INTRODUCTION

Paraguay had a population of 6,340,639 in 2010 (1), distributed across urban (58.3%) and rural areas (41.7%), with 33.3% of the population concentrated in the departments of Asunción and Central. The annual average growth rate was 1.8% between 2005 and 2010. The distribution of the population shows a clear predominance of young persons, with those under 15 years old representing 37.1% of the total (41.3% in rural areas and 33.9% in urban areas) (see Figure 1). The total fertility rate fell from 2.9 children per woman in 2004 to 2.5 in 2008, and is higher among women with less schooling (3.6 children), those who speak Guaraní at home (3.3), and those of very low socioeconomic status (4.1). The crude birth rate estimated in 2011 was 23.9 per 1,000 population, and the overall corrected mortality rate for 2009 was 5.7 per 1,000 population (2).
Paraguay’s total land area is 406,752 km² and is divided into two geographic regions by the Paraguay River: the western region, or Chaco, with 3 departments, and the eastern region which is divided into 14 departments and includes the main cities and primary road networks. Nearly 2% of the population is indigenous (119,497 in 2010) (3). The indigenous population census of 2002 (4) revealed that 31% of the population lives in the Chaco, with 91.5% living in rural areas. There are 20 ethnic groups in five linguistic families: Guaraní, Maskoy, Matako, Guaicuru, and Zamuco. The Guaraní family is the largest, with six peoples and a 3.9% growth rate as of 2002. The indigenous population is younger than the general population: 47.1% was under 15 years old as of 2002.

Paraguay’s two official languages are Spanish and Guaraní (5); the latter was the country’s first native American language to obtain recognition as an official language, as enshrined in the 1992 Constitution. The fact that these two languages have endured side-by-side testifies to the coexistence of two ways of life that gives rise to a distinctly Paraguayan idiosyncrasy: the Western “live to have” and the Guaraní “live to be” (6).

Other population groups settled in the country during the 20th century. The most numerous were Russian-German and Canadian Mennonites, who first established their colonies in 1927 and have a strong economic and social influence on their areas of settlement, mainly in the Chaco (7).

Paraguay was ruled for 61 years by the Republican National Association (the Colorado party). This period included a 35-year dictatorship that ended in 1989, when an incipient democratic process began. In August 2008, a coalition of parties and minority social groups was voted into government with the support of the majority of the population.

In 2009, the Government presented “Paraguay for All: A Proposed Public Policy for Social Development, 2010–2020” (8), an initiative that articulates 11 emblematic programs that have four key foci: quality of life, social inclusion, economic growth without exclusion, and results-based management. Among its programs are the development of family health units, water supply and sanitation, and food security, all closely linked to the health of the population.

Between 2003 and 2008, 255,932 Paraguayans migrated—almost 1 out of every 10 people in the economically active population (9). In 2010, 19.8% of the population reported they had ever used the

---

**FIGURE 1. Population structure, by age and sex, Paraguay, 1990 and 2010.**

The population increased 52.0% between 1990 and 2010. In 1990, the population structure displayed a pyramidal shape in which age groups under 20 years old accounted for one-half of the population. By 2010, the pyramidal shape shifts to older age groups as the population ages, and age groups under 25 years old appear similar, which reflects the reduction in fertility in these younger groups.


*Each age group’s percentage represents its proportion of the total for each sex.*
The gross domestic product (GDP) had an annual growth of 3.7% between 2006 and 2010 \(^{10}\), and is predicted to remain stable for the 2012–2013 period \(^{11}\). In 2010 there was a record increase in the GDP per capita (14.5%) over that of 2009, which is particularly significant considering that 2009 was a year of negative growth (−3.9%) \(^{12}\).

In December 2009, Resolution 1,074 of the Ministry of Public Health and Social Welfare was adopted, decreeing that all services provided by state health care centers be free of charge \(^{13}\). That same year, the country exceeded its goal of creating 500 family health units, which provide services to 30% of the Paraguayan population, giving priority to the communities that are most vulnerable and have been historically overlooked by the Government.

