIV-negative tuberculosis population. The rate of abandonment of treatment is greater among HIV-negative patients. Until 2005, no major tendency in the development of TB drug resistance was seen in the Uruguayan population. Another unique situation is overpopulation of detention centers where more than 600 cases of TB per 100,000 are registered in some centers, which is a rate 30 times greater than in the general population.

HIV/AIDS and Other Sexually Transmitted Infections

As of 2005, the HIV/AIDS epidemic was largely driven by sexual transmission (71%; prevalence of 1,975 cases in that year), particularly through heterosexual transmission (63%). Transmission through infected blood was responsible for 25.4% of the cases (prevalence of 706 cases in 2005) and perinatal transmission was responsible for 3.6% of the cases (prevalence of 101 cases in 2005). Sentinel studies in 2000 showed the HIV prevalence to be 0.23% of the population, rising to 0.45% in 2004. In 2005, it was found that 78.3% of persons living with HIV/AIDS were from Montevideo, and 21.7% were found in the rest of the country.

From 1983 to 2006 a total of 6,463 cases of HIV-positive patients were registered, and 2,895 cases of AIDS (total number of accumulated cases) were registered. Of the persons with AIDS, 1,467 have died (mortality rate of 51%). As of June 2006 it is estimated Uruguay has 7,890 persons living with HIV or with AIDS, and that of those approximately 1,700 are on treatment. The rest, approximately 6,190 persons identified as living with HIV/AIDS, are not receiving treatment for different reasons: personal abandonment of indicated treatment, choice of alternative treatments (without antiretrovirals), or, in some cases, lack of indication by the physician. However, according to the last sentinel study (2004), approximately 5,000 people living with HIV/AIDS have not been identified as such.

Of the total number of cases up to 2005, 67.0% of those HIV positive are male. The most affected are those between 15 and 44 years, with a maximum incidence in those 25 to 34 years. The male/female ratio dropped from 8.9 in 1989 to 2.2 in 2005.

In 1991 Uruguay passed a law that establishes that the provision of treatment is compulsory to all persons living with HIV/AIDS. In 1996 100% treatment coverage was achieved for all those living with HIV/AIDS requiring treatment as indicated by their physicians. Since 1997, all health centers are required by law to offer HIV testing to all pregnant women at their prenatal visits. In 1998, the National Consensus Commission was created to standardize treatment protocols. In 2002, the National Fund to Fight AIDS was created to finance antiretroviral treatment and corresponding paraclinical exams; the Fund is financed through a 3% tax on insurance policies, and taxes on the sale of football players to foreign teams.

Zoonoses

Uruguay was declared free of **foot-and-mouth-disease (FMD)** without vaccination in 1999. However, in 2000 the virus was reintroduced in the department of Rivera, and the pertinent recommendations of the World Organization for Animal Health (OIE) were implemented. In 2001, another reemergence of the disease occurred on the eastern coast, and since then bovine vaccination was reinitiated. A bivalent OA vaccination was chosen over a trivalent OAC vaccination, as there has been no trace of the virus in the Southern Cone for several years.

Very few cases of **brucellosis** (five cases in 2005) and **anthrax** (four cases in 2005) have been found in rural workers since 2000, as both zoonotic diseases are on the decline.

Leptospirosis is an occupational and epizootic disease found in specific areas dedicated to dairy farming and the cultivation of rice and sugar cane. Since 2002, there has been a greater awareness of the importance of this disease, leading to an increase in outbreak notifications. The outbreaks have been largely brought on by the floods and recent growth in the informal suburban settlements. In 2000, 23 cases were notified, while in 2002, 247 cases were notified (*12*).

Hydatidosis or cystic echinococcosis is a highly endemic parasitosis that, with intervention by the National Honorary Commission to Fight Hydatidosis, has been drastically reduced in terms of prevalence among children, real and operative incidence in men, and prevalence in canines (definite host), ovines, and bovines (intermediate hosts). In 1993, 367 cases were operated on nationwide (39.8% of them coming from Montevideo); and, in 2002, 139 patients were operated on (31.7% of them coming from Montevideo). On the basis of this national experience, the Southern Cone Subregional Project of Surveillance and Control of Hydatidosis was formed in 2004 (Argentina, Brazil, Chile, and

Uruguay), with the Technical Secretariat of the Pan American Health Organization (PAHO)/Pan American Foot and Mouth Disease Center (PANAFTOSA) and the Food and Agriculture Organization of the United Nations (FAO).

Prevention, surveillance, and control of zoonotic diseases and other illnesses transmitted by arthropods has been reorganized by law and the National Honorary Commission to Fight Hydatidosis was transformed into the National Commission of Zoonosis, in charge of handling these pathologies and responsible for the coordination of all programs in this area.

NONCOMMUNICABLE DISEASES

Metabolic and Nutritional Diseases

The major nutritional problems in Uruguay are **obesity** and **protein energy malnutrition**; the prevalence of **nutritional anemia** and **vitamin A deficiency** is unknown. A survey conducted in 2000 revealed that 51% of Uruguayans are **overweight** and 17% are obese (*13*). According to 2005 figures, the greatest proportion of obese children is found in those less than 1 year (7.8%), and malnutrition is highest among children age 1 (11.8%), measured by weight and height (*14*).

School-based censuses of children in the first grade in public schools (approximately 85% of the total child population attends public schools) reveal that 19.7%, 18.1%, and 22.9% of children had a height deficiency in 1987, 1990, and 2002, respectively. Data from 2002 suggest that the nutritional status of children has shown deterioration according to international standards (National Center for Health Statistics, CDC) since it was expected that the height deficiency that year would be 15.9% (*2*).

Cardiovascular Diseases

Diseases of the circulatory system have been the leading cause of death for nearly 50 years, accounting for 33.0% of all deaths in 2004. The mortality rate for these diseases was 330 per 100,000 population in 1999 and 328 per 100,000 in 2004.

The most common are **cerebrovascular diseases**, with a mortality rate of 114 per 100,000 population, and **ischemic diseases**, with a mortality rate of 86 per 100,000 population. Cerebrovascular diseases have a greater mortality rate among women than among men (128 vs. 98 per 100,000), while the opposite is true for ischemic disease, which is more frequent in men (101 and 72 per 100,000 population, respectively).

Malignant Neoplasms

Malignant neoplasms represented 23.5% of all deaths in Uruguay in 2004. A hospital-based morbidity study conducted in the first part of 2005 by the Ministry of Health among private health institutions found that tumors represented 9.6% of hospital discharges, with malignant tumors comprising 66% of the total. The rates of hospital discharge for this cause did not show a significant difference between men and women (3.47 and 3.77 per 1,000 persons, respectively). More than 90% of the cases corresponded to persons aged 45 and older. In the general population, the most frequent types of tumors were, first, breast cancer, followed by cancer of the trachea, bronchus, and lung; and thirdly cancer of the colon. In men, cancer of the trachea, bronchus and lung predominated followed by cancer of the prostate and then cancer of the bladder, while among women, breast cancer led with 27% of the cases, followed by non-Hodgkins lymphoma and colon cancer. The average hospital stay for neoplasms is 10 days.

OTHER HEALTH PROBLEMS OR ISSUES

Mental Health

In 2005 the rate of mortality due to suicide was 20.6 per 100,000 population, and it was higher in men (77%) and in the interior of the country (70.9%). Of all persons treated in ambulatory mental health facilities in the country, 54% were women and 11% were children or adolescents. The average number of contacts per person is 3.3 per year. The most common diagnoses for admission to psychiatric hospitals were schizophrenia (44%) and changes in mood (20%).

Oral Health

Through decree by Executive Order, production and obligatory sale of fluoridated salts was initiated throughout the country in 1999. During that year, the last DMFT (decayed, missing, and filled teeth) survey among 12 year olds was taken, with an index of 2.47.

RESPONSE OF THE HEALTH SECTOR

Health Policies and Plans

The Constitution establishes that the State will legislate on all questions or issues related to health and public hygiene in order to achieve physical, moral, and social improvement of the Uruguayan population. The State will provide free preventive care and assistance only to indigents or those lacking sufficient resources. The Ministry of Public Health (MSP) was created in 1934 by Law No. 9.202, and is the organization responsible for establishing norms and regulating the sector, developing preventive programs, and administrating their assistance services.

In order to respond to the increasing poverty that was identified particularly after 2002, the Ministry of Social Development (MIDES) was created by Law No. 17.866 (*15*) in March of 2005. One of its principal policies is the National Plan for Social Emergencies (PANES) that consists of monthly transfers of a sum of money by the State to those households that are below the poverty line and whose incomes per person do not surpass the amount for a basic basket of food (*16*). In return for the money, persons are requested to provide some compensation, such as carrying out community work, ensuring that their children at-

tend school, and that they care for their health. The program will be carried out for two years, followed by an evaluation to determine the results.

The Child, Adolescent and Family Program (Infamilia) (*17*), operating within the framework of the Ministry of Social Development, aims to improve the living conditions and social insertion of boys and girls and their families through specific policies, many of which are linked to health and poverty. The Program supports the promotion of integrated development and the growth of boys and girls from 0 to 4 years through the support of the Plan CAIF (Child and Family Care Centers), which provides care to 13,800 children throughout the country through 210 care centers. The Infamilia Program also works with the Ministry of Public Health to develop activities regarding sexual and reproductive health, including the accompanying of adolescent mothers and fathers during the first year following birth; the training of youth promoters; and the creation of specialized spaces for adolescent care. In 2005, more than 50 socio-educational agents accompanied more than 1,500 adolescent mothers and fathers, and training for health professionals in sexual and reproductive health was also conducted.

Health Strategies and Programs

In 2000 the Ministry of Public Health established a program to strengthen the Collective Health Care Institutions, with financing from the Inter-American Development Bank, which had a partial impact particularly on a group of private institutions located in Montevideo. The debt situation and other structural causes were the reason for the closure of many Collective Health Care Institutions, which declined in number from 50 in 2000 to 41 in 2005. Several institutions remain at risk, and the health authority has to play an active role in the evaluation of the fulfillment of their responsibilities as well as in control of their economic-financial management. Beginning in March 2005, the new government proposed that, given the critical situation of the sector, profound changes must be made to the models of health care, finance, and management. It hopes to achieve this through the construction of a National Integrated Health System and a National Insurance program to finance it. Therefore, a comprehensive strategy and inter-institutional coordination with other areas such as food, education, housing, and social security, among others, are considered absolutely necessary (*18*).

The health system is currently very fragmented and inequitable: the population covered by the public assistance services is largely younger, mostly female, and further below the income and education level than the population covered by the private sector. At the same time, the private sector has three times the amount of resources per beneficiary than the private sector. With the crisis in 2002, the utilization of the public sector has grown due to reduced employment opportunities, and those unemployed lost health coverage through social security. The lack of a corresponding increase in the resources assigned to the public sector has resulted in a worsening of the inequities in quality and access.

Organization of the Health System

In March of 2005 the government proposed a global reform to the health sector (*18*), with a principal objective of contributing to equity in access to health services, through changes to the model of care and the application of a Primary Health Strategy, prioritizing the needs and rights of citizens through disease prevention, education, and health promotion, with an emphasis on active development of healthy behaviors and social participation. The reform also proposes changes to the management model, with an emphasis on democratization, transparency, efficacy, and efficiency to improve quality of care, as well as to the financing model, through the creation of a National Health Insurance program, proposing that resources be assigned and distributed to the health sector to meet the needs of the population. In the proposed insurance scheme, the users would contribute to the system based on family income and would obtain access to integrated coverage for health services. Public and private businesses would contribute an amount proportional to the number of employed workers. The institutions providing health services would receive income that would make it possible for them to achieve a reasonable balance between the number of enrollees and the cost of their care, based on the level of risk and expected expense for the population covered. This implies charging different costs through risk premiums based on sex, age, and other variables. The participating private health care institutions would follow the guidelines, norms, and controls that are defined as a condition for them to be financed by the insurance. The proposal includes a universal salary, regardless of where one works, as well as an overall cap on remunerations. The administration of the National Health Insurance program would be in the office of a Health Superintendent. The financial control and the quality of the core proposed services are the main components of the proposal.

In 2006 one of the first legal instruments designed by the Ministry of Public Health, and currently under discussion in the Parliament, was the Law of Administrative Decentralization of the State Health Services Administration, that separates the Administration from the structure of the Ministry of Public Health and converts it into an autonomous organization. The new organization would be directed by three delegates of the Executive Branch, a representative from the beneficiaries, and a representative from the workers of the State Health Services Administration. The purpose of this project is to complete the decentralization process begun in 1987 and to allow the Ministry of Public Health to concentrate on its steering role of the health sector.

The health system (*19–22*) has been historically characterized by a high level of fragmentation in the public and private sectors and by significant involvement of the private sector.

Various institutions make up the public sector providing health services. The network of the State Health Services Administration establishments is the largest in the country, and it includes hospitals, health centers, polyclinics, and family physicians. It provides coverage to the low-income population and is estimated to cover approximately 1,400,000 persons, approximately 40% of the total population. The State Health Services Administration provides 8,000 beds. The Armed Forces Health Services has its own hospital infrastructure in Montevideo with 450 beds and nursing services in the military units in the rest of the country. It provides coverage to approximately 165,000 people (active duty military, retirees, and their dependents). The Police Health Service has a hospital infrastructure of 132 beds in Montevideo, and in the interior of the country contracts services from the State Health Services Administration and private providers. It provides coverage to 70,000 (active duty police, retirees, and their dependents). The Scientific Hospital of the University of the Republic covers the same population as the State Health Services Administration and has 450 functioning beds. The Maternal-Child Service of the Social Welfare Bank has its own centers and provides coverage to couples and the children of beneficiaries of the Illness Insurance program who do not have private coverage. The State Insurance Fund provides direct care through its own 160-bed hospital in Montevideo and contracts services in the interior of the country. It covers occupational accidents and illness for the private sector. The Autonomous Entity Services and the Decentralized Services provide coverage to their workers, and in some cases, former employees and their families. The medical services of the 19 departments have varying levels of development, all providing primary health care and covering the low-income population.

The Collective Health Care Institutions are located in the private sector, with 41 medical centers with prepaid comprehensive services, 12 of which have their base in Montevideo and the rest in the interior of the country. It is a tightly regulated sector, and prices are subject to administrative control by the Ministry of Economics and Finance. Furthermore, the Ministry of Public Health determines which services it must provide and controls its aspects of care, as well as its economic and financial aspects. The majority of these organizations have their own inpatient services and their beneficiaries number 1,400,000. The institutions have between 3,000 and 240,000 affiliates. Private insurance plans are comprised of private businesses, largely commercial in nature, which provide care services through prepayment. This subsector includes institutions that provide total coverage (similar to the Collective Health Care Institutions), as well as partial. Starting in 2000, the State began to tighten its control over these organizations, particularly for those that are competition for the Ministry of Public Health. There are six companies which offer private insurance plans, including comprehensive coverage, and provide care to 55,000 subscribers. The mobile emergency systems are made up of a particular type of private partial coverage insurance, which includes domiciliary ambulatory coverage in case of emergency. Most of the subscribers to these insurance plans have double coverage, and they complement their public or private comprehensive insurance plan with these services. The Institutes of Highly Specialized Medicine are also care-providing organizations, and they sell high-technology services. There are also a large number of private businesses, sanatoriums, and clinics that sell ambulatory services or inpatient care.

Public Health Services

On February 20, 2004, within the framework of strengthening the Epidemiological Surveillance of the Ministry of Public Health (Decree 64/004), the National Code on the Required Notification of Disease and Health Events was put into place, which includes a listing of notifiable diseases and events and the definition of a suspicious case, of a confirmed case, and the corresponding prevention and control methods. At the same time, the organization and functioning of the ministerial units in charge of communicable disease surveillance, chronic disease, environmental health, accidents, and nutrition were redesigned. In the area of maternal-child health, the Ministry of Public Health has required prevention activities in the polyclinics throughout the departments, and it also has incorporated, through the health reform process, measures to ensure greater equity, such as free prenatal care.

Also through this framework, the organization and functioning of the National Public Health Laboratory have been redesigned (Decrees 384/999 and 241/000). The goals include technical assistance and supervision of the National Network of Clinical Analysis Laboratories (public and private), epidemiological surveillance, the development of diagnostic norms and protocols, the quality control of reagents, procedures, and techniques, and outside evaluation. In March 2006 the Ministry of Public Health designed a National Contingency Plan for Pandemic Influenza (which includes avian influenza). The Ministry of Public Health is also working with other sectors, particularly with the Ministry of Livestock, Agriculture and Fisheries, to prevent avian influenza among producers.

The coverage of potable water services is 98% for the total population living in formal or regular settlements. A technical renovation and expansion of potable water service coverage continues to be developed, which was started during the 1990s by the Public Sanitation Office (official agency). The country continues to face the challenge of providing potable water coverage to the population residing in informal settlements around the outskirts of Montevideo, which represents 10.1% of the population of the capital. Sanitation services only reach approximately 80% of the population in the urban area of Montevideo, with more than 50% receiving services through the national sanitation network. In the urban interior of the country, 30% of the population receives services through the sanitation network, and approximately 50%

of the urban population in the interior of the country disposes of their own waste water (through septic tanks).