**HEALTH DETERMINANTS AND INEQUALITIES**

In 2009, 35.1% of the Paraguayan population was poor (49.8% in the rural area) and 18.8% lived in extreme poverty (32.4% in the rural area) \(^{14}\). Total poverty rose from 38.6% to 43.7% between 2005 and 2006, but declined steadily thereafter until 2009; this was attributed to a decline in the incidence of poverty in urban areas. The incidence of extreme poverty appears to be similar to that of total poverty, with a slight increase in 2008 and 2009.

In 2010, the open unemployment rate was 5.7% (4.7% of men and 7.2% of women). Total underemployment was 22.9% (20.8% among men and 26.3% among women), declining steadily since 2007 (26.6%). The primary or extractive sector absorbed almost 27% of the employed population; the secondary sector, which includes manufacturing, 18.2%; and the tertiary or services sector, 54.8%. Some 72.6% of employed women worked in the tertiary sector, while men were distributed largely between the tertiary and primary sectors (44.0% and 31.7%, respectively) \(^{15}\).

As of 2010, the illiteracy rate stood at 5.3% (3.5% in the urban population and 8.1% in the rural population): 4.6% in men (3% in urban and 6.8% in rural areas) and 5.9% in women (3.9% in urban and 9.5% in rural areas). Whereas in Asunción the illiteracy rate was 1.4%, in the department of San Pedro it reached 7.2% \(^{16}\). In 2009, the illiteracy rate was 10.5% among the extremely poor and 3.7% among the non-poor.

In 2010, the Government estimated a quantitative deficit of 98,720 dwellings (73% in urban areas) and a qualitative deficit—which refers to needs for improvement and expansion—of 705,298 dwellings (54% in rural areas) \(^{17}\).

Most of the Paraguayan society considers that agrarian reform is an unresolved issue. One percent of landowners hold 77% of arable lands, and 40% of farmers who own 0–5 hectares have only 1% of agricultural lands \(^{18}\).

Paraguay is party to several treaties, conventions, pacts, and binding protocols that establish specific measures to protect the right to the enjoyment of the highest attainable standard of health and other related human rights. These include the right to life, right to personal integrity, children’s rights, the right to education, the right to work, the right to a name and nationality, and the right to benefit from cultural and scientific advances.

**THE ENVIRONMENT AND HUMAN SECURITY**

**Access to Clean Water and Sanitation**

In 2009, 68.6% of the population had access to drinking water provided by the Sanitary Services Company of Paraguay, the National Environmental Sanitation Service, sanitation boards, community networks, private networks or providers, or from artesian wells, enclosed and covered dug wells, protected springs, or rainwater. Overall, 77.7% of

---

\(^{1}\) Data for Asunción (the most developed area) and San Pedro (one of the poorest departments) are presented in order to demonstrate inequalities within the country.
the urban population and 59.0% of the rural population had access to drinking water.

Among indigenous communities, in 2009, 40% of the population obtained water from artesian wells, 26% from rain collection tanks, 18% from weirs or reservoirs, 6% from surface water, 4% from dug wells, and 6% from other sources. In these communities, the task of collecting water falls largely to women (94%), 42.5% of whom spend 11 to 30 minutes and 37.5% of whom spend more than 30 minutes on each collecting trip. This task is repeated three to five times a day in 55% of communities, and more than six times in some 20% of communities (19).

In 2009, 8.5% of the population had access to a sewage system (16.3% in urban areas versus 0.3% in rural areas) (20).

**Solid Waste**

In 2010, 39.2% of the population had access to waste disposal services through public or private collection (69.7% in the richest quintile and 7.5% in the poorest). Overall, 48.5% of the population incinerated its waste (80.4% in rural areas) (15). With regard to final disposal, 70.8% of the waste was discarded in open-air or controlled landfills, and the rest in sanitary landfills (21).

**Deforestation and Soil Degradation**

In 1945, the forests of the eastern region of the country encompassed 55% of the total surface of the region (22); by 2000, only 5% remained (23). Although the leading cause of deforestation is extensive felling by the timber industry and the progressive encroachment of agriculture on the indigenous forest, the massive use of firewood and charcoal for domestic consumption also has an impact. In 2010, 31.3% of homes mainly used firewood to cook, 12.1% used charcoal, and only 3.7% used electricity, which is remarkable for a country that exports the latter form of power (15).