Traditionally, Uruguay has maintained a high level of food safety. The national responsibilities for food safety fall to the Ministry of Public Health, while the direct execution of food inoculation activities corresponds to the municipal authorities. Other actors in this area are the Technological Laboratory of Uruguay (LATU), the Ministry of Agriculture, Livestock and Fishery, consumer protection organizations, and the industrial and food services business associations. Several departments have their own comprehensive food safety programs as a strategy to protect health, production, and the local labor market. Work continues through the System for Epidemiological Surveillance of Food-Borne Disease, coordinated by the Ministry of Public Health at the national level. The municipal authorities conduct bromatological controls and the Consumer Defense Area (ADECO) of the Ministry of Economy is responsible for product quality control, among other duties.

Individual Care Services

Blood donation in Uruguay is voluntary according to national norms. Some 35,000 Uruguayans receive transfusions every year. Eighty-seven blood banks exist in Uruguay: 45 public and 42 in the private sector. One hundred percent of blood is screened for the following diseases: syphilis, viral hepatitis B (superficial antigen and "anticore" antibody), viral hepatitis C, HIV (anti HTLV-1 and 2), and Chagas' disease. Based on the pre-donation questionnaire, 17% of would-be donors are rejected, and 4.7% of blood samples are discarded after screening (*23*).

Health Promotion

As a way to address community health, the Ministry of Public Health has begun a "productive and health communities" strategy in certain at-risk rural and suburban areas, with the goal of including comprehensive health activities in the development of production and local work. It has supported cooperative projects and small and mid-sized community businesses, based on the production of foodstuffs, artisan goods, and other local/regional products. The Ministry of Public Health and the Ministry of Agriculture, Livestock and Fishery programs have played an active role in these activities.

Uruguay ratified the Framework Convention on Tobacco Control. In 2006 the country enacted a national law that made all public spaces, workplaces, bars and restaurants smoke-free and made Uruguay a pioneer in the Region in the battle against tobacco.

Health Supplies

A broad legal framework exists to regulate the importation, production, distribution, sales, and propaganda of pharmaceuticals. The Ministry of Public Health controls the requirements to authorize the sanitary registration of pharmaceuticals considered necessary, efficacious, safe, and under conditions that guarantee quality and compliance with the norms of the production laboratories. The Ministry of Public Health depends on the evaluation and registry units; inspection of manufacturers, importers, distributors, and places of sale and usage; and on laboratory analysis to control the quality of medications.

The control includes all areas of production (licensure of manufacturer, sanitary registration of products, and good manufacturing practices) and of distribution (outfitting and inspection of establishments and compliance with best practices).

Norms require an obligatory common *vade mecum* (reference book) for all the Collective Health Care Institutions, and a separate one exists for all the public services. Some of the goals defined by the new administration since 2005 include: approve the Law of Generic Drugs; provide guaranteed access and availability to medications as soon as they are approved for the Sole Therapeutic Drug Formulary for the entire health system; strengthen drug surveillance; stimulate national production through competition and with adequate quality controls; and promote the rational use of drugs.

Decree 165/99 establishes that the manufacturing, registration, importation, commercialization, use, and control of diagnostic reagents, medical equipment, and therapeutic devices are the exclusive domain of the Department of Medical Technology, of the Division of Health Products, belonging to the General Directorate of Health of the Ministry of Public Health. The Ministry of Industry and Energy, through the Directorate of Nuclear Technology, has responsibility for all equipment that emits ionizing radiation. Since 2004 it has coordinated with the Department of Medical Technology on the registration of this type of equipment (Decree 43/004).

In 2004 the first National Census of Medical Equipment was completed with the objective of undertaking a diagnostic review of the medical equipment being used throughout the country, with the goal of planning for the rational introduction of new technologies. It should be noted that a high percentage of equipment is obsolete or in very precarious maintenance condition, which has resulted in the regulation of maintenance services for medical equipment.

Through the framework of implementing the Comprehensive National Health System since 2005, the government considered it necessary to create an Information System on Medical Technology, with the goal of systematically gathering information on the habilitation, organization, functioning, and use of medical equipment.

With regard to the functioning of manufacturing companies and importers of medical products, Good Manufacturing Practice Inspections were begun, as required by MERCOSUR norm 4/95, and the goal is to require this certification for all national companies.

Human Resources

Medical doctors must be professional university graduates with a diploma granted by an officially recognized institution, must register with the Ministry of Public Health to practice as a professional, and must register with the Retirement and Pension Office for University Professionals. For foreign professionals to be able to practice in Uruguay they must have an authorized diploma from a university or institution recognized by the Ministry of Education and Culture.

As of December 31, 2005, Uruguay had 13,390 physicians (41.3 per 10,000 population). The supply of physicians is characteristically a specialized workforce in which, on average, every professional holds more than two jobs (*24*). In terms of the workforce overview, a study has confirmed (*25*) that medical work is spread among a relatively important number of sources of employment. The average number of jobs is higher than two jobs per professional, but it varies depending on how many years the professional has been working as a medical doctor and the concentration of work in the private sector. Human resources in health are shown in Table 1.

The system for human resources training, from the point of view of the programs and based on the number of graduated professionals and technicians, does not take into consideration the health needs of the population based on demographic and epidemiological parameters when planning. Similarly, the identification of human resources for the sector also has not been a priority area for action on the part of health authorities. In 2005, the implementation of an information system on available health resources in the public and private health services was begun, including data on the quantity and type of positions, level of care where they work, and remunerations and quantity of medical interventions, which demonstrate advancement in the characterization of such resources.

Furthermore, the Ministry of Public Health and the School of Medicine are developing other joint activities with an agenda linked to the Medical Residency Programs and other areas related to human resources.

TABLE 1. Health professionals in Uruguay.

Profession	Total number	Ratio per 10,000 population
Physicians	13,390	41.3
Dentists	4,308	13.3
Licensed nurses	3,543	10.9
Pharmacists	1,476	4.6
Midwives	579	1.8

Source: Calculated with data from the Retirement and Pension Office for University Professionals.

Health Sector Expenditures and Financing

Studies have shown a trend in health expenditures increasing from 1994 until 2000, and decreasing from 2000 until 2004. The relationship between health expenditure and gross domestic product (GDP) can be seen in Table 2.

As shown in Table 3, the resources for the health sector come from both the public and private sectors. The public sector spends approximately US$ 12 per person per month, while the private sector spends US$ 32 per person per month. Although the coverage of care is almost evenly split between the public and private sectors, there is a large and historical difference in expenditures between the two sectors.

Public financing is comprised largely of taxes, contributions to social security, and tariffs for services on some companies. National and municipal taxes exist that finance health expenditures, and the General Budget for Expenses and Investment is the instrument by which the resources are assigned to the public agencies on the national level. The resources available for the Ministry of Public Health correspond largely to the budget of the State Health Services Administration. The municipal taxes are collected by the departmental governments, which, in function of their own budgetary assignments, contribute to the system to finance the provision of health services to the population of the department, as well as to finance the coverage of their own employees. According to the 1975 Law 14.407, the employees and employers in a private activity should contribute 3% and 5%, respectively, to the Illness Insurance program of the Social Welfare Bank. The law also provides for the possibility of not contributing the aforementioned support to the Health Insurance program, given that the employer and the employees agree that the support for coverage will be financed through other insurance plans. According to the 1995 Law 16.713, the right to coverage through the Illness Insurance program is given to those pensioners below a certain predetermined income level; those who opt for this arrangement contribute 3% of their pension. Teachers and judicial employees in the public sector have obtained the right to supported coverage through the Social Welfare Bank. This coverage, as well as the deficit of the actively employed and those retired, is financed through the transferences from the Central Government to social security.

Some of the public agencies (the National Administration of Combustibles, Alcohol, and Cement; and three banks (Banco República, Banco Hípotecario, and Banco de Seguros) finance the health coverage of their employees, and those funds come from the fees charged for their services. Private financing is largely comprised of out-of-pocket expenses by those persons who have voluntary or private providers.

The sources of financing of the health system are made up of organizations that have the securing and administering of funds for the purchase of services (such as the Illness Insurance program of the BPS) as their specific function, as well as other organizations whose principal function is the provision of services.

TABLE 2. Trends in health expenditures, Uruguay, 1994–2004.

Year	Population (thousands)	Health expenditures (millions US$)	GDP (millions US$)	Expenditure in health as a percentage of GDP (%)	Per capita expenditure in health (US$)
1994	3,195	1,590	17,518	9.1	498
1995	3,218	1,781	19,318	9.2	553
1997	3,265	2,163	21,695	10.0	662
1998	3,289	2,292	22,371	10.2	697
1999	3,303	2,238	20,912	10.7	678
2000	3,322	2,182	20,042	10.9	657
2004	3,241	1,184	13,215	9.0	365

Source: Cuentas Nacionales en Salud 2004 y Cuentas de Gasto y Financiamiento, 1990–2000.

TABLE 3. Sources of health financing, Uruguay, 2000 and 2004.

Sources of financing	2000 (%)	2004 (%)
General taxes	21.9	20.2
Local taxes	0.3	1.7
Parastatal and public corporations	2.3	2.3
Social security		
Employer contributions	9.6	11.9
Contributions of the employee/pensioner	4.6	5.8
Transfers of the government to social security	3.3	7.7
Health expenditures with private financing	53.4	49.6
Health expenditures financed externally	0.0	0.0
Debt	4.5	0.8
General total	100.0%	100.0%
(millions of US$)	(2,182)	(1,184)

Beginning with the social security contributions and the transfers of the government the comprehensive care for approximately 600,000 workers and retired people are financed and covered, which form part of the care providers of the private sector.

The National Fund of Resources, a non-State public institution whose objective is to finance a group of high-cost, low-frequency providers, is also an institutional agent of financing. Its funds are derived largely from the payment of the Illness Insurance program of the Social Welfare Bank, by the actively employed and pensioners who are covered; out-of-pocket payments from all persons voluntarily affiliated with a Collective Health Care Institution; payment for services from the General Revenue for the coverage of those receiving services from the State Health Services Administration; and specific taxes. The National Fund of Resources contracts public and private providers (named by the Institutes of Highly Specialized Medicine) for the coverage of high-technology care. Other organizations such as the State Health Services Administration, the Military Health System of the National Ministry of Defense, the Police Health System of the Ministry of the Interior, the Municipal Intendancies, and the State Insurance Fund, are financial agents that also receive funds through public financing and provide care.

At the private level the Collective Health Care Institutions and the private health insurance plans fulfill a double role as financing agent and provider of services.

Technical Cooperation and External Financing

The majority of the projects begun in the 1990s financed by the World Bank were completed by the end of 2000. The Strengthening Project of the Collective Health Care Institutions, developed during that same year, was funded by the Inter-American Development Bank (IDB).

Beginning in 2005, new lines of support from the World Bank began, largely linked to the social area, including the reform of the health sector. The technical cooperation of the Pan American Health Organization (PAHO)/World Health Organization (WHO) continues working to comply with the resolutions of the Governing Bodies and the national and departmental health authorities. From December 2000 to July 2006, the Ministry of Public Health,

Response to Deepening Poverty

In 2002 Uruguay suffered a severe economic crisis with a decline in employment and serious consequences for the financial system. The increase in unemployment and the debt in dollars of the urban and rural population have made poverty more acute. In 1999, 15.3% of the population lived below the poverty line, with the figure rising to 32.1% by 2004, concentrated largely among children (56.5% of boys and girls between 0 and 5 years lived below the poverty line in 2004).

As a response, the Ministry of Social Development (MIDES) was created in March 2005. One of its main policies is the National Plan for Social Emergencies (PANES) that consists of monthly government cash transfers to households below the poverty line whose per capita incomes do not exceed the cost of a basic basket of food. The cash transfers are contingent on the beneficiaries performing community work, and ensuring that their children attend school and go for medical checkups. The program will last for two years, followed by an evaluation of the results. MIDES also operates the Child, Adolescent and Family Program (Infamilia), which aims to improve the living conditions and social integration of children and their families through specific policies, several of which are linked to health and poverty. The Program supports the promotion of comprehensive development and growth among boys and girls from 0 to 4 years and, together with the Ministry of Health, it carries out actions for sexual and reproductive education, including support for teenage parents for the first year following the birth of a child, training for youth promoters, and the creation of specialized spaces to assist adolescents.

with support from PAHO and financing from the IDB, developed a project on oral health that included a cost-effectiveness study on the technique or practice of the atraumatic restoration (PRAT). This research is simultaneously being conducted in other countries in the Region. As a consequence of the research, the Ministry of Public Health and the Intendancy of Canelones signed a framework agreement of complementary work, known as the Departmental Health Plan. One of its lines of work in primary health care includes oral health.

In 2004, the Memorandum of Understanding between the governments of Uruguay and Italy was approved by law for a credit of 15 million Euros to acquire new equipment for the public health sector. This represents the largest investment in health of the current administration.

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VENEZUELA


Saint Lucia
Aruba
Netherlands Antilles
Barbados
Grenada
Trinidad and Tobago
1
Falcón
Caracas
2
4
3
Sucre
Lara
7
6
5
Zulia
9
8
10
Monagas
Guárico
Anzoá-tegui
Delta Amacuro
11
Barinas
12
Apure
Bolívar
Guyana
Colombia
Amazonas
Brazil
0
100
200 Miles
1 Nueva Esparta
2 Vargas
3 Miranda
4 Capital District
5 Aragua
6 Carabobo
7 Yaracuy
8 Cojedes
9 Trujillo
10 Portuguesa
11 Mérida
12 Táchira

The Bolivarian Republic of Venezuela is a federation organized into 23 states, a capital district, and federal dependencies distributed in 335 municipalities. It has a land area covering 916,446 km^2 and a population estimated at 26,577,423 in 2005—49.7% women (*1*)—with a density of 29 people per km^2 and an annual average growth rate of 1.7% (*2*).

GENERAL CONTEXT AND HEALTH DETERMINANTS

Social, Political, and Economic Determinants

The gross domestic product (GDP) grew by approximately 19% in 2004 and by 9% in 2005 (*2*), mainly owing to oil revenues. The poverty level, measured by income, rose from 39.1% in 2001 to 42.4% in 2005 and extreme poverty climbed from 14.2% to 17% (*1*). In 2003, according to the Human Development Report (*3*), the country ranked 14th out of 81 countries in development (11th place in 2001). The Gini coefficient fell from 0.48 in 1998 to 0.46 in the first half of 2004. The poorest 20% obtains 4.7% of the country's income and the wealthiest 20% obtains 52.3%.

Inflation grew from 12.5% in 2001 to 21.8% in 2004. As of December 2005, 65.4% of the population was economically active, 49.5% of whom were women (*2*). The employment rate was 91.1% (15.9% in the public sector and 84.1% in the private sector) and 47.6% of jobs were in the informal sector. The net activity rate, which refers to the capacity to engage in productive economic activities, was 65.3% in 2001, and 68.8% in 2004 (*2*), and the trend indicates that the percentage of people able to engage in economic activities in the country continues to grow.

Table 1 shows Venezuela's classification in social territories (units of analysis composed of a group of people who share similar sociocultural and economic profiles but do not necessarily correspond to existing geopolitical boundaries) and Figure 1 shows that life expectancy has increased in the more developed territories.

In 2004, public investment in education as a percentage of GDP was 4.9% (*2*). For the 2004–2005 school year, the net enrollment rate by age group was 51.7% in preschool; 90.7% in primary school; and 30.6% in secondary, upper secondary, and vocational school (*2*). In 2001, the illiteracy rate was 6.4% (*2*). On 28 October 2005, Venezuela declared itself "illiteracy free" in the wake of the Robinson Mission, which was an initiative to teach more than 1 million Venezuelans around the country to read and write.

In 2004, the housing shortage in Venezuela was about 1.1 million units, and the qualitative shortage was 1.8 million; 68% of occupied housing is located in shantytowns and public housing projects built by the government (*4*).

To combat poverty, include excluded groups, and respond to the commitments to achieve the Millennium Development Goals (MDGs), the national government has implemented large-scale, rapid social programs known as "missions." The *Misión Barrio Adentro* and the *Misión Milagro* stand out in the field of health care. Other missions promote education, culture, employment, food access, sustainable development, research, and other human development areas.

Demographics, Mortality, and Morbidity

In 2005, 31.2% of the population was under 15 years of age and 7.5% was 60 and over (*1*). In 2004, the birth rate was 24.4 per 1,000 population; the general fertility rate was 2.69 children per woman, and the mortality rate per 1,000 people was 4.5 (6.1 for men and 3.9 for women) (*1, 2*). This situation has produced a population pyramid with an increasingly narrow base (Figure 2). According to the most recent census (2001), 87.1% of the population is urban; 57% lives in the coastal area, 22% in border areas, and 21% in the central region (*1*).

Life expectancy at birth was 72.7 years (76.6 for women and 69.8 for men) in 2002 and 73.2 years (76.2 for women and 70.3 for men) in 2005 (*2*). In 2004, there was a life expectancy gap of 9.4 years between the population living in the most developed and the least developed states (74.6 years in the Capital District and 65.2 years in Delta Amacuro) (*1*).