**Air Pollution**

During June 2010, an air quality study was conducted in the city of Asunción through daily continuous sampling of PM$_{2.5}$ (very fine particulate material). Values were found to fluctuate between 5 µg/m$^3$ and 48 µg/m$^3$; 39% of the samples exceeded the limits recommended by the World Health Organization (WHO). Elemental carbon levels presented peaks of up to 140 µg/m$^3$. Regarding the sampled gases (SO$_2$ and NO$_x$), the most critical concentration was that of NO$_2$, with an average of 39.1 µg/m$^3$—close to the maximum limit set by WHO (40 µg/m$^3$); that value was exceeded in more than half of the sampled urban areas (24).

**Pesticides**

The importation and use of pesticides have grown in recent years, in tandem with crop production. The annual average volume of pesticides imported between 2007 and 2009 was over 30 million kilograms or liters. The key imports are acephate, atrazine, imidacloprid, endosulfan, and, to a larger extent, glyphosate and paraquat (25).

The number of pesticide-related deaths decreased from 58 in 2006 to 19 in 2009. According to an FAO report, there are 385 tons of obsolete pesticides and 4,210 tons of contaminated material distributed across 15 departments of Paraguay (26).

**Food and Nutritional Security**

The country has a high potential for food production. The agricultural and livestock sectors accounted for 47.0% and 8.5% of 2010 GDP growth, respectively (10). However, the abandonment of traditional crop systems and diversification by small farmers and the switch to extensive monoculture in the pursuit of better income have changed the conditions for food production and could affect food security.
HEALTH CONDITIONS AND TRENDS

HEALTH PROBLEMS OF SPECIFIC POPULATION GROUPS

Maternal and Reproductive Health

The prevalence of contraceptive use by married or cohabiting women 15–44 years old rose from 72.8% in 2004 to 79.4% in 2008. In 2008, 90.5% of pregnant women completed four or more prenatal visits, and 84.6% of deliveries took place in health facilities (27).

A pressing problem in Paraguay is the high maternal mortality rate, which has remained stable in recent years, but still poses a great challenge to achieving Millennium Development Goal 5. The targeted 75% reduction in maternal mortality would mean achieving a rate of 37.5 deaths per 100,000 live births by 2015. By 2009, with a rate of 125.3 per 100,000 live births, the reduction had barely reached 33%. The main causes of maternal mortality are postpartum hemorrhage, preeclampsia/eclampsia, and sepsis, which are avoidable deaths. A third of maternal deaths were due to complications of abortions performed in dangerous conditions. In 2009, the departments with the highest maternal mortality rates were Central, Parana, and Asunción. In 2008, 93% of maternal deaths occurred in health facilities, and 60% of in-hospital deaths occurred in the night or early morning, when fewer health professionals are on duty (28).

Infants and Children (0–9 years old)

The country’s efforts in achieving Millennium Development Goal 4, which aims to reduce child deaths by two thirds between 1990 and 2015, have been insufficient. Infant mortality in 1990 was 30.4 deaths per 1,000 live births and the estimated infant mortality rate in 2008 was 20 per 1,000 live births (27). There was a slight decline in the reported rate (17.8 per 1,000 live births in 2005 and 15.4 per 1,000 in 2009), which was achieved due to lower postneonatal mortality, while the neonatal mortality rate remained stable (11.7 and 11 per 1,000 live births, respectively). Without taking into account some departments whose rates would be outliers due to obvious underreporting, there are substantial differences between departments (12.4 per 1,000 in Asunción vs. 31.0 per 1,000 in Boquerón). Mortality in children under 5 declined between 2005 and 2009, from 21.8 to 18.7 per 1,000 live births. In 2009, 82.4% of the recorded deaths of children under 5 occurred during the first year of life, and 58.8% in the first 28 days of life; of these, 80% occurred in the first week (29). The leading cause of neonatal mortality throughout the 2005–2009 period was infant respiratory distress syndrome, followed by congenital malformations. The latter was the leading contributor to postneonatal mortality, followed by pneumonia and influenza.

Population-based studies (30) suggest that differences persist with regard to vaccination in several municipalities across the country. Also, information is lacking in various areas and difficulties estimating denominators and absence of separate data for indigenous and vulnerable populations remain problematic.

Adolescents (10–19 years old)

Adolescents make up 21.3% of the Paraguayan population (31). In 2009, the leading causes of death in this age group were external causes, accounting for 31.6 deaths per 100,000 population and 49.1 per 100,000 in males, with an upward trend since 2005 (29).

In 2008, the fertility rate among adolescents was 63 live births per 1,000 women aged 15 to 19 years, versus 87 per 1,000 in 1998 and 107 per 1,000 in 1995. Despite this sustained decline, the rate in Paraguay is still far above the world average. In rural areas, it is almost double that of urban zones (85 per 1,000 versus 47 per 1,000, respectively).

An increasingly early onset of sexual relations has been recorded; 52% of women 15 to 19 years old self-identified as sexually active in 2008 (27). Of all pregnancies that occur in the country, approximately 20% are in adolescent girls. In 2009, 108 girls in the 10–13-year age group gave birth (0.11% of registered births). In the same year, 21 maternal deaths were
reported in girls under the age of 19 years (16.4% of the total) (32).

The Elderly (60 years and older)

Approximately one out of four households has at least one older adult among its members. In the future, the country will be faced with the challenge posed by an increase in the proportion of the population aged 60 and over, which is expected to rise from 7.1% in 2000 to 11.6% in 2025 and 18.5% in 2050 (1).

Mortality

In 2009, diseases of the circulatory system caused 111.5 deaths per 100,000 population; malignant neoplasms, 56.0 per 100,000; external causes, 49.2 per 100,000; and communicable diseases, 35.1 per 100,000. In men, between 2006 and 2009, ischemic heart disease accounted for 10.2% of deaths, followed by cerebrovascular disease (9.5%) and motor vehicle accidents (7.4%). In women, the leading cause of death was cerebrovascular disease (12.8%), followed by diabetes mellitus (10.8%) and ischemic heart disease (9.2%). On analysis of mortality by major groups of causes across the country’s health regions, the much higher rates of Asunción and Central stand out in all groups, which would seem to indicate an issue of information quality. In 2009, external causes were the leading cause of death overall and led for men with regard to years of potential life lost.

The percentage of underreported deaths declined from 40% in 2000 to 29% in 2009, as did the percentage of deaths attributed to ill-defined causes (from 20% in 2000 to 13% in 2009).

Morbidity

Communicable Diseases

Vector-borne Diseases

During the 2006–2007 dengue epidemic, which affected the entire country, serotype 3 of the dengue virus was in circulation. A total of 11,034 cases were confirmed, and there were 17 deaths. Serotypes 1 and 3 were in circulation during the 2008–2009 epidemic, which spread to 32% of the 230 districts of the country. That outbreak was weak to moderate in intensity, no dengue-associated deaths were recorded, and there was not excessive demand placed on the health services network. Transmission of the dengue virus was once again recorded starting on week 41 of 2009, and persisted at least until mid-2011, which means that dengue is considered endemic in Paraguay as of that date. By the end of 2010, 13,559 cases had been confirmed and simultaneous circulation of serotypes 1, 2, and 3 was established. As of week 22 of 2011, 27,103 cases had been confirmed, most occurring between weeks 6 and 19. Eight percent of confirmed cases required hospitalization; of the hospitalized cases, 4% were classified as severe dengue and 57% of these resulted in deaths (54/95).

In January 2008, Paraguay saw the reemergence of jungle yellow fever in the country (which had not been recorded since 1974) as well as the first outbreak of urban yellow fever in the Americas since 1942. Overall, 27 cases were confirmed, with 10 deaths in four well-defined areas: San Estanislao and Santo Domingo (department of San Pedro), the Laurelty neighborhood of San Lorenzo (Central department), and the department of Caaguazú. An intermediate transmission model was identified in deforested rural areas with extensive human penetration and presence of jungle and urban vectors. Seventy percent of the population was vaccinated and the outbreak was controlled, although unvaccinated population groups remain and surveillance of epizootics is still precarious (33).