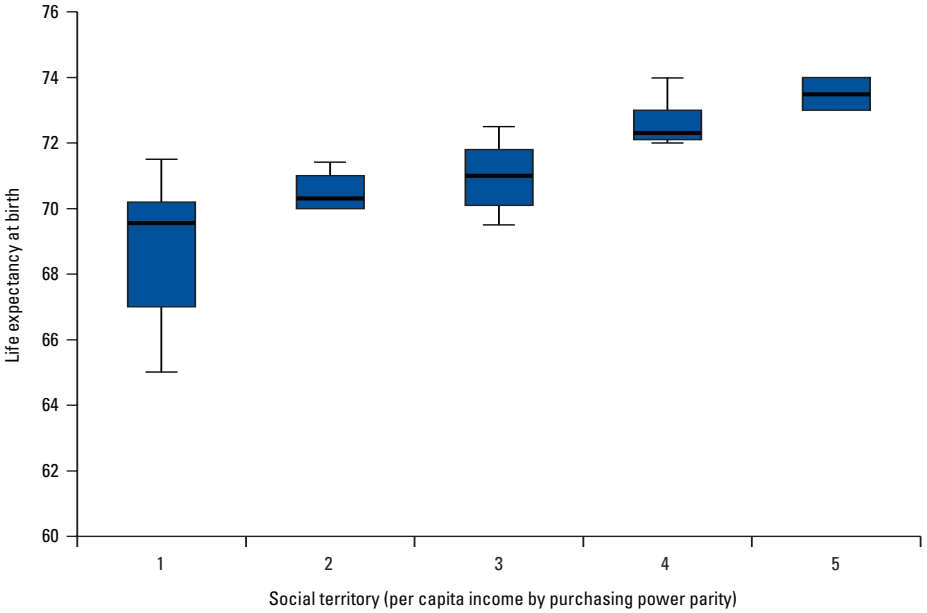
In 2004, the 10 leading groups of causes of death, expressed as unadjusted rates per 100,000 people, were heart disease (93); cancer (67); suicides, homicides, and other violent deaths (57.2); accidents of all kinds (32.1); cerebrovascular disease (31.7); diabetes (27.3); conditions originating in the perinatal period (20.1); chronic lower respiratory diseases (12.1); influenza and pneumonia (11); and liver disease (8.5). The differences by sex in violent deaths (100.4 in men and 10 in women) and accidents of all kinds (49.1 in men and 14.9 in women) are striking (*5*). Deaths due to violence were the leading cause of potential years of life lost in the country. Underreporting of mortality is between 10% and 15%.

TABLE 1. Classification of Venezuela in social territories, 2002.

Social territory 1 (least developed)	Social territory 2	Social territory 3	Social territory 4	Social territory 5 (most developed)
Amazonas	Yaracuy	Lara	Nueva Esparta	Capital District
Delta Amacuro	Sucre	Falcón	Aragua	Miranda
Guárico	Trujillo	Monagas	Anzoátegui	
	Portuguesa	Mérida	Bolívar	
	Barinas	Táchira	Carabobo	
	Apure	Cojedes	Zulia	

Source: Data obtained from the Human Development Index and Context in Venezuela. INE-UNDP, 2002. Strata defined by per capita income using purchasing power parity.

FIGURE 1. Life expectancy at birth, by social territory, Venezuela, 2002.



Source: National Statistics Bureau. http://www.ine.gob.ve.

HEALTH OF POPULATION GROUPS

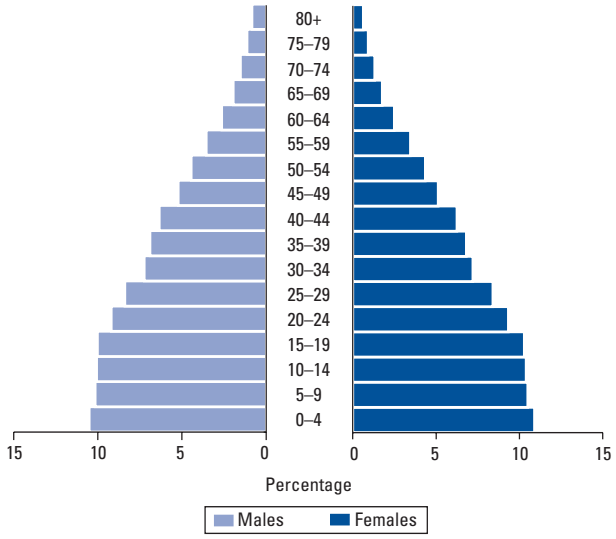
Children under 5 Years Old

In 2005, children under 1 year of age accounted for 2.2% of the general population (51.2% were boys). The prevalence of low birthweight fell from 12% in 1999 to 8% in 2002 (*1*). The infant mortality rate has steadily decreased in recent decades (Figure 3). Infant mortality expressed as the rate per 1,000 live births was 25.8 in 1990, 17.7 in 2000, and 17.5 in 2004 (*5*). Projections of this trend using the ARIMA method indicate that the country will have a rate of 10.7 deaths per 1,000 live births by 2015, which is close to the MDG of 8.5. Social territory 2 (Table 1) has the highest rate (21.7) and social territory 5 the lowest (14.6).

The deaths among children under 1 as a proportion of total deaths fell from 14.2% in 1990–1994 to 8.4% in 2000–2004. In 2004, 66.5% of deaths in children under 1 occurred in the neonatal period and 33.5% in the postneonatal period (*5*). The proportional contribution of the five leading causes of death was: certain conditions originating in the perinatal period 56.7%, congenital defects 16.2%, intestinal infectious diseases 8.1%, influenza and pneumonia 4.6%, and accidents of all kinds 3.5% (*5*).

In 2005, the 1- to 4-year age group made up 8.4% of the population (51.4% were boys) (*1*). In 2004, mortality from all causes expressed as the rate per 100,000 boys and girls between the ages of 1 and 4 was 73.7 (76.6 for boys and 70.7 for girls). The leading five causes of death were: accidents of all kinds (16.6), intestinal infectious diseases (13.8), influenza and pneumonia (12), congenital defects (10.7), and nutritional deficiencies (9.8) (*5*).

FIGURE 2. Population structure by age and sex, Venezuela, 2005.



Children 5–9 Years Old

In 2005, the 5- to 9-year age group accounted for 10.2% of the total population (51.1% were boys) (*1*). In 2004, mortality from all causes expressed as the rate per 100,000 boys and girls in this age group was 34.4 (40.9 for boys and 27.6 for girls). The five leading causes of death were: accidents of all kinds (12.2), cancer (4.4), congenital defects (2.7), infant cerebral paralysis (1.7), and influenza and pneumonia (1.2). The difference between the sexes in deaths caused by accidents of all kinds stands out (16.8 for boys and 7.3 for girls) (*5*).

Adolescents 10–14 and 15–19 Years Old

In 2005, the 10- to 19-year age group accounted for 20.1% of the total population (50.9% were males). In 2004, the specific fertility rate among girls between the ages of 15 and 19 was estimated as 91.7 per 1,000 population (*1*).

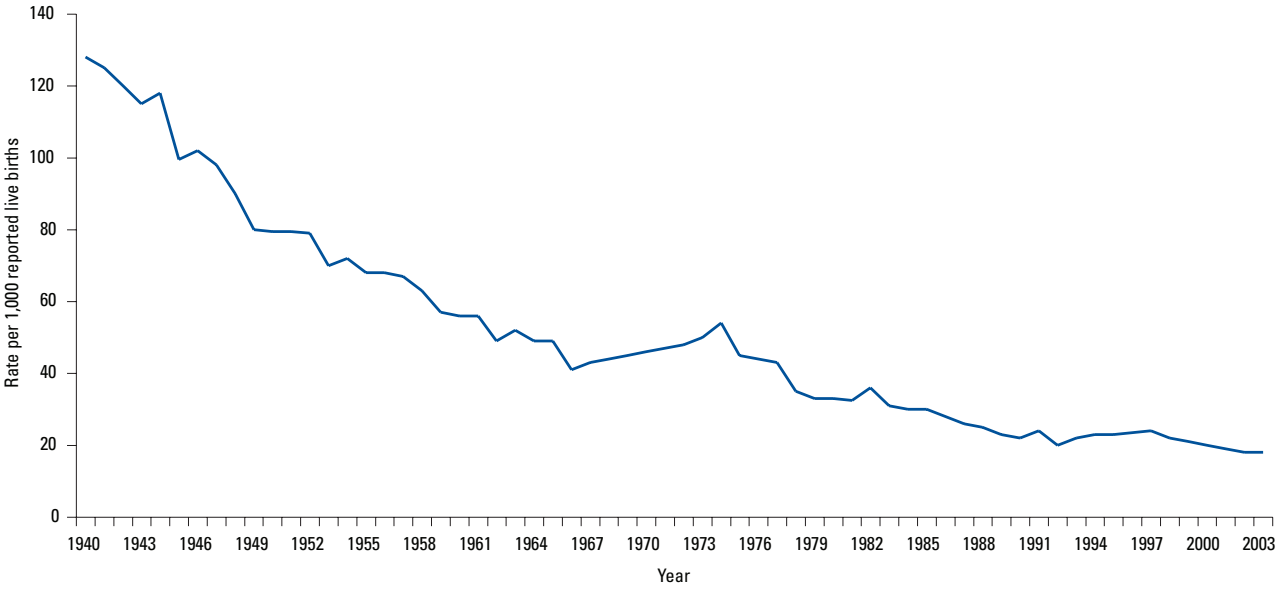
In 2002, the Ministry of Health reported 98,099 births in the 10- to 19-year age group (22.4% of all births), with percentages higher than the national average in the following states: Apure (31.2% of total births), Guárico (27.8%), Cojedes (27.2%), Portuguesa (26.9%), and Barinas (25.7%). The prevalence of low birthweight for babies born to mothers between the ages of 10 and 14 was 12.6%, and it was 9.2% for mothers between the ages of 15 and 19 (8% for mothers of all ages) (*6*).

In 2004, the mortality rate for adolescents between 10 and 14 years old was 44 per 100,000 (52.0 for males and 35.0 for females) and for adolescents between 15 and 19 years of age it was 158.0 per 100,000 (253.0 for males and 59.0 for females) (*1*). Violence was the main cause of death in adolescent males between the ages of 15 and 19 years (*5*).

Adults 20–59 Years Old

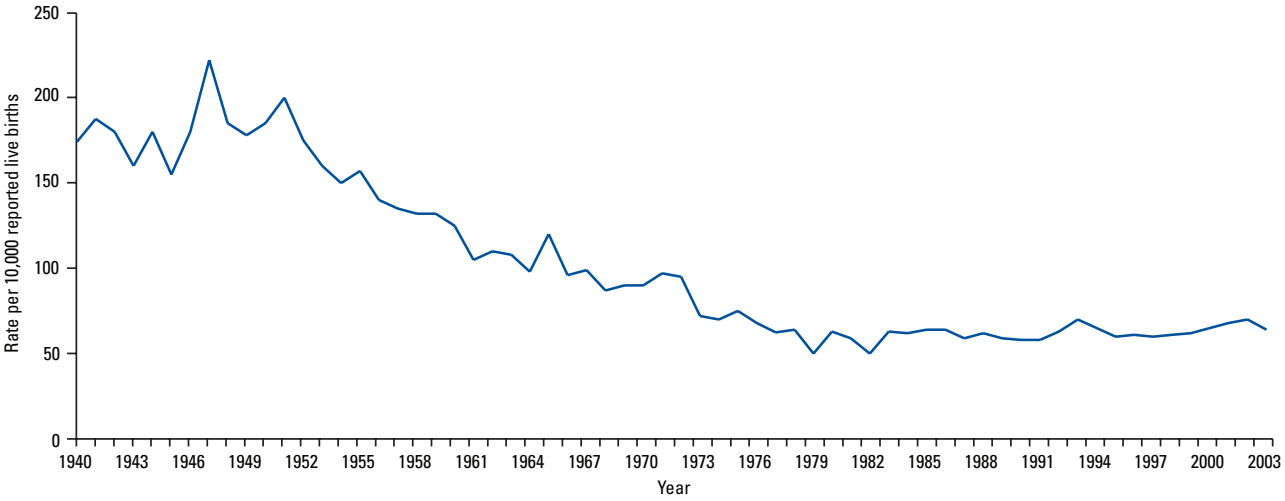
In 2005, the 20- to 59-year age group made up 51.3% of the population, with one-half being males (*1*). In 2004, the five lead-

FIGURE 3. Infant mortality, Venezuela, 1940–2003.



Source: Ministry of Health, National Epidemiology Directorate, 2006, Venezuela.

FIGURE 4. Maternal mortality, Venezuela, 1940–2003.



Source: Ministry of Health, National Epidemiology Directorate, 2006, Venezuela.

ing causes of death (rate per 100,000 population) were: 82.3, violent events (153.4 for men and 11.1 for women); 57.3, cancer (47.7 for men and 67.0 for women); 49.2, heart disease (68.6 for men and 29.9 for women); 45.3, accidents of all kinds (76.1 for men and 14.5 for women); and 13.8, diabetes (15.9 for men and 11.7 for women) (*5*).

Maternal mortality fell steadily until the end of the 1970s. Since then, the level has remained stable, with slight variations (Figure 4), but inequalities persist among the social territories. In 2004, the maternal mortality rate was 59.9 per 100,000 live births. Maternal deaths in 2000–2004 averaged 331 a year (*5*). In 2004, the proportional contribution of the leading five causes of maternal deaths was 28.6% from edema, proteinuria, and hypertension; 22.6% from other obstetrical complications; 20.8% from pregnancies ended by abortion; 13.8% from complications related to labor and delivery; and 10.1% from complications in the puerperium (*5*). In 2004, institutional coverage of care during delivery was 98% and coverage of prenatal checkups in Ministry of Health establishments was 25.5% (*1*).

Older Adults 60 Years Old and Older

In 2005, the group aged 60 and up accounted for 7.6% of the population, 47.1% of whom were males (*1*). In 2004, the proportional distribution of the leading causes of death was 19.1% from heart disease, 10.5% from cancer, 6.8% from cerebrovascular diseases, 5.1% from diabetes, and 2.8% from chronic lower respiratory diseases (*5*). In 2005, the main causes of morbidity were arterial hypertension (17.2%), visual disorders (13.9%), respiratory disorders (12.7%), diabetes (11.3%), and osteoarthrosis and osteoarthritis (10%) (*7*).

Workers

Occupational risks over the last decade have tended to increase as a consequence of informal employment, the use of unsuitable premises, and the use of homes as production centers. In 2004, the National Occupational Accident Prevention, Health, and Safety Administration (INPSASEL) reported 1,339 cases of muscular-skeletal disorders (68.6%), pathologies related to chemical risks (9.9%), psychosocial disorders (5.7%), respiratory disorders (4.9%), voice pathologies (4.3%), skin conditions (3.1%), occupational deafness (2.5%), exposure to extreme temperatures (0.4%), work-related zoonoses (brucellosis) (0.4%), and radiation disorders (0.3%) (*8*). Significant underreporting is assumed and the real figures for work-related disabilities and deaths are unknown.

Persons with Disabilities

According to the 2001 census, 4.2% of the population had a disability of some kind, for a total of 927,397 people (0.13% blindness, 0.15% deafness, 0.38% retardation, 0.15% loss of the upper limbs, 0.31% loss of the lower limbs, and 3.1% other causes) (*1*), although underreporting is assumed. *Misión Barrio Adentro* launched a process to strengthen comprehensive rehabilitation services.

Ethnic Groups

The indigenous population represents 2.3% of the total (532,743 people) (*1*) and is distributed among 36 ethnic groups who live in 10 states. The diseases that prevail in this population

are tuberculosis, malaria, hepatitis, intestinal parasitosis, malnutrition, onchocerciasis, and respiratory and digestive disorders. The Amazon Tropical Disease Research and Control Center (CAICET) reported that the incidence of tuberculosis among the Yanomami was 10 times higher than for the nonindigenous population. In the states of Amazonas and Bolívar, the four leading causes of death in this ethnic group are malaria (40.1% of reported mortality), malnutrition, hepatitis B, and intestinal infections (gastroenteritis, amoebic dysentery, and helminthiasis). The indigenous population, in particular the Yanomami and Añú, are highly vulnerable to sexually transmitted infections owing to their contact with miners and tourists (*9*).

HEALTH CONDITIONS AND PROBLEMS

Communicable Diseases

Vector-borne Diseases

In 2002, three cases of **yellow fever** were reported in Zulia, with the start of an outbreak that lasted until 2003; of the total of 34 cases, 21 were in Zulia (with 9 deaths), 11 in Táchira (with 5 deaths), and 2 in Portuguesa. Also, the surveillance system in Zulia reported 9 cases (with 6 deaths) among people from northern Santander in Colombia. In 2004, a total of 5 cases were reported, with 2 in Mérida (with 1 death) and 3 in Monagas (with 2 deaths); in 2005, there were 12 cases with 8 deaths in the country, with 3 in Mérida (with 2 deaths), 1 in Apure (with 1 death), 1 in Bolívar (with 1 death), and 7 in Portuguesa (with 4 deaths) (*10*).