In the first half of the 2000 decade, the National Program for Control of Chagas’ Disease assessed more than 354,000 dwellings (98%) in seven departments with a high presence of Triatoma infestans. Starting in 2008, the eastern region was certified free of vector-borne transmission of Chagas’, based on a serological survey of children under age 5. The entomological surveillance system remains in place in the eastern region, has been expanded to the western region (Chaco), and disease control activities have continued (34).
Cutaneous leishmaniasis occurs in the north, center, and east of the eastern region, where areas of tropical rain forest are still found. Since 2002, when the largest number of cases in the decade (1,251) was recorded, the disease has followed a downward trend. Between 2006 and 2010, 1,895 cases were reported (35). Human visceral leishmaniasis is a hazard in over 90% of the area formed by the department of Asunción and the departments of Central, Paraguari, and Cordillera, where canine disease is hyperendemic and sandfly vectors are present. Confirmed cases of visceral leishmaniasis were on the rise between 2000 and 2010; 145 were recorded in the latter year (36), and the case-fatality rate was highly variable during this period (ranging from 4.7% in 2005 to 20.8% in 2004).

Within an 11-year period (2000–2010), a 99.6% reduction in the number of cases of malaria has been achieved, as has a 95.0% reduction in the incidence rate (annual parasite index) per 1,000 population (from 0.79 in 1990 to 0.004 in 2010). Paraguay is on the way to eliminating autochthonous malaria transmission, and has already met the corresponding target of Millennium Development Goal 6 (37).

**Vaccine-preventable Diseases**

The last case of poliomyelitis was reported in 1985, the last case of measles in 1998, and the last cases of rubella and congenital rubella syndrome in 2005. Isolated cases of diphtheria, whooping cough, tetanus, and neonatal tetanus have been reported. The rotavirus and pneumococcal vaccines were included in the basic child immunization schedule in 2010 and 2011, respectively.

**Zoonoses**

Paraguay had been free of foot-and-mouth disease since December 2006, but in September 2011, an outbreak was declared in Sargento Loma, department of San Pedro. The outbreak affected 13 head of cattle; the focus was contained and meat exports were canceled, which caused a severe crisis in the livestock sector and huge economic losses to the country.

**Neglected Diseases and Other Infections Related to Poverty**

Paraguay reached the goal of eliminating leprosy as a public health problem in 2006. However, as of 2010, leprosy was present in three departments (Amambay, Neembucú, and Concepción). In that year, evidence of delayed detection was found (of 392 new cases, 79% were multibacillary and 16% had grade 2 disability). Furthermore, the fact that 3.3% of cases are detected in children under 15 years old indicates that transmission of leprosy persists. In 2009, there began a process of integrating leprosy care into the primary health care system, with an emphasis on prevention and case-finding.

**HIV/AIDS and Other Sexually-transmitted Infections**

The HIV/AIDS epidemic primarily affects the most vulnerable populations: men who have sex with men, injecting drug users, and sex workers. Prevalence in the general population is 0.30%, according to WHO and UNAIDS estimates (38). The incidence rate in 2009 was 15.1 per 100,000 population, which indicates a 71% increase in the number of new infections notified as compared with 2005 (39, 40). Between 2005 and 2009, the incidence of HIV doubled among young people aged 15 to 24, rising from 4.54 to 8.99 per 100,000 in 15–19-year-olds and from 12.27 to 25.91 per 100,000 among 20–24-year-olds. In 2009, the most frequent route of transmission was sexual (86%). Between 2005 and 2010, the male-to-female ratio remained stable at between 1.4 and 1.5 (41). Nearly half of women (47%) who access health services during pregnancy take part in a program for prevention of mother-to-child transmission of HIV (42). In 2011, HIV counseling and voluntary HIV screening tests were added to the services of over 200 family health units, although the partners of pregnant women have minimal access to this service. Two-thirds (66.6%) of men diagnosed with HIV in 2010 had stage 2 and 3 disease according to the immunological classification for established HIV infection, which is indicative of late access to diagnosis in the male population. By the end of 2010, 177 children and 2,785 adults who were eligible for treatment were receiving antire-
trovirals in accordance with the national standard, although WHO and UNAIDS estimated that, for that year, 5,600 people living with HIV were still in need of antiretroviral therapy, which implies that the corresponding target of the Millennium Development Goals is still far from being achieved (43).