In 2003, an unconventional surveillance system was introduced, which identified the disease in primates in Apure, Barinas, Monagas, Sucre, Guárico, and Portuguesa in 2004 and 2005. In response to the outbreak, 953 samples were processed for viral isolation between 2003 and 2005, with three isolations in humans and four in primates (*11*). Also, in 2004, the Anatomical-Pathological Institute of the Central University of Venezuela introduced the immunohistochemical technique. Up to 2005, 121 tests had been performed (85 in humans and 36 in primates), with 8 humans and 3 Araguato monkeys testing positive for yellow fever (*12*).

American cutaneous **leishmaniasis** has been diagnosed in different parts of the country even though there is no national surveillance system. For the states that keep statistics, the largest number of cases have been reported in Lara (288 human cases in 2005), Nueva Esparta (13 in 2001 and 21 in 2005, with a prevalence in dogs estimated at 15% to 20%), and Sucre (6 in 2003 and 3 in 2004) (*13*).

The risk zone for **Chagas' disease** covers 164 municipalities in 18 states located in the Andean foothills, the coast, the north central region, and the plains; 80% of the population at risk lives in rural communities with no basic services. In 2000, 16,670 houses were examined for the presence of contaminated vectors, with 859 of them positive for *Rhodnius prolixus* and 51 for *Trypanosoma cruzi*. In 2004, 5,746 houses were examined and 135 were positive for *R. prolixus* and 26 for *T. cruzi*. Based on the proportion of positive cases out of the total number of samples, seroprevalence for *T. cruzi* was calculated as 8.1% in 2000 and 5.8% in 2005 (*14*).

The population at risk of contracting **malaria** (i.e., people living in municipalities where the disease has been transmitted during two consecutive years) fell from 36% in 2000 to just under 20% in 2004. However, the incidence of the disease nearly tripled in that same period, from 0.3% in 2000 to 0.9% in 2004. Most cases were caused by *Plasmodium vivax* (90% in 2004) (*15*). In 2003, 31,719 cases were reported, for a rate of 611 per 100,000 people in the at-risk population and 121 per 100,000 people in the total population. The state with the highest incidence was Amazonas, with 7,131 cases per 100,000 people, and the state with the lowest incidence was Zulia, with 15 cases per 100,000 people. In 2004, 46,655 cases were reported (899 per 100,000 people in the at-risk population and 179 per 100,000 people in the total population). The parasite formula in December 2003 was 82.6% for *P. vivax*, 16.7% for *P. falciparum*, 0.6% mixed (*P. falciparum* and *P. vivax*), and 0.1% for *P. malariae* (*16*).

The annual parasite index (API) has risen since 2001, and in 2004 it was 8.99 per 1,000 people for all areas. The API for *P. falciparum* fell in 2004 compared with the previous year (0.89 versus 1.07), but it remained far higher than in 2001 and 2002. The API for *P. vivax* rose steadily from 2.38 in 2001 to 8.08 in 2004 (*15*). The Ministry of Health has begun to use an artesunate-mefloquine combination to treat uncomplicated malaria (*17*).

Classic **dengue fever** and **dengue hemorrhagic fever** are endemo-epidemic in the country, with four virus types circulating. The year with the highest incidence was 2001, when there were 85,262 cases, for a rate of 446.15 per 100,000 population (77,344 classic dengue and 7,918 hemorrhagic dengue). The number of cases fell gradually until 2004, when 30,693 cases were reported (28,707 classic dengue and 1,987 hemorrhagic). There was an increase in 2005, with 42,217 cases reported (39,536 classic and 2,681 hemorrhagic) (*18*). The progressive reduction in the number of deaths from hemorrhagic dengue in the period is worth noting: from 50 in 2001 to 19 in 2004 (*5*).

In 2005, the population at risk of **onchocerciasis** in Venezuela accounted for 22% of the total in the Americas. There are 625 endemic communities reported in three areas: northeast, north-central, and south; 74.4% of the cases are in the northeast. The susceptible population eligible to receive treatment with ivermectin is 99,484 people and between 2003 and 2005 coverage rates exceeded 85% (*19*).

Vaccine-preventable Diseases

In 2004 and 2005, coverage with routine vaccinations for children under 1 year of age was over 90% for BCG (96% and 95%, respectively) and for yellow fever vaccine (94% both years), while

coverage with the other vaccines remained between 80% and 90% in 2005 (80% OPV3, 87% DPT3, 87% Hib, 88% Hep B, and 76% MMR). Coverage with the pentavalent vaccine (DPT, hepatitis B, and *Haemophilus influenzae* type b) rose from 37% in 2004, when it was introduced in the country, to 80% in 2005 (*20*). To increase coverage, in 2004 the Ministry of Health implemented the National Vaccination Plan which, in addition to coverage for the population under 5 years with the vaccines included in the national vaccination model, provides vaccinations against hepatitis B and yellow fever for the at-risk adult population.

The progress made with yellow fever vaccinations for children over 1 year after the outbreak in 2003 should be emphasized. By 2005, over 15 million doses had been applied, mainly vaccinating the population over 1 year that lives in 140 high-risk municipalities in nine states, with an estimated population of 7,756,921. In those municipalities, general coverage of 90% has been achieved. Also, the yellow fever vaccine is administered regularly as part of the Expanded Immunization Program (PAI), to children 1 year of age, with coverage rates exceeding 90% in the last three years (*20*). Venezuela has participated actively in the Americas Vaccination Week (SVA) since 2003 and has used this initiative to strengthen its regular program and conduct campaigns.

With regard to the epidemiological behavior of vaccine-preventable diseases, in 2005 the country remained free from confirmed cases of **poliomyelitis** (the last case was reported in 1989). In the same year, one confirmed case of neonatal **tetanus** was reported (the last case was in 2001) and one of **diphtheria** (last case in 1992). The number of cases of **whooping cough** rose from 286 in 2002 to 367 in 2003 and to 715 in 2004. On the other hand, there was a marked drop in the number of cases of **rubella** confirmed clinically and in the laboratory: 2,724 in 2003 and 2,885 in 2004 compared to 4,047 reported in 2002 and 9,996 in 2001 (*6*).

The country was affected by an outbreak of **measles** from week 36 of 2001 to week 46 of 2002, with a total of 2,501 cases distributed among 17 of the 24 states, with 84% of the cases in Zulia, which was hardest hit. The outbreak mainly affected the under-5-year age group, particularly children under 1, with 699 cases and a rate of 122.5 per 100,000. Young adults, mainly between the ages of 20 and 34 years, also had high incidence rates. The virus that caused the outbreak was imported by a traveler from Europe who went to the municipality of Zamora in the state of Falcón and was not opportunely detected. The disease spread to the rest of the state and then to the rest of the country. Thanks to intensive control activities, the outbreak lasted only 14 months and the event is considered to be the last presentation of the measles virus (D9), which is widely endemic in the Americas.

Intestinal Infectious Diseases

Mortality in children under 5 years caused by intestinal infectious diseases expressed in rates per 100,000 people was 37.3 in 2002 (*21*) and 35.3 in 2004, with approximately 70% of those deaths among children under 1 year (*22*). There were 1,213,460 cases of **diarrhea** reported in children under 5 in 2004 and 1,214,461 in 2005 (*23*).

Chronic Communicable Diseases

Venezuela has been classified since 2004 among the group of countries in the Americas with a moderate burden of **tuberculosis** (TB). In 2004, 6,519 new cases of TB in all its forms were reported, for a rate of 25.1 per 100,000 people; the highest incidences were in Delta Amacuro (111.9), the Capital District (66.2), Amazonas (44.0), Monagas (43.9), Portuguesa (33.9), and Vargas (31.2). The pulmonary form accounted for 84.4% of all the new cases of TB that were reported, with 68.6% of them bacilliferous; 51.3% presented in the 15- to 44-year age group; 8.9% were in children under 15 years; and 15.3% were in people 65 years of age and over. The tubercular meningitis rate in the 0- to 4-year group was 0.2 per 100,000. AIDS/TB coinfection continues to rise and the association is present in 5% of new cases of TB and in 3.5% of reported relapses. The total number of relapses reported was 425, and 68% of them were confirmed bacteriologically. The country uses passive case detection and therefore underdiagnosis is assumed (*24*).

In 2004, the national prevalence rate of **leprosy** was 0.54 per 10,000 people; however, rates above 1.0 persist in the states of Cojedes, Portuguesa, Barinas, and Apure. New cases are more frequent with advancing age and in males, predominating in rural zones and unconsolidated urban settlements. The multibacillary form is the most prevalent. The detection rate was 0.27 per 10,000 people (*25*).

Acute Respiratory Infections

Mortality in children under 5 years from acute respiratory infections, expressed in rates per 100,000 people, was 24.5 in 2002 (*21*) and 27.2 in 2004, with 60% of them in children under 1 year. (*22*). Preliminary figures report 6,694,002 acute respiratory infections in 2004 and 6,716,211 in 2005 (*23*).

HIV/AIDS and Other Sexually Transmitted Infections

Between 1982 and 2005, 53,465 cases of AIDS were reported with 6,372 deaths. The epidemic is considered theoretically concentrated, with a prevalence in the population from 15 to 49 years of 0.7% and an estimated 110,000 cases of HIV infection. It should be kept in mind that AIDS was reported in only 13 of the 24 states, which suggests the existence of underreporting that has still not been estimated. The trend observed through the detection of people with the infection is an increase in heterosexual transmission and feminization of the epidemic. The male-to-female ratio fell from 9.8:1 in 1990–1994 to 3:1 in 2000– 2004. The Ministry of Health offers universal access, free of charge, to antiretroviral drugs, diagnostic tests, and immunological and vi-

rological monitoring. Antiretroviral treatment rose from 52% in 2004 to 100% in December 2005 (*26*).

Zoonoses

Coordination of actions between the Ministry of Health and the Ministry of Agriculture and Land has been stepped up. Through regular meetings of the National Zoonoses Committee, it has been possible to effectively implement joint projects from the planning to the action stages.

The geographic distribution of **rabies** in dogs was reduced from 11 states in 1991 to 1 state (Zulia) in 2001. The annual number of cases of canine rabies in Zulia has risen continually, from 82 cases in 2001 to 181 in 2004. However, intervention by local authorities made it possible to improve the structure of the vaccination campaigns carried out in mid-2004 and to reduce the incidence by 57% in 2005 (76 cases) (*27*). In 2003, there were two cases of human rabies transmitted by dogs, while, in 2004, five cases of human rabies were reported, three of them transmitted by dogs in Zulia and two by hematophagous bats in Sucre; no human cases were reported in 2005 (*6*).

With regard to **equine encephalitis**, the Ministry of Health and the Ministry of Agriculture and Land maintain a joint vaccination program of equines in high- and moderate-risk municipalities. In 2004, 297,046 doses were applied and 303,211 in 2005. In 2004, 29 outbreaks of the disease were reported, with 13 being eastern equine encephalitis (EEE), 9 Venezuelan equine encephalitis (EEV), and 7 with positive serology for both viruses. In 2005, 5 outbreaks were reported, 4 caused by EEE and 1 by EEV (*28*). In 2005, a national surveillance program was carried out for West Nile virus to monitor its possible entry into the country.

In 2000, 419 cases of **leptospirosis** were reported in the wake of the floods in Vargas (*29*), with the number dropping gradually to 98 cases in 2004 (*30*). The 2005 floods caused an outbreak with 90 suspected cases and 6 deaths (*31*).

With regard to birds, the country has been historically free from all the viruses that cause **avian influenza**, which was corroborated through sampling at the end of 2005, with negative results for the commercially raised bird population consisting of about 78 million birds (*31*). A permanent surveillance system is being implemented for commercial and backyard birds, and migratory birds are being monitored.

In 2003, an epidemic of **foot-and-mouth disease** affected 63 farms; the incidence fell to 13 farms in 2005, predominantly in the western part of the country. **Vesicular stomatitis** fell from 22 outbreaks reported in 2003 to 12 farms affected in 2005, and its incidence continues to be low (*27*).

As for **brucellosis**, in 2003 new regulations were approved for diagnostic tests and for the destination of animals that tested positive. This led to an increase in serological tests from 504,310 in 2003 to 1,197,636 in 2005. The prevalence of the disease in animals was 8 per 1,000 in the field in 2005. Vaccinations increased from 273,448 in 2004 to 478,182 in 2005 (*6*).

Noncommunicable Diseases

Metabolic and Nutritional Diseases

The prevalence of the nutritional anthropometric deficit in children under 5 was low (weight/age <10%, height/age <20%, and weight/height <5%). The main problem was low height for age (12.5%); low weight for age was 5.2% and acute nutritional deficit was 4.1%. The prevalence of overweight was 3.1%.

Of 78,405 hospital pediatric admissions (<13 years) for all causes in 24 sentinel hospitals in 2004, 1.4% had serious malnutrition, with a predominance of marasmus, with children under 1 year being the hardest hit. The highest rates for pathologies linked to malnutrition were for diarrhea (3.4%), helminthiasis (1.5%), bronchitis (1.3%), anemia (1.2%), and pneumonia (0.4%) (*32*).

Other Health Problems or Issues

Disasters

The torrential rains of 2002 and 2005 almost everywhere in the country, which caused flooding and mudslides, stand out: 300,000 people were left homeless and there were 98 deaths. A large number of health centers were affected (*33*). In 2005, 90 accidents were reported in the oil industry, which indicated a pressing need to promote or recover safety margins in the country's oil and petrochemical industries (*34*). The Civil Protection and Disaster Management Law was promulgated in 2003 and the Risk Management Law in 2005. In 2005, the Ministry of Health created the Emergency and Disaster Coordination Office and the Health Department of Metropolitan Caracas established a Health Risk Management Unit.

The Ministry of Health prepared the National Plan for Surveillance, Prevention, and Control to address a possible avian influenza pandemic and the National Surveillance System for Acute Respiratory Infections, Pneumonia, and Influenza was strengthened by implementing an epidemiological investigation file for acute respiratory infections (*35*).

Violence and Other External Causes

The Interministerial Commission for Road Awareness, Accident Prevention, and Education (CIAPEV) was established in 2003. In 2004, the Ministry of Health's National Accident and Other Violent Events Program was reactivated. In 2004, 117,227 deaths were reported, with 5,437 caused by traffic accidents (21% women), 7,348 homicides (6.2% women), and 1,034 suicides (19.4% women), with the number of deaths from accidents and violence totaling 13,819 (*36*).

Between 2000 and 2004, an average of 4,000 domestic violence complaints were reported each year. More than 40% of the complaints involved physical or psychological violence. In the aggressor-victim relationship, more than 80% of acts of violence are performed by the partner or former partner (*37*).

Addictions

Smoking by people more than 15 years old declined from 40% in 1984 (*38*) to 28% in 2005, according to studies conducted by the Central University of Venezuela and the National Anti-Smoking Office (*39*), which had national coverage. This drop was accompanied by a reduction in per capita consumption of cigarettes from 2,100 in 1984 to 900 in 2005. In the population under 15 years, the percentage of smokers increased from 2.7% in 1984 to 13% in 2000 (*40*). These results indicate that the policies to combat smoking implemented in the country have mainly had an impact on adults and have been less effective among youths. Resolutions of the Ministry of Health that ban tobacco advertising and restrict access to tobacco products by minors, which were approved in March 2006, constitute a strategy to reduce consumption by youths. The resolutions in question and the regulations governing tobacco products and their packaging place Venezuela among the most advanced countries in policies to control and prevent tobacco use.

In 2000, **alcohol consumption** was a factor in 50% of homicides and suicides and in 40% of traffic accidents (*39*). In 2003, a survey on alcohol consumption conducted by the National Commission to Combat Illegal Drug Use (*41*) reported that 31% of the respondents were regular alcohol users; 36.7% started between the ages of 10 and 14 years; and 48.2% started between the ages of 15 and 19. Since 1979, the country has had an Alcohol and Alcoholic Beverages Revenue Law that regulates the sale, production, taxation, and advertising of alcohol. Advertising was prohibited on radio and television between 1979 and 2004, when beer, wine, and liquor advertising was reauthorized in the media, but it was restricted again in 2005. It is also prohibited to sell alcohol to youths under 18 years and there is a tax on the sale of domestic and imported alcoholic beverages to the public.

Drug consumption in the country is moderate, according to the National Commission to Combat Illegal Drug Use. In 2005, the prevalence among people over age 15 who had tried drugs of some kind was 2.2% (4% men and 0.7% women). The age group with the highest consumption was between 20 and 39 years (3% of the population). The most widely used drug was marijuana, followed by cocaine and crack. For all of them, consumption is higher among men, except for ecstasy, where the figure for women was 5.4%, compared to 1.1% for men. The parts of the country where prevalence is highest are Vargas (4.5%), the Capital District (4.2%), and Miranda (4.1%) (*39*).

Environmental Pollution

Twenty-five deaths were reported from accidental poisoning and pesticide exposure in 2002 (*21*) and 24 deaths in 2004 (*22*). Preliminary figures indicate that there were 4,028 cases of pesticide poisoning in 2004 and 3,572 in 2005 (*23*).

RESPONSE OF THE HEALTH SECTOR

Health Policies and Plans

The Constitution of the Bolivarian Republic of Venezuela, approved in a referendum in 1999, proposes a process of legislation and institutional reform and new strategies to bring about the necessary changes. It lays the groundwork for developing the legal nature and the organizational model for Venezuela's health sector. Article 83 establishes that health is a fundamental social right, an integral part of the right to life, and an obligation of the State. To guarantee the right to health, article 84 orders the creation of a National Public Health System (SPNS) that is intersectoral in nature, decentralized and participatory, and integrated into the National Social Security System. It is governed by the principles of gratuitousness, universality, comprehensiveness, equity, social integration, and solidarity. Article 85 establishes that its financing is an obligation of the State. Article 86 establishes that everyone has the right to social security as a not-for-profit public service that guarantees health and assures protection from different contingencies. In 2002, the National Assembly passed the Social Security System Organic Law and is in the process of drafting a Health Organic Law, which compiles policies and establishes the rules governing the sector's new institutional framework.

The Ministry of Health is the lead agency in the health sector and is responsible for regulating, formulating, designing, evaluating, controlling, and monitoring health policies, programs, and plans. Through the primary care strategy known as *Misión Barrio Adentro*, implemented under an agreement with the Republic of Cuba, it is in charge of integrating the sources of financing and allocating resources to establish the SPNS and providing comprehensive health care for all population groups, particularly low-income sectors.

During the period 2001–2005, 68 resolutions, 14 decrees, 7 laws, 3 agreements, and 1 directive were issued in the field of health. The most important are: regulation of the second-level access and medical care program, known as the Community Clinics Network, where the changes in the SPNS's care services are apparent; the requirement that the SPNS health establishments are allowed to purchase only the drugs that appear on the national basic list of essential medications; and the Workplace Accident Prevention, Conditions, and Environment Organic Law.

Health Strategies and Programs

With a view to attaining MDGs 4 and 5 by 2015, the Venezuelan government has established *Proyecto Madre*, with a vision of comprehensive and intersectoral care, whose objective is to reduce maternal and child mortality. The project is a strategy de-

signed and promoted by the Ministry of Health to improve the health of children under 5 years of age and of pregnant women. It incorporates a strong disease prevention and health promotion component, which is intended to strengthen knowledge about healthy habits and lifestyles in families and communities, and the practice of care and assistance for pregnant women and children under 5 in the home, as a way of contributing to the growth and full development of all family members (*42*).

Organization of the Health System

The health services system has been marked by complicated and segmented organization and functioning. It is composed of the public and private subsectors and many players that regulate, finance, insure, and deliver services.

In the 1990s, the health system began a process of decentralizing the services of the then Ministry of Health and Social Welfare to the state level, which took place in 17 states. However, the process was not consolidated and therefore the health sector has both decentralized and centralized services.

At the end of 2005, the Ministry of Health reported that there were 4,804 public ambulatory establishments on the primary level, 4,605 (96%) of which belong to the ministry, in addition to the ambulatory network of the *Misión Barrio Adentro* with approximately 8,600 consultation points. There are 296 public hospitals, with 214 reporting to the Ministry of Health or the state governments, 33 to the Venezuelan Social Insurance Administration (IVSS), 29 to the National Geriatrics Administration (INAGER), 13 to the Armed Forces Social Protection Administration (IPSFA), 3 to Petróleos de Venezuela (PDVSA), 2 to the Corporación Venezolana de Guyana (CVG), 1 to the municipality of Miranda, and 1 to the Municipal Police Force of Caracas. The private sector has 344 health centers (315 for profit and 29 benevolent institutions). In 2003, the public sector had 23,858 beds in hospitals (9.2 beds per 10,000 people) (*1*).

The treatment capability of the system has improved with the introduction of the *Misión Barrio Adentro* and waiting times for surgery and specialized ambulatory care have been reduced under an agreement with the Cuban government to treat patients in that country, particularly through *Misión Milagro*, which offers eye surgery.

Public Health Services

Misión Barrio Adentro is a primary care strategy that consists of organizing structures, programs, and human, technical, and financial resources, with the goal of gradually extending services and expanding comprehensive health care actions to strengthen the SPNS. In 2003, the *Misión* received US$ 169.4 million from Petróleos de Venezuela (PDVSA) to build up the primary health care network, which was administered directly by the Ministry of Health through a trust with the Economic and Social Development Bank. The agreement between the Ministry of Health and the PDVSA also included construction of 100 primary care modules by the PDVSA.

The National Network of Public Health Laboratories is coordinated by the Rafael Rangel National Hygiene Institute and its main objective is to strengthen cooperation between the states to monitor, prevent, and control communicable diseases in the country and detect congenital hypothyroidism and phenylketonuria in neonates.

The network's most important achievements include: strengthening the capacity to diagnose and monitor communicable diseases on the national level, with a significant increase in the number of diagnostic tests processed in the network's laboratories, which rose from 123,483 in 2001 to 463,465 in 2005; expansion of diagnostic coverage of the different health programs countrywide, with the goal of providing a rapid and timely response for decision making (Caicara in Orinoco, Santa Elena in Uairén, Tumeremo, Güiria, Santa Bárbara in Zulia, and Altagracia in Orituco); the establishment and consolidation of diagnostic tests for congenital metabolic diseases, which led to an increase in the number of tests from 40,442 in 2001 to 293,186 in 2005; strengthening the program to prevent the vertical transmission of HIV, which means that all the regional laboratories screen pregnant women for HIV in addition to hepatitis B and hepatitis C; and the establishment of an information system to obtain up-to-date data on the incidence or seroprevalence of communicable diseases throughout the country. It was also ensured that the population would have access to those services free of charge (*43*).

Regular annual public investments in the water and sanitation sector did not exceed 0.2% of GDP between 2000 and 2005. In 2001 a national sanitation plan was consolidated, with additional funds of US$ 88.9 million, which meant a budget increase of 26.7% for the sector. One factor that contributes to the sector's financial deficit is unbilled water, which amounts to about 63% (*44*).

Potable water coverage rose from 86% in 1998 to 91% in 2004 in urban zones. Areas without coverage correspond mainly to rural and unconsolidated urban areas and indigenous groups. The country has 151 treatment systems. There are shortcomings in monitoring and control of water quality in rural areas. In 2003, 66% of the rural population had household water connections (*44*). The population with adequate liquid waste disposal rose from 66% in 2000 to 77% in 2004 (*44*) and the shortfall is mainly in rural and unconsolidated urban areas and among indigenous groups.

In Venezuela, 24.3% of municipalities have controlled sanitary landfills and 59.2% use open air dumps (*45*). The country does not have secure disposal for hazardous materials, including hospital waste. The Solid Waste Law was promulgated in 2004 and guidelines were established for regional solid waste management plans. Trash collection in mid-sized and large cities and final disposal in general are serious problems, because the trash that is not collected is dumped into the environment without control. As a result, it becomes a risk factor for the exposed population, particularly people who work in contact with trash and who live close to final disposal sites.

The system for monitoring air quality is limited; only Caracas, Maracaibo, and Valencia have monitoring networks, mainly for particulate matter, but the information is not available and there are no published inventories of emissions. A study conducted in 2003 indicates that the average concentration of inhalable particles (PM_{10}) in Maracaibo is double the WHO guidelines (*46*). Leaded gasoline has not been sold in the country since August 2005.

The proliferation of sources of ionizing radiation, particularly in medical activities, led the Ministry of Health to draw up a register of public and private health centers that use radiation. The following shortcomings were found: 65% of the services do not have personal radiation detection kits, 40% present structural failures, and none of them perform environmental monitoring to control exposure (*47*).

Nutritional availability in 2004 was fully sufficient (>110%) in iron, thiamine, niacin, and vitamin C; only just sufficient (100%–110%) in riboflavin; insufficient (95%–100%) in vitamin A; and critically insufficient (<95%) in calories and proteins. In 2002, national production of calories, proteins, and fats was low, with the greatest vulnerability in the fats group. In 2005, the average value of a standard food basket was US$ 178, and the minimum wage was US$ 189.

Between 2000 and 2002, 31 outbreaks of food-borne diseases were reported in Venezuela (*48*). The country's food control model is based on interventions by various institutions with different legal frameworks, functions, and responsibilities that do not act in coordination (*49*).

Under the leadership of the Ministry of Health, an intersectoral committee was established to work on a project leading to implementation of the International Sanitary Regulation (ISR) in the country. Technical groups were set up to work on specific areas: regulatory framework, diagnosis, organization, warning and surveillance systems, and information systems. In view of WHO's request to voluntarily move ahead with the points in the ISR related to preparation for a possible avian influenza epidemic, the group that has made the most progress is the group on ports, airports, and overland border crossings, which already has a protocol for evaluating basic installed capacity.

Individual Care Services

During the first 18 months of *Misión Barrio Adentro*, 163 million free medical consultations took place (6.5 consultations per person), with 14.8 million dental checkups and 3.8 million eye examinations; 1.4 million pairs of glasses have been provided. Also, 567,000 emergency consultations and 1.1 million rehabilitation treatments were carried out. As a complement, the *Misión Milagro* was launched in mid-2004, which provided surgery in Cuba for 176,000 Venezuelans with eye problems (as of February 2006), while 8,500 patients from Latin American countries were operated on in Venezuela for the same difficulties.

The services system is composed of primary care clinics, comprehensive diagnostic centers, comprehensive rehabilitation facilities, high-technology centers, and hospitals. To operate them, regional technical committees were set up in the 24 states under *Misión Barrio Adentro*, composed of representatives of the state and municipal governments, prisons, the Ministry of Health's Regional Health Directorates, the Regional Directorates of the Ministry of Housing and Habitat, the Cuban Medical Mission, the Health Committees, the Francisco Miranda Front, the National Armed Forces, and joint public and private enterprises.

The goal was for each community clinic to cover 250 families or 1,250 individuals, which means that roughly 14,000 clinics would be required. At the end of 2005, about 640 primary care clinics were operating and 1,670 were in the process of being equipped under the coordination of the Ministry of Health. There are also about 6,900 consultation points that operate out of rooms in houses facilitated by families living in low-income areas, which will gradually be replaced by 4,600 primary care clinics. The infrastructure in operation could cover 11.4 million people. The clinics have 103 free drugs for treatment of the most prevalent diseases. There are also dental clinics (1 for every 4 medical clinics) and as of November 2005 close to 2,000 Venezuelan dentists had been incorporated into the system. In addition, 470 eye clinics are operating (1 for every 6 medical clinics) and approximately 1,450 will be needed to cover the public's requirements.

In March 2006, there were 100 comprehensive diagnostic centers around the country, which operate 24 hours a day year-round and provide emergency services and intermediate and intensive care. As of the same date, they had provided 4.1 million laboratory tests, 567,000 emergency consultations, 792,000 ultrasounds, 398,000 x-rays, 324,936 electrocardiograms, 1,108 surgeries, 59,000 endoscopies, and 1.1 million rehabilitation treatments. Also as of March 2006, there were 100 comprehensive rehabilitation rooms, providing the following services: electrotherapy, cervical-lumbar traction, thermotherapy, hydrotherapy, pediatric exercises, adult exercises, occupational therapy, natural medicine and acupuncture, speech therapy, phoniatrics, and podiatry. The high-technology centers were designed as centers for medical diagnosis based on noninvasive medical imaging.

In October 2005, the Ministry of Health began a process of consultation to identify the equipment that should be installed in its 214 hospitals. The National Health Technology Evaluation Committee (CONETS), jointly with a group of experts, prepared technical protocols to determine the technologies required for the optimum functioning of the public hospitals. Sixty percent of the country's beds and 50% of its operating rooms are concentrated in 43 hospitals belonging to the Ministry of Health, most of them located in the capitals of the 24 states (*50*).

The Ministry of Health is responsible for coordinating all aspects of the organization, operation, monitoring, and evaluation of the blood banks in the National Blood Banks Program (PNBS), through the national coordination office. The main objectives of

Training for Comprehensive-care, General Physicians through Social Programs Known as "Missions"

To combat poverty, achieve the inclusion of socially and economically excluded groups, and respond to the commitments made to achieve the Millennium Development Goals, the Government has implemented large-scale, rapid social programs known as "missions." The *Misión Barrio Adentro* and the *Misión Milagro* stand out in the field of health care, while *Misión Robinson* is designed to reduce illiteracy, and *Misión Mercal* to guarantee food security.

Undergraduate medical training takes a community approach and is carried out through *Misión Barrio Adentro* under an agreement with the Republic of Cuba. In the medium term, the international cooperants will gradually be replaced with Venezuelan personnel, to ensure the sustainability of the process from the technical and financial standpoints. It is a study/work program, with three days a week spent at the community clinics and two days in the classroom. The first cohort, which has been undergoing training since 2005, has 15,000 students and there are a further 2,500 students following the same program in Cuba. The goal is to train 25,000 Venezuelan doctors to replace the Cuban physicians.

the PNBS are to guarantee a safe blood supply and provide quality products and services tailored to the needs and specific rights of the population, which takes a gender and ethnic approach throughout the life cycle.

The network of blood banks is composed of 270 units, with 86 in the Ministry of Health, 28 in the Venezuelan Social Insurance Administration, 126 in private institutions, and 30 in other institutions. Transfusions are also performed in 1 community clinic and in 4 diagnostic centers (*51*).

Health Promotion

The Constitution establishes that health is a fundamental social right that forms part of the right to life, where many determining factors converge, including physical, biological, demographic, social, economic, and environmental factors. Accordingly, health policy forms part of a broader set of government policies that give priority to social factors. On the local level, priority is given to the policy on endogenous development nuclei through the social territories where institutional responses and community needs are coordinated.

Another constitutional mandate is participation by society in the implementation and control of public management and in the strategic development plans for local intervention. The Health Committees were established as entities for community organization and participation in solving health problems, and to date there are more than 8,000 of them around the country. In 2006, the Community Councils Law was passed to promote linkage and integration among different community organizations and permit the public to directly manage public policies and community projects. In that same year, the Ministry of Citizen Participation and Social Development was established by splitting the Ministry of Health and Social Development.

Health Supplies

The Ministry of Health regulates and oversees medications from their production to their use by patients. There are 4,347 registered pharmaceuticals that are currently sold; 33% of those products are classified as over-the-counter, while 67% need to be prescribed by a physician (*52, 53*). The most recent list of essential basic medications prepared by the National Therapeutic Committee of the Ministry of Health is composed of 328 active principles that are sold in 534 pharmaceutical presentations (*54*) and whose technical fiches are described in the National Therapeutic Form (*55*). The national market for drugs grew from US$ 1.86 billion in 2004 to US$ 2.10 billion in 2005, with 63% corresponding to multinational industries and 37% to national ones (*56*). The psychotropic drugs segment is represented by 10 active ingredients, with consumption in 2005 amounting to 1,073 kg. For narcotics, the segment is composed of 30 active ingredients, with national consumption in 2005 of 431 kg (*57*). As for pharmaceutical monitoring, the two executive centers (the National Pharmacological Monitoring Centre of the National Hygiene Institute and the Drug Monitoring Center of the Central University of Venezuela) processed 529 reports of adverse reactions to medications in 2004 and 533 in 2005, which were sent to the Uppsala Monitoring Center of Sweden (WHO Collaborating Center) (*56, 57*). In 2005, the distribution of four large groups of antimicrobials was restricted (quinolone, macrolides-lincosamides, third-generation cephalosporins, and drugs whose active principle is rifampicin) (*58*).

Human Resources

The Ministry of Health's staff totaled 150,263 in 2005, including professionals, 3.6% of whom were at the central level, 12.6% in the centralized states, 72.7% in decentralized states, and 11.2%

in reporting agencies. Of that total, 85.7% were permanent, 11% were contracted, and 3.3% were acting (*59*).

In 2003, the IVSS's hospital, ambulatory services, and central administration staff numbered 43,390, with 33,630 working in services and 9,770 in administration (*1*). In 2000, there were 20 physicians for every 10,000 people, with a marked contrast between the Capital District (42.2) and Sucre (11.5) (*59*). According to a census taken by the Venezuelan Medical Federation, in 2005 there were approximately 53,300 active physicians registered in Venezuela and about 1,100 of them work in *Misión Barrio Adentro* together with 15,000 Cuban doctors, and therefore in that year there were 25 doctors per 10,000 people. In 2000, there were 4.5 nurses per 10,000 people, with the highest percentage in Falcón (9.8) and the lowest in Nueva Esparta (2) (*59*). Training in general medicine is carried out in *Misión Barrio Adentro* under an agreement with the Republic of Cuba and takes the form of a study/work program. The purpose is, in the medium term, to gradually replace the international cooperants with Venezuelan personnel, to ensure the sustainability of the process from technical and financial standpoints. The first cohort that has been undergoing training in the country since 2005 has 15,000 students and a further 2,500 students are following the same program in Cuba. The goal is to train 25,000 Venezuelan doctors to replace the Cuban physicians.

Research and Technological Development in Health

With regard to scientific and technical information on health, in 2005, Venezuela's Virtual Health Library was made official (http://www.bvs.org.ve), whose executive secretariat is the Dr. Arnoldo Gabaldón Institute for Advanced Studies in Public Health, which reports to the Ministry of Health. SciELO Venezuela (http://www.scielo.org.ve) was consolidated and accredited and has 22 different journals in its collection.

Health Sector Expenditures and Financing

Public social investment as a percentage of GDP rose from 11% in 2000 to 12.1% in 2004. Real per capita social investment fell from US$ 516.80 in 2000 to US$ 226.90 in 2005. Public spending on health rose from 1.4% of GDP in 2000 to 1.6% in 2004 (*2*). Since 2000 public investment has increased and private investment has stabilized. The government sought to funnel part of its oil earnings to the excluded and impoverished population.

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UNITED STATES–MEXICO BORDER AREA

The United States–Mexico border extends for 1,952 miles (3,141 kilometers), stretching from the Gulf of Mexico to the Pacific Ocean. The 1983 La Paz Agreement—signed by the federal governments of the United States and Mexico for the protection, improvement, and conservation of the environment along the border—defines the border area as the land within 100 km (62.5 mi) on either side of the international boundary.

GENERAL CONTEXT AND HEALTH DETERMINANTS

Border areas in the two countries share environmental, social, economic, cultural, and epidemiological features with one another, but they operate under different policies, norms, and regulations.

The U.S.-Mexico border is made up of 10 states,[1] 48 United States counties, 80 Mexican municipalities, and 14 pairs of sister cities,[2] constituting a total population of slightly more than 13 million. As will be seen in the text ahead, in general—although clearly there are exceptions—health determinants on the Mexico side of the border show more positive conditions than in Mexico as a whole. The opposite is seen along the United States side of the border, where health determinants are generally worse than for the United States as a whole.

Social, Political, and Economic Determinants

The United States–Mexico border is the most traveled border in the world. According to the U.S. Immigration and Naturalization Service, in 2002, more than 190 million people entered the United States from Mexico through 24 official ports of entry. According to information published online by *Economic Development America*, in 2004, approximately 60% of the 500 million visitors admitted into the United States entered across the U.S.-Mexico border, as did 90 million cars and 4.3 million trucks; this human and vehicular traffic is a major contributor to the US$ 638 million in trade conducted along the border each day. Data from the United States Department of Transportation's Bureau of Transportation Statistics showed that the number of trucks entering the U.S. in 2005 increased to 4.9 million, ranging from 40,042 (0.8% of all truck crossings) in New Mexico to 3,275,563 (66% of all truck crossings) in Texas.

Mexico is the United States' third leading business trading partner; the U.S. is Mexico's main trading partner. In 2003, Mexico's exports to the U.S. amounted to US$ 146.8 trillion, and its imports from the U.S. for the same period were US$ 105.7 trillion.

Mexico's *maquiladoras*—plants that import raw materials and components for processing or assembly by Mexican labor and then export the finished products—have become the largest component of U.S.-Mexico trade and are an engine of growth in the border area. Most *maquiladoras* are U.S.-owned and import most of their components from U.S. suppliers.

With the signing of the North American Free Trade Agreement (NAFTA) and the consequent lifting of most trade and investment barriers among Canada, Mexico, and the United States, the rate of industrial development along the border flourished further: in 1990, there were about 1,700 plants operating in Mexico; by 2001 they had more than doubled, to nearly 3,800 *maquiladora* plants, 2,700 of which were in the border states. In 2004, it is estimated that more than one million Mexicans were employed in the more than 3,000 *maquiladoras* located along the border.

Despite the extraordinary degree of cross-border interdependency, economic development along the border is uneven. For example, Mexico's border states have lower unemployment rates and higher wages compared to other regions of the country. Mexico's border states also have the lowest poverty rates and highest literacy rates in the country.

Conditions in the United States are the reverse: four of the seven poorest cities and five of the poorest counties in the United States are located in Texas along the Mexican border. Generally, counties on the U.S. side have experienced an increase in unemployment and a decrease in per capita income over the past 30 years. For example, in the city of El Paso, Texas, poverty is twice the national average and average income is one-third the national figure. The educational level of the population in U.S.

[1]On the Mexico side: Baja California, Chihuahua, Coahuila, Nuevo León, Sonora, and Tamaulipas. On the United States side: Arizona, California, New Mexico, and Texas.

[2]San Diego/Tijuana (California/Baja California), Calexico/Mexicali (California/Baja California), Yuma/San Luis (Arizona/Sonora), Nogales/Nogales (Arizona/Sonora), Naco/Naco (Arizona/Sonora), Douglas/Agua Prieta (Arizona/Sonora), Columbus/Puerto Palomas (New Mexico/Chihuahua), El Paso/Ciudad Juárez (Texas/Chihuahua), Presidio/Ojinaga (Texas/Chihuahua), Del Rio/Ciudad Acuña (Texas/Coahuila), Eagle Pass/Piedras Negras (Texas/Coahuila), Laredo/Nuevo Laredo (Texas/Tamaulipas), McAllen/Reynosa (Texas/Tamaulipas), and Brownsville/Matamoros (Texas/Tamaulipas).

border counties also is lower than elsewhere in the country. Nationwide, the percentage of persons without a middle-school education is 0.5%, compared to 22.1% in Luna, 21% in Presidio County, and 20.1% in Maverick.

The benefits of growing trade between Mexico and the United States notwithstanding, the boom has had its down sides. For example, growing trade between the two nations has brought with it an increase in freight vehicle traffic, potentially exacerbating the risk of environmental pollution and traffic-related injuries. Moreover, in addition to formal trade, there are cross-border networks of informal and even illegal trade. On the one hand there is drug trafficking: according to the United States Drug Enforcement Agency, 65% of the cocaine consumed in the United States enters through the Mexican border, and virtually 100% of the heroin produced in Mexico and South America targets U.S. markets. On the other hand, there is a booming market for used tires that accumulate by the millions in several waste piles in all Mexican border cities.

While economic growth clearly has contributed toward higher employment, the border area's infrastructure has not been able to keep pace. In addition, as millions of new residents from the interior of Mexico and elsewhere in Latin America flock to the border area, lured by the promise of jobs and a better life, already strained resources, including health resources, are further taxed.

Infectious diseases easily pass through the permeable border, as hundreds of thousands of persons trek back and forth across its boundary. And, whereas years back the border area was mainly rural, it is urbanizing rapidly, which brings on all the diseases of big cities caused by contamination, stress, and nutritional habits. Like many emerging nations, the U.S.-Mexico border must cope with the double burden of communicable diseases coupled with chronic illnesses.

Environmental health issues are by far the most pressing problems in the border area, including poor air quality, water scarcity and contamination, lead contamination, and improper waste disposal, to name but a few. Water is the most precious resource in a large portion of the border that is primarily arid. And air pollution ranks among the worst environmental problems: particulate matter levels continue to exceed standards during peak events, and many projects looking at the health effects of air pollution continue to be carried out in the region. Ozone pollution also threatens many communities, even though a relaxation in the standard (from a 1 hour average to an 8 hour average) has reduced the number of instances that exceed set limits.

Rural communities along the border are confronted with a host of environmental problems, including pollution from agricultural activities that threaten surface- and groundwater resources with contamination. Pesticide contamination poses a greater threat to areas with a high concentration of farming, such as the Imperial Valley and the Rio Grande Valley. Programs monitoring human exposure are scattered and not coordinated.

Demographics, Mortality, and Morbidity

The annual net flow of Mexican migration to the United States increased notably during the final three decades of the 20th century, spiking from an annual average of just under 30,000 people between 1961 and 1970 to close to 400,000 between 2001 and 2004. This continuously growing migratory flow has resulted in a large Mexican-origin community living in the United States. Clearly this enormous human movement has implications for family structure, employment, and health care, and it clearly begs for further exploration and study.

According to information for 2004 from the U.S.-Mexico Health Initiative, all four United States border states were among the 13 states in that country with more than 100,000 Mexican immigrants: in ascending order, New Mexico had 111,049 Mexican immigrants, Arizona had 618,105, Texas had 2,356,703, and California had 4,026,219. Together, the four U.S. border states had more than seven million Mexican immigrants living within their borders in 2005.

In 2001–2004, three-quarters of migrants lacked proper documentation to legally cross the border, an increase compared to less than half who lacked such documentation in 1993–1997.

A U.S. Government Accountability Office (GAO) report to the United States Senate on illegal immigration in August 2006 stated that border-crossing deaths have doubled since 1995. Data analysis showed that the annual number of border-crossing deaths increased from 241 deaths in 1999 to 472 in 2005, with most of the increase occurring in the Border Patrol's Tucson Sector, which includes much of the Arizona desert. Data from the National Center for Health Statistics (NCHS) for 1990–2003 show a major shift in the causes of migrant border-crossing deaths—traffic fatalities were the leading cause of migrant border-crossing deaths in the early 1990s, while from the late 1990s onward, heat exposure was the leading cause. The increase in deaths due to heat exposure over the last 15 years was attributed to a shift of migrant traffic from urban areas like San Diego and El Paso to the desert, as a result of the implementation of the Southwest Border Strategy in 1994. Because of their migratory nature, undocumented immigrants have less access to preventive and curative services.

Border communities are predominantly urban, with 83% of the population of San Diego, Pima, El Paso, Hidalgo, and Cameron counties in the United States living in urban settings. Hispanics account for 40% of the border states' population; 48% of the population in border counties is Hispanic.

More than 13 million people live in the border area, 53% of them on the United States side. If rapid population growth trends persist (more than twice that of the overall growth in each country), the total population is expected to reach 20 million by 2020. For the U.S., according to the 2000 census, overall growth was 0.92%, compared with an average 2.87% growth in border counties. In 2005, with annual growth rates ranging from 1.2% to 2.7%, the six Mexican border states (average 1.8%) registered faster growth than the country, which had a growth rate of 1.0%.

Nearly 95% of the border population lives in 14 pairs of sister cities. The Ciudad Juarez–El Paso sister city metropolis has more than two million inhabitants, making it the largest border community. According to the 2000 census, the fastest growing border communities, with population gains of almost 5% per year, were Hidalgo and Reynosa.

The population on both sides of the border is relatively young. In 2005, 29% of persons living on the Mexican side of the border were younger than 15 years of age, slightly less than the overall 30% figure for the nation. On the U.S. side, 23% of the population was younger than 15, compared to 21% for the country as a whole. In 2003, the fertility rate for U.S. border states taken together was 2.4, compared to 2.0 for the nation. The total fertility rate in Mexico's border states in 2005 was 2.1, on a par with the country's overall rate.

Life expectancy at birth for U.S. border states in 2003 ranged from 72.2 years (Arizona) to 77.2 years (Texas). Life expectancy at birth in 2005 for Mexican border states ranged from 75.8 years (Tamaulipas) to 76.6 years (Baja California), all higher than the national figure of 75.4 years. Women outlived men by 4.4 to 5.3 years.

In 2003, the crude mortality rate in the four U.S. border states was lower than the 842 deaths per 100,000 population figure for the United States as a whole—Texas, 700; California, 675; Arizona, 778; and New Mexico, 790. It should be noted that in 1992–1994, crude mortality rates in United States border states were 60% to 70% greater than their corresponding age-standardized rates using a world standard population. Based on a mortality rate evaluation, the population on the Mexican side of the border is younger than that on the U.S. side.

This trend is expected to hold in 2001–2005. In 2003, crude mortality rates per 100,000 population show that three border states on the Mexico side had higher rates than that country's national figure (470)—Coahuila (477), Chihuahua (540), and Sonora (506); the lowest rate was found in Tamaulipas, at 430.

In 1992–1994, age standardized rates among Mexico border states were 25%–37% higher than corresponding crude rates. This same general trend is expected for 2001–2005.

Health problems are similar on each side of the border, and affect similar populations. Six of the 10 leading causes of mortality are the same in both nations: heart disease, malignant neoplasms, cerebrovascular diseases, diabetes mellitus, liver disease and cirrhosis, and land transport accidents. Pulmonary tuberculosis and water- and food-borne diseases also are important infectious diseases along the border.

In 2003, the 10 leading causes of death in the four U.S. border states were all heart diseases (182–195 deaths per 100,000 population), malignant neoplasms (153–173), cerebrovascular diseases (41–50), accidents (30–65), chronic lower respiratory disease (34–50), influenza and pneumonia (16–23), diabetes (20–32), Alzheimer's disease (18–31), suicide (10–18), and chronic liver disease and cirrhosis (10–17). The five leading causes were the same in 1992–1994. It is noteworthy that HIV/AIDS was not a leading cause in either time period.

In 2003, the leading causes of death for the six Mexican border states were ischemic heart disease (57–82 deaths per 100,000 population), malignant neoplasms (62–72), diabetes mellitus (48–79), cerebrovascular disease (23–29), liver disease and cirrhosis (15–19), chronic lower respiratory infections (11–19), certain diseases originating in the perinatal period (11–21), land transport accidents (8–18), acute respiratory infections (6–13), and diseases of the urinary system (9–13). The lowest mortality rates for six of the 10 leading causes were found in Baja California and four of the highest rates were found in Chihuahua.

A comparison of these disease categories with leading causes in 1992–1994 finds few differences, but the rates in the earlier period, except for heart disease, were about the same or lower—ischemic heart disease (54–67), malignant neoplasms (56–69), diabetes (33–46), cerebrovascular disease (25–28), and chronic liver disease and cirrhosis (12–20). Again, interestingly, AIDS was not one of the leading causes of death in either time period.

It is important to note that the range of diabetes mortality rates in 2003 was roughly twice as great in Mexico's border states as in U.S. border states. In 1992–1994, the ratio of diabetes mortality rates for 45–64-year-olds in Mexico's border areas to those in the U.S. border area of sister cities was 6.3 to 1.

Evidence suggests that sedentary lifestyles and poor nutritional habits have contributed to high rates of chronic disease on both sides of the border, though both populations are relatively young.

HEALTH OF POPULATION GROUPS

Children under 5 Years Old

In 2003, all four United States border states had lower infant morality rates than the national level (6.8 per 1,000 live births): 5.2 in California, 5.8 in New Mexico, 6.5 in Arizona, and 6.6 in Texas. The overall combined infant mortality rate for the four border states on the United States side in 2003 was lower than it was in 1992–1994.

Data published in 2004 in *Salud Pública de México* indicate that in 2003, two Mexican border states (Chihuahua and Baja California) had female infant mortality rates that were higher than the national figure (14.5 female infant deaths per 1,000 live female births), and Baja California, Chihuahua, and Sonora had higher male infant mortality rates than the overall national rate (18.4 male infant deaths per 1,000 live births).

In 1992–1994, infant mortality rates in Mexican border states doubled those of United States border states. The infant mortality rates in Mexican border states ranged from 12.6 infant deaths per 1,000 live births in Tamaulipas to 20.6 in Coahuila; Mexico's national rate was 17.7.

The four leading causes of infant deaths in 2003 in the U.S. border states were congenital anomalies, short gestation, SIDS, and maternal pregnancy complications.

The leading causes of infant mortality in the six Mexican border states in 2003 closely resembled those for Mexico as a whole. The 10 leading causes included certain conditions originating in the perinatal period, congenital malformations of the heart, lower acute respiratory infections, infectious intestinal diseases, protein calorie malnutrition, anencephaly and similar malformations, defects of the abdominal wall, Down's syndrome, lower acute respiratory infections, and spina bifida. The reported perinatal mortality rate was reported as 77.4 per 1,000 live births in 2003.

In 2003, the United States border states accounted for 25% of the 4,965 deaths among children 1–4 years of age in the country, with 557 deaths in California, 524 deaths in Texas, 134 deaths in Arizona, and 46 deaths in New Mexico. In 1992–1994, the United States border states accounted for 23% of the 20,630 deaths of children 1–4 years old in the United States, with 2,600 deaths in California, 1,634 deaths in Texas, 420 deaths in Arizona, and 167 deaths in New Mexico.

The leading four causes of death in children 1–4 years old in three United States border states (Arizona, California, and New Mexico) in 2003 were unintentional injuries, congenital anomalies, malignant neoplasms, and homicide; the pattern was similar in Texas, but there, homicide ranked as the fourth cause. Mortality rates among children 1–4 years old per 1,000 population in 1992–1994 ranged from 0.39 in California to 0.53 in Arizona, compared to the overall rate in the United States of 0.44.

In Mexico's border states in 2003, the leading causes of death in children 1–4 years old closely resembled those of the country as a whole: infectious intestinal diseases, lower acute respiratory infections, congenital malformations of the heart, motor vehicle accidents, accidental drowning and submersion, protein calorie malnutrition, leukemia, homicides, anemia, and epilepsy.

Among Mexico's border states in 1992–1994, rates ranged from 0.67 per 1,000 children 1–4 years old in Nuevo León to 1.1 in Chihuahua, compared to Mexico's overall rate of 1.2.

Adults

Maternal mortality rates for U.S. border states in 2003 showed Texas with the highest (15.9 maternal deaths per 100,000 live births); followed by California (15.0); and then by Arizona and New Mexico, each at 5.0. A review of maternal mortality for 2000–2003 showed that New Mexico has consistently had the lowest maternal mortality rate, while California had the highest rate in 2000, 2002, and 2003. In 2001, Texas had the highest rate at 11.0.

Maternal mortality rates for Mexico's border states in 2003 showed Baja California with the highest rate, at 62.8 per 100,000 live births, followed by Chihuahua (53.7), Tamaulipas (45.2), Coahuila (32.1), Sonora (29.3), and Nuevo León (15.9). With the exception of Baja California, all the other states had lower rates than Mexico as a whole (62.6). Nuevo León consistently had the lowest rate throughout 2001–2003. Sonora registered the lowest rate in 2000. The national rate was higher than the state rates throughout 2000–2003.

In comparison with rates in 2003, maternal mortality rates for 1992–1994 ranged from 16.1 maternal deaths per 100,000 live births in Baja California and Tamaulipas to 38.3 in Sonora. The maternal mortality rates of Mexico's border states were all lower than rates for the country as a whole (47.7). In 1992–1994 the rates for the United States border states ranged from 3.4 in Arizona to 10.8 maternal deaths per 100,000 live births in New Mexico. The overall United States maternal mortality rate was 7.9 maternal deaths per 1,000 live births.

Data on early prenatal care (percentage of live births with early prenatal care) in the U.S. border states for 2001–2003 showed that California's rate, at 86.4%, is higher than the national rate (83.7%), whereas the other three states had lower rates of 80.6% (Texas), 76.6% (Arizona), and 68.9% (New Mexico). Prenatal care (number of visits for pregnant women) in 2004 for Mexico's border states ranged from 5.5 (Tamaulipas) to 6.2 (Baja California), both of which were higher than the national average (5.0). Visits for each state are 5.9 (Nuevo Leon) and 6.0 (Coahuila, Chihuahua, and Sonora).

The percentage of deliveries attended by trained personnel in Mexico's border states in 2004 ranged from a low of 63% (Chihuahua) to a high of 96.4% (Coahuila), indicating that coverage in five of the border states was higher than the national figure of 74.2%.

Indigenous Peoples

There are 26 U.S. federally recognized Native American tribes (ranging in size from 9 to 17,000 members) and 7 Mexican indigenous peoples in the border area. Some of these tribes and peoples share extensive family and cultural ties.

In May 2006, Arizona and Sonora created a health council to represent Arizona border communities in the Tohono O'odham Nation, Western Pima County, and the Northwest Sonora border communities of Caborca, Sonoyta, and Puerto Peñasco. The health council will be one of 13 other binational health councils located along the U.S.-Mexico border and the first trinational health council, encompassing the United States, Mexico, and the Tohono O'odham Nation.

Health inequities along the border particularly affect indigenous populations, who are especially vulnerable as a result of poverty and lack of health insurance. Health professionals in the area suggest that the number of indigenous people who leave their home area has increased in recent years, and these groups are the most vulnerable, given the linguistic and cultural barriers they face in order to access health services.

HEALTH CONDITIONS AND PROBLEMS

Communicable Diseases

Vector-borne Diseases

In 2005, 3,000 cases of **West Nile virus** were reported in the United States, and 40% of these were in the four U.S. border states: Arizona (113 cases and 5 deaths), California (880 cases and 19 deaths), New Mexico (33 cases and 2 deaths), and Texas (195 cases and 11 deaths). The 37 deaths represent 31% of the total deaths from West Nile virus reported in the U.S. in 2005.

Although there were no reported cases of West Nile virus in border states on Mexico's side from 2003 to 2005, the many cases reported in the U.S. along the border in 2005 suggest that West Nile virus may well be a health concern along both sides of the border.

Although there were only 61 indigenous cases of **dengue fever** reported in the United States during 1980–1999, dengue is a reemerging threat along the border. In 2005, on the Mexican side of the border, 4,333 dengue cases were reported in Tamaulipas during the first 41 weeks. Subsequently, the Border Infectious Diseases Surveillance (BIDS) program undertook active surveillance at participating clinics in the U.S. and identified 18 cases of dengue. One of these was a case of **dengue hemorrhagic fever**, the first locally acquired classic dengue hemorrhagic fever case in the continental United States.

There were no reported cases of dengue in the six Mexican border states in 2002 and 2003. In 2001, the six border states reported a total of 171 cases led by Tamaulipas (93 cases), followed by Nuevo León (76 cases), Baja California, and Coahuila (1 case each), while there were no cases reported in Chihuahua and Sonora. These six states accounted for 2.8% of the total reported 6,095 cases in Mexico.

Vaccine-preventable Diseases

Childhood immunization programs have been a success in both countries and in the border area. There have been record high vaccination coverage rates and vaccine-preventable diseases are at an all time low. **Measles** is no longer endemic and rubella control has been effective. **Poliomyelitis** had been eradicated in the Americas.

The United States National Infant Immunization Week and Vaccination Week in the Americas have been conducted jointly in the border area since 2004.

According to the United States Centers for Disease Control and Prevention, 2004 immunization coverage with a complete vaccine series (DPT/polio/MCV/Hib/HepB) in the United States overall is 81%. In the border states on the U.S. side, coverage was 71% in Arizona; 81% in California; 84% in New Mexico; and 73% in Texas.

Vaccination coverage in Mexico is very high. Data from Mexico's Instituto Nacional de Salud Pública indicate that in December 2004, immunization coverage of fully immunized children 1–4 years old in Mexico's border states (96%) was higher than the national average of 93%. Tamaulipas had the highest coverage in 2004.

Hepatitis A incidence has decreased substantially from that seen in 1987–1997, when all border states and most border counties reported incidence rates of ≥20 cases per 100,000 population each year. By 2004, only two border areas had rates of ≥20 per 100,000 population.

Data for Mexico for 2000–2004 indicate that in 2003, there were more than 15,000 cases of hepatitis A (the lowest in the period), increasing to 16,000 in 2004. There were 1,888 reported cases in the six Mexican border states, accounting for 12.3% of the total cases in Mexico in 2003. The highest number of cases occurred in different states each year, with Tamaulipas having the highest number of cases in 2001 (939), Nuevo León in 2002 (836), Baja California in 2003 (489), and Coahuila in 2004 (439).

The four U.S. border states accounted for 1,125 cases of hepatitis B, 20.5% of the 5,497 cases in the United States in 2005; the six Mexican border states accounted for 126 cases, 21.5% of the 587 cases in Mexico that same year.

Intestinal Infectious Diseases

The four U.S. border states accounted for 49 cases of **typhoid fever** in 2005, 80 in 2004, 91 in 2003, and 65 in 2002.

The six Mexican border states accounted for 11,544 cases of typhoid fever in 2005, indicating serious food and water sanitation problems. Reported cases increased between 2002 and 2004, with 2,725, 6,123, and 8,342 reported annual number of cases of typhoid, respectively. Tamaulipas has consistently had the highest number of cases since 2001, with the highest number of typhoid cases—5,837—reported in 2005.

Chronic Communicable Diseases

Tuberculosis (TB) continues to be a concern for border areas in both Mexico and the United States. Both countries report approximately 15,000 cases of all forms of tuberculosis on a yearly basis. In 2005, the tuberculosis incidence rate in Mexico was 15 per 100,000, while the United States reported a rate of 4.7 incident TB cases per 100,000 population. What is more troubling is that the U.S.-Mexico border states reported a tuberculosis incidence rate higher then the national average, with rates of 7.9 in U.S. border states and 26.3 in Mexican border states. Efforts to control tuberculosis in the United States–Mexico border are reflected in the 2005–2010 Strategic Plan of Ten against Tuberculosis, a binational initiative created by the health officers of the 10 U.S.-Mexico border states in June 1995.

In 2005, a total of 11,547 cases of tuberculosis were reported in the U.S. The four border states accounted for 3,560 (31%), broken down as follows: Arizona, 221; California, 2,034; New Mexico, 35; and Texas, 1,270.

In 2005, a total of 14,038 cases of tuberculosis were reported in Mexico, of which the six border states accounted for 4,277 (31%), ranging from 407 cases (Coahuila) to 1,172 (Baja California).

HIV/AIDS and Other Sexually Transmitted Infections

In 2005 Baja California ranked seventh in the nation and first among Mexico's border states in the number of new reported AIDS cases (160), approximately 4.5% of the total AIDS cases reported at the national level; Coahuila had 43 reported new cases (1.2%), the fewest along the border.

Data published in *Salud Pública de México* indicate that the highest male and female mortality from AIDS occurred in Baja California. In 2003, male mortality from AIDS per 100,000 males in Baja California (32.1) was twice the national figure for males (16.7), while female mortality, at 5.3 per 100,000 females, also is higher than the national figure for females (3.1). A review of mortality data due to AIDS during 2000–2003 shows that males had a consistently higher mortality rate due to AIDS than females.

In 1992–1994, mortality from AIDS was 0.9 per 100,000 in Mexico's sister cities, the same rate for Mexico as a whole. In comparing border states with Mexico, only Baja California had a rate (1.3) higher than the national rate; the remaining border states all had rates below 0.5 per 100,000 population. In 1992–1994 on the U.S. side of the border, mortality rates for AIDS in sister cities (1.6) almost doubled those of Mexican sister cities, but were half those for the United States as a whole (4.0).

Zoonoses

The four U.S. border states accounted for 47 reported human brucellosis cases in 2005. California had 26 cases, Texas had 17, New Mexico had 1, and Arizona had 3.

In 2005, the six Mexican border states accounted for 759 reported cases (38.2% of the total reported human cases of brucellosis in Mexico). From 2001 to 2005, the number of reported human cases of brucellosis ranged from 1,083 in 2002 to 1,988 in 2005. Coahuila had the highest number of cases among the six Mexican border states in 2003 (491 cases), in 2004 (618 cases), and in 2005 (311), while Nuevo León reported the highest numbers in 2001 (423 cases) and in 2002 (435 cases).

NONCOMMUNICABLE DISEASES

Metabolic and Nutritional Diseases

Diabetes is on the rise along the U.S.-Mexico border, with the number of persons with diabetes increasing at an alarming rate on both sides. In 2003, diabetes was the third leading cause of death in Mexican border states and the sixth leading cause of death on the U.S. side. Of the 14,513 deaths in U.S. border states that same year, California accounted for 7,093 deaths, or 20 deaths per 100,000 population, and New Mexico for 559, or 32 per 100,000. Arizona had 20.7 deaths per 100,000 population and Texas had 25.6 deaths per 100,000. In comparison, in 1992–1994, crude diabetes mellitus mortality rates for border states were 17.6 deaths per 100,000 in Arizona, 13.2 in California, 24.4 in New Mexico, and 23.1 in Texas.

In Mexican border states, mortality due to diabetes mellitus has been increasing for both males and females. Data published in *Salud Pública de México* indicate that the highest mortality from diabetes in 2003 was in Coahuila, with male mortality at 70.3 per 100,000 and female mortality at 89.2 per 100,000. The second highest was in Tamaulipas, with male and female mortality rates of 56.5 and 68.2, respectively. These rates are substantially higher than those seen a decade ago. In 1992–1994, the average annual male and female mortality rates in Coahuila for diabetes were 40.4 male deaths per 100,000 and 51.9 female deaths per 100,000 each year—about 30 per 100,000 less than in 2003. In Tamaulipas, the male rate was 35.7 and the female rate was 41.9 in 1992–1994—about 20 per 100,000 less than 2003.

In comparison, in 1992–1994 in United States sister cities, the diabetes mellitus crude mortality rate was 17.3 per 100,000 population, while in Mexico's sister cities, the rate was 2.5 times greater, at 43.6. Female rates were slightly higher than male rates on both sides of the border. Among Mexico's sister cities, the diabetes mellitus mortality rate for males was 40.4; for females, 46.6. On the United States side, the male diabetes mellitus mortality rate was 16.1; for females, 18.5.

A diabetes prevalence study was conducted from February 2001 to October 2002 on 4,027 individuals (1,905 on the United States side and 2,122 on Mexico's side) in 45 border communities (38 in Mexico and 16 in the U.S.). Initial results showed that approximately 1.2 million (15.7%) of the 7.5 million adults who live along the U.S.-Mexico border area have diabetes. Of these, roughly 500,000 live on the Mexican side of the border with the remaining 700,000 living on the U.S. side. It is estimated that pre-diabetes affects about 14% (645,000) of the total adult population residing on the United States side of the border.

In response to the diabetes problem, the U.S.-Mexico Border Diabetes Project was established to determine the prevalence of diabetes along the border and to develop and implement binational diabetes prevention and control programs targeted to the needs of the border population.

Obesity, too, is a serious problem affecting the population living along the border. According to the 2001–2002 U.S.-Mexico Border Diabetes Prevention and Control Project study, it is estimated that 5.3 million adults living along the Mexico border are overweight or obese. One million of them live on the Mexican side of the border, and 1.5 million live on the U.S. side. Obese individuals along the U.S. side of the border have 2.8 times greater risk of developing diabetes than individuals with normal weight, and on the Mexican side, the risk is 2.2 times greater. The rate for obese men is slightly higher on the U.S. side (37.7%),

compared to men on the Mexico side (26.7%). The reverse holds true for obese women, whose rates are higher on the Mexico side (31.9%).

Cardiovascular Diseases

Heart disease continues to be the leading cause of death on both sides of the U.S.-Mexico border. In 2003, there were 124,932 deaths from heart disease in the U.S. border states, ranging from 3,402 deaths in New Mexico, for a crude rate of 181.5 deaths per 100,000 population, to 68,864 deaths in California, for a crude mortality rate of 194.1 per 100,000 population. The heart disease mortality rate in Arizona was 195.1 and in Texas it was 188.9.

In 2003, the mortality rate due to heart disease in the Mexican border states (62.6 deaths per 100,000 population) was higher than the national rate (45.4). The mortality rate ranged from 54.8 (Baja California) to 77.7 (Sonora).

For 1992–1994, the mortality rate from heart disease in Mexico's sister cities was about 1.4 times that of Mexico as a whole. Comparisons of rates at the state level with that of the national level showed Baja California's rate to be 1.4 times greater and Sonora 1.8 times greater than the overall rate for Mexico.

The main contribution to heart disease mortality in 2003 was mortality from ischemic heart disease, with crude rates among Mexico's border states that ranged from Baja California (56.8 per 100,000 population) to Nuevo León (102.0). In 1992–1994, ischemic heart disease rates ranged from 49.0 in Coahuila to 67.0 in Sonora.

Malignant Neoplasms

Malignant neoplasms continue to be the second leading cause of death in all four U.S. and all six Mexico border states.

In 2003, there were 100,916 deaths due to malignant neoplasms in the U.S. border states, ranging from 3,103 deaths in New Mexico, for a crude mortality rate of 166 deaths per 100,000 population, to 54,319 deaths in California, for a rate of 153 deaths per 100,000 population. Arizona and Texas had rates of 173 and 153, respectively. All fell under the crude mortality rate for the country as a whole, 192 deaths per 100,000 population.

In 1992–1994, mortality rates for malignant neoplasms were also greater in New Mexico (157 deaths per 100,000 population per year), California (163), Arizona (195), and Texas (171) than in the United States as a whole (205).

In 2000, five of the six Mexican border states had mortality rates for malignant neoplasms that were higher than Mexico's national figure (65.3 malignant neoplasm deaths per 100,000 population).

Malignant neoplasm of the cervix uteri is the most frequent type of cancer among women of reproductive age and the leading cause of death among women 25 years and older in the border states.

In Mexico in 2003, the mortality rate for malignant neoplasms of the cervix uteri was 16.2 deaths per 100,000 females. Two border states had similar, although slightly higher rates: Coahuila with 16.7 deaths per 100,000 females and Chihuahua, with 16.3.

Mortality rates for malignant neoplasm of the cervix uteri ranged from 6.7 per 100,000 females in Nuevo León to 10.9 in Coahuila in 2003. During 1992–1994, average annual malignant neoplasm death rates from cervix uteri ranged from 8.4 in Nuevo León to 12.8 in Tamaulipas; the rate for Mexico overall was 11.2. Only Nuevo León had a lower rate than the national rate among Mexico's border states.

Mortality rates for malignant neoplasm of the breast for 2001–2003 were consistently higher in Mexican border states than in the country overall, with a crude mortality rate of 8.0 per 100,000 females. In 2003, Baja California had the same rate for deaths from malignant neoplasm of the breast as did Mexico as a whole, 15.7 breast cancer deaths per 100,000 females.

Mortality rates for malignant neoplasm of the breast ranged from 8.3 deaths per 100,000 females in Baja California to 11.0 in Chihuahua in 2003. In 1992–1994, the rate ranged from 6.7 in Baja California to 10.7 in Nuevo León; the national rate was 11.2 deaths from malignant neoplasm of the breast per 100,000 women.

Mortality rates for malignant neoplasm of the prostate ranged from 7.3 deaths per 100,000 males in Tamaulipas to 10.5 in Sonora. In 1992–1994, the rate ranged from 5.7 in Baja California to 8.0 in Sonora; the national rate was 6.2 deaths due to prostate cancer per 100,000 males.

Other Health Conditions and Problems

Disasters

In the past five years, the border area suffered natural disasters, including hurricanes, forest fires, and floods. In 2005, hurricanes Rita and Katrina hit East Texas and Tamaulipas. Forest fires also caused damage to all four United States border states. In 2006, floods resulting from sudden and severe rainfall occurring within a short period damaged El Paso, Las Cruces, and Ciudad Juarez. None of these cities were prepared for severe rainfall events nor had they adequate storm drainage systems. This led to many displaced persons and damages to houses and infrastructure. There were no fatalities reported as a direct result of the floods in either country.

Violence and Other External Causes

In 2003, violence ranked high among crude mortality rates in the border states, with Chihuahua having the highest rate at 16.9 violent deaths per 100,000 population and Nuevo León the lowest, at 3.3; similar patterns with slightly higher rates were found in 1992–1994. In 2003, males were 6.7 times more likely to die a violent death than females in Mexico's border states. In Baja California, 3.5% of total deaths in 2003 were due to homicides. On the U.S. side, border state homicide rates ranged from 7 to 9

homicides per 100,000 population in 2003, lower than the 10 to 13 per 100,000 population in 1992–1994.

Traffic along the border is huge, with an estimated 800,000 to 1 million border crossings each day. According to the United States National Center for Health Statistics (part of the Centers for Disease Control and Prevention), motor vehicle accidents were the eighth leading cause of death in 44 border counties on the U.S. side in 2000, resulting in about 1,000 deaths. For Hispanics, motor vehicle crashes were the fifth leading cause of death, compared to a rank of ninth for non-Hispanic whites. Using the years of potential life lost (YPLL) measure, motor vehicle crashes were the third leading cause of death for Hispanics living on the border (the fifth leading cause for white non-Hispanics living there). When broken down by age group, data showed that motor vehicle crashes are the leading cause of death for age groups 1–4, 5–14, 15–24, and 25–34 at the national, border state, and border county levels.

Data from Mexico for 2003 showed that observed mortality rates due to traffic accidents (deaths per 100,000 population) for males ranged from a high of 25.1 in Chihuahua, to 24.9 in Tamaulipas, 22.3 in Sonora, 18.4 in Nuevo León, 16.7 in Coahuila, and a low of 11.3 in Baja California. Female morality rates were highest in Chihuahua (7.9), followed by Sonora (6.7); the pattern followed the same trend as for males in 2003.

Mental Health and Addictions

Addiction, tobacco consumption, and mental health are public health problems of concern along the border. Adolescents are the most vulnerable population group, at high risk for addiction, including tobacco consumption; suicide; traffic-related injuries; and unwanted pregnancy.

In 2003, suicide was the ninth leading cause of death in U.S. border states, with a rate of 15.1 suicides per 100,000 population in Arizona and 18.3 per 100,000 in New Mexico. The suicide rate for the United States overall in 2003 was 10.8 suicides per 100,000 population. Suicide was the tenth leading cause of death in California (7.0 suicides per 100,000 population) and Texas (6.9). In 1992–1994, the average annual suicide rate in the United States was 12.0 per 100,000 population. Average annual suicide rates during 1992–1994 were higher than the 2003 rates in the U.S. border states, with Arizona at 18.1 per 100,000 population, California at 12.1, New Mexico at 18.4, and Texas at 12.7.

In 2003, suicide was the second leading cause of death for 10–14-year-olds in Arizona and New Mexico, and the second leading cause for 25–34-year-olds in Arizona, New Mexico, and Texas. Homicide was the second leading cause of death among 15–24-year-olds throughout the U.S. border area, as well as for 25–34-year-olds in Texas.

According to information from Mexico's National Statistics, Geography, and Informatics Institute (Instituto Nacional de Estadística, Geografía e Informática, INEGI), the State of Baja California registered the highest frequency of suicide in youths 18–25 years old on a per capita basis nationwide. Among men of all ages, Baja California Sur ranked sixth in the nation in suicides in 2003. In response, the State launched a telephone "hotline" campaign in 2004 to provide suicide, drug, and domestic violence counseling. In Coahuila there were 120 recorded suicides in 2003. The male to female suicide ratio approached 3 to 1.

The suicide rates in the six Mexico border states in 1992–1994 were Baja California at 3.0 per 100,000 population, Sonora at 4.2, Chihuahua at 4.0, Coahuila at 2.7, Nuevo León at 2.9, and Tamaulipas at 4.7. In the same period, Mexico's national suicide rate was 2.7 per 100,000 population.

In 2003, injuries (intentional and unintentional) were the second leading cause of death in Mexico's border states.

Environmental Pollution

The most persistent and pervasive pollutants found in the sister cities are ozone and particulate matter (PM10, or particulate matter 10μ in diameter or less). From 2001 to 2005, concentrations of ozone were higher than the binational standard of 0.08 ppm in Mexicali/Imperial Valley and Tijuana/San Diego. Ozone concentrations in Ciudad Juarez/El Paso improved during the past five years, staying below established standards in 2004 and 2005. Ozone concentrations in the Lower Rio Grande Valley also were below established standards. Annual mean concentrations of PM10 (mean for year of interest with the two prior years) from 2001 to 2005 in the Lower Rio Grande Valley were lower than the binational annual standard of 50 $\mu g/m^3$. Concentrations in the other four border monitoring areas exceeded the set limit, with the highest concentrations observed in Mexicali/Imperial Valley.

RESPONSE OF THE HEALTH SECTOR

Health Policies and Plans

The United States-Mexico Border Health Commission (BHC), which was created in 2000, is charged with providing international leadership to optimize health and quality of life along the border. The binational Commission has 26 members, comprising federal secretaries of health, chief health officers of the 10 border states, and prominent community health professionals from both nations; it is headed by the secretaries of health of both countries. The BHC operates on an independent budget, defines the binational health agenda, and presides over the administration of health services along the border.

In response to the terrorist attacks of September 11, 2001, the United States and Mexico signed the U.S.-Mexico Border Alliance, reiterating their commitment to cooperate towards achieving a safe, orderly border through specific actions designed to strengthen their common interests in matters of security, economic development, and tourism during the coming years. Preparedness against bioterrorism attacks has been given a higher

Opening a Window to Health

Next to solving environmental problems, ensuring that people have adequate access to health services is the leading challenge for the U.S.–Mexico border. More than 13 million souls live along the border, and between 250 million to 400 million persons crisscross the border each year. Communicable diseases take a particularly heavy toll along the border. Of the West Nile virus cases seen in the United States in 2005, 40% occurred in the four U.S. Border States. The border also experienced a dengue epidemic and there was at least one case of dengue hemorrhagic fever reported on the United States. The "Ventana a la Salud" program attempts to bring access to health care to difficult to reach populations. Through the program, Mexico's consular system, in partnership with local health advocacy and health service organizations, and sometimes with U.S. Government co-financing, has set up "health windows" in several Consulate Offices. Bilingual and bicultural staff provide health assessments, referrals, information on patient rights, and linkages to available services.

priority in border states through various initiatives, including the establishment of the Early Warning Infectious Disease Surveillance (EWIDS) program by the U.S.-Mexico Border Health Commission in 2004.

In addition to having epidemiological and laboratory functions, the program aims to strengthen cross-border activities in early detection, identification, and reporting of infectious diseases associated with potential bioterrorism agents.

After the signing of the North American Free Trade Agreement, Canada, Mexico, and the United States created the Commission for Environmental Cooperation (CEC) of North America to address regional environmental concerns, help prevent potential trade and environmental conflicts, and promote the effective enforcement of environmental law. In addition, Mexico and the United States created the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADB). BECC identifies, evaluates, and certifies environmental infrastructure projects; the Bank, a binational financial institution capitalized equally by both countries, finances environmental projects certified by the BECC. Both institutions work together with communities and project sponsors in both countries to develop and finance infrastructure necessary for a clean and healthy environment for border residents.

Since 2002, the Border Legislative Conference has met several times each year to find shared solutions to problems along the border. The Conference consists of state legislators of Mexico and United States border states, who gather to consider common problems, exchange information, and develop joint programs wherever appropriate.

Health Strategies and Programs

Working through the Border Health Commission, the United States and Mexico governments define health priorities for the border area. To this end, during the Commission's second meeting in 2001, they issued the Healthy Border 2010 Program, which sets a binational agenda of health promotion and disease prevention. The Program's two central objectives are: 1) to improve the quality of life and increase years of healthy life, and 2) to eliminate health disparities. The goals of the Healthy Border 2010 Program are channeled along 11 areas, each with its own specific aims. The areas and their respective goals are: 1) access to health care, by ensuring access to primary health care services; 2) cancer, by reducing breast and cervical cancer deaths; 3) diabetes, by reducing mortality and hospitalization due to the disease; 4) environmental health, by improving household access to sewage and drainage and reducing hospitalizations from acute pesticide poisoning; 5) HIV/AIDS, by reducing the incidence of HIV/AIDS; 6) immunization and communicable diseases, by broadening the scope of vaccinations for children and lessening the incidence of hepatitis and tuberculosis; 7) injury prevention, by reducing mortality from motor vehicle accidents as well as mortality from unintended injuries among children; 8) maternal and child health, by reducing infant mortality from birth defects, improving prenatal care, and bringing down pregnancy rates among adolescents; 9) mental health, by reducing suicide mortality; 10) oral health, by improving access to oral health services; and 11) respiratory diseases, by reducing the rate of hospitalization from asthma. Health problems or conditions such as cardiovascular diseases, tobacco use, substance abuse, gastrointestinal diseases, nutrition and obesity, lack of physical activity, and bioterrorism preparedness will be incorporated into the Program in the future.

As a way to address the border area's most pressing environmental and environmentally related problems, in 2003 representatives from the U.S.-Mexico border gathered to launch the Border 2012 Program, a 10-year working plan whose mission is to protect the environment and public health along the border, consistent with principles of sustainable development. This latest incarnation of a multi-year, binational environmental initiative

represents a collaborative effort among federal, state, and local governments and agencies from both nations, as well as the active participation of U.S. tribal governments. The Border 2012 Program's six goals are: to reduce water contamination; to reduce air pollution; to reduce land contamination; to improve environmental health; to reduce exposure to chemicals as a result of accidental chemical releases or acts of terrorism; and to improve environmental performance through compliance, enforcement, pollution prevention, and promotion of environmental stewardship. To measure the Program's results, implementation reports will be prepared every two years to review progress, a five-year progress report will be issued in 2007, and a final report will be released in 2012. The Program is working on a strategy to control the used-tire piles in the future and clean up existing ones.

Organization of the Health System

In the United States, the health care system is characterized by a demand model, and health care is delivered on a fee-for-service system. Health services are provided by nonprofit institutions or by private entities. In 2000, 65% of the population of the U.S. border states was covered by private insurance and 25.6% by government insurance.

According to data from statehealthfacts.org (a website that is part of The Henry J. Kaiser Family Foundation), in 2004–2005, 51% of the population of the border states on the U.S. side was covered by private insurance (individual employer and Medicaid individual), 27% was covered by government insurance (Medicare, Medicaid, and other public Medicare), and 22% had no insurance. In general, the percentage of persons without private or public health insurance in U.S. border communities was higher than the national figure (22% versus 17%).

In Mexico, health care is considered a constitutional right. Various institutions provide health care services. The social security subsystem provides coverage to employed persons and their dependents, and is complemented by services provided by the government to unemployed persons, known as the "open population." There also are private health care services available, either through payment for medical insurance or through direct payment to providers. Beginning in 2002, an additional avenue of access to health care became available as part of the national health plan, known as *seguro popular* (people's insurance), which now covers approximately one million families.

In 2000, Mexico's border communities generally enjoyed greater social security coverage (59%) than the national average (43%). The greatest social security coverage occurred in the most industrialized border communities. Data for 2005 from the National Institute of Statistics, Geography, and Informatics (INEGI) showed that the percentage of border-state population covered by insurance (Social Security Institute insurance [IMSS], state employees insurance [ISSSTE], government provided insurance for government and state oil industry [ISSSTE/PEMEX], Armed Forces insurance [SDN], the *seguro popular* created in 2001, and other insurance venues) was higher than the national figure. In 2005, Nuevo León had the highest health insurance coverage (69.2%), and Baja California and Tamaulipas had the lowest (56.2%). Coverage for other states in the same year was 58.4% in Chihuahua, 64.7% in Tamaulipas, 66% in Sonora, and 69% in Coahuila.

Public Health Services

The United States' and Mexico's health care systems have various programs and projects in place to promote health along the border. On the Mexican side, the Department of Health has health promotion offices in each of the 13 largest border cities, each of which has state-level support. On the U.S. side, some local health departments have health promotion sections that address specific needs. In late 2003, a Binational Border Health Promotion Plan began to be created.

The Binational Health Week that began in California in 2001 is one of the largest combined mobilization efforts (federal and state government agencies, community based organizations, and volunteers) designed to improve the health and well-being of the underserved Latino population living in Canada, Mexico, and the United States. Health-promotion and health-education activities are held throughout the border during this week.

The launching of a health station (*Ventanilla de Salud*) at the Mexican Consulate in El Paso in April 2006 marks the fourth such station in an initiative operating throughout the United States–Mexico border, along with those in San Diego (California), McAllen (Texas), and Tucson (Arizona). The *Ventanilla de Salud* program is a partnership among local health advocacy and health services organizations and the Mexican consular network designed to incorporate bilingual, bicultural, and highly trained health educators and advocates as part of Mexican consular services in the United States to counsel clients on eligibility for government-funded health insurance, other primary care services, and, when appropriate, various legal issues.

Based on the 2000 census, access to piped water within the house is 90% or higher in U.S. border communities. In Mexico's border communities, access is lower, ranging from a low of 66% in Acuña to a high of 85% in Ciudad Juarez and Piedras Negras.

Human Resources

According to data published online in statehealthfacts.org (a website that is part of The Henry J. Kaiser Family Foundation), in 2004 all four U.S. border states had fewer than the overall United States average of non-federal physicians (28.1 per 10,000 population). There were fewer physicians per 10,000 population in each of the four border states than in the U.S. as a whole, by as much as 22% in Texas and as little as 7% in California. The same is true for registered nurses: the ratio of registered nurses per

10,000 population in the four U.S. border states is approximately 20% lower than the national rate of 28 per 10,000 population. Border counties in Arizona and California have the same number of physicians, nurses, and dentists per 10,000 population as the United States as a whole, while border counties in New Mexico and Texas have lower health worker ratios than the national or state average.

In 2004, the distribution of human resources in Mexico's border states was comparable to the national figures of 11 physicians per 10,000 population and 19 nurses per 10,000 population. According to information from the secretaries of health in Mexican border states, the ratio of physicians per 10,000 population in Baja California was 8 and in Tamaulipas, 15; the figures for social security ranged from 9 in Baja California and Chihuahua to 14 in Tamaulipas. The number of nurses per 10,000 population ranged from 17 in Baja California and Chihuahua to 24 in Coahuila.

Research and Technology

At the border health research agenda council meeting in February 2002, four research areas of interest were identified—disease control and prevention; health and the environment; health care systems, services, and human resource development; and health, society, and development.

PAHO's United States-Mexico Border Field Office began to engage in activities designed to facilitate the use of appropriate technology, including providing training to border institutions on the use of the geographic information system software, SIGEPI, and on the use of other communications software.

The information and knowledge management center at the El Paso Field Office houses online databases of periodicals and/or journals and provides access to courses as a way to develop competence in information search. It also distributes bibliographic material and produces various technical documents on public health issues in various formats.

Health Sector Expenditures and Financing

The United States and Mexico finance health in vastly different ways. The percentages presented in this section are intended for in-country comparisons only.

In the United States border states in 2004, total health expenditures as a percentage of the gross state product (GSP) ranged from 11% in California, to 12% in Arizona and Texas, to 13% in New Mexico. At the national level, total health expenditures as a percentage of the gross domestic product were 13%.

In Mexico's border states, public expenditure in health as a percentage of GDP (public expenditure) in 2004 ranged from 2.1% in Nuevo León to 3.3% in Sonora, compared to the national level of 3%. Public expenditure in health as a percentage of the total public expenditure ranged from 16.5% in Tamaulipas to 26.9% in Nuevo León, compared to the national level of 17.4%.

Technical Cooperation and External Financing

The United States Agency for International Development (USAID) provides funds and technical assistance to strengthen epidemiological surveillance systems and deal with chronic diseases, tuberculosis, and disaster mitigation on the border.

The Pan American Health Organization (PAHO) has had a field office on the U.S.-Mexico border since 1942. The field office currently contributes to meeting the objectives of Healthy Border 2010, Border 2012, and other border health initiatives, within the framework of the Strategic Plan of the Pan American Sanitary Bureau, 2003–2007, and the Millennium Development Goals. The Organization will continue to provide technical cooperation and services.

Other local, national, and international institutions also work along the border. There are also coalitions, agencies, associations, foundations, academic institutions, and government and nongovernmental organizations that provide funding for health-related activities on both sides of the border.

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