Congenital syphilis is a public health issue that has intensified in recent years, despite multiple programs established to tackle it in the country. As of 2010, the incidence was 14 per 1,000 live births (44).

**Tuberculosis**

The incidence of all forms of tuberculosis declined between 2005 (38.4 per 100,000 population) and 2010 (32.8 per 100,000). Nevertheless, the rate of positive sputum-smear microscopy remained stable. It bears noting that there are regional differences in both the overall incidence and the incidence of smear-positive TB. In 2009, Boquerón and Presidente Hayes, two departments of the Chaco, had incidence rates of all forms of tuberculosis of 165.6 per 100,000 population and 153.5 per 100,000 population, respectively. The rate of detection by sputum-smear microscopy reached 75% in 2009, after two years in which the 70% goal failed to be reached. Diagnosis, detection, and treatment capabilities were boosted, and the cure rate has increased. The country receives funding from the Global Fund to Fight AIDS, Tuberculosis, and Malaria, which places particular emphasis on controlling and preventing tuberculosis in prison populations; expanding directly observed treatment, short-course (DOTS); and addressing TB/HIV coinfection. With regard to this last component, the HIV screening rate of TB patients remains very low (30%) (45).

In 2009, the prevalence of smear-positive tuberculosis in the indigenous population was 117 per 100,000, higher than that estimated in the non-indigenous population (46).

**Emerging Diseases**

During the 2009 influenza A(H1N1) pandemic, 7,916 cases of the disease were reported, of which 1,025 were laboratory-confirmed; of these, 47 had a fatal outcome. During the first wave of the pandemic, 117 suspected cases of pandemic influenza were reported in pregnant women; 25 of these died of severe acute respiratory infection, and three had confirmed influenza A(H1N1) infection. The influenza A(H1N1) virus accounted for 80% of respiratory viruses isolated in patients over the age of 50 years in 2009. The pandemic influenza A(H1N1) vaccine was made available in the country in April 2010, and coverage was achieved in over 90% of the target population (1,092,653 out of 1,200,000 people). However, despite a history of greater mortality in pregnant women during the pandemic, barely 37% of this population group was vaccinated; the same coverage rate was reached in children between 6 and 35 months old.

**Intestinal Diseases**

Between December 2008 and April 2009, three outbreaks of acute diarrheal disease consistent with cholera occurred in the Chaco region (Vibrio cholerae O1 serotype Ogawa was isolated from a specimen). The outbreak was detected late, and retrospective analysis of death certificates revealed 14 deaths (10 adults and 4 children) from acute diarrheal disease.

**Chronic, Noncommunicable Diseases**

Noncommunicable diseases2 account for the majority of deaths in Paraguay. In 2011, self-reported hypertension affected 32.2% of the general population (37.9% of women). Regarding morbidity, self-reported diabetes affected 9.7% of the population (11% of women) and high cholesterol levels affected 21.5% of the population (23.1% of women). Since 2008, vertical health programs have begun a process

2 Malignant tumors; other tumors; diabetes mellitus; other endocrine, metabolic, hematological, and immunological diseases; mental disorders and diseases of the nervous system; diseases of the sense organs; cardiovascular diseases; respiratory diseases; digestive diseases; diseases of the skin; diseases of the musculoskeletal system; birth defects; and dental diseases.
of integration into primary health care and other service networks, which has promoted intersectoral work in noncommunicable disease prevention. According to 2008 estimates (47), prostate cancer and breast cancer accounted for the highest cancer incidence rates in men and women, respectively. Cervical cancer had an adjusted incidence rate of 35 cases per 100,000 women (47). Throughout the country, opportunistic screening is being switched to screening programs that are integrated into primary health care and service networks.

**Nutritional Diseases**

In 2008, 32.9% of infants younger than 3 months were exclusively breastfed (compared to 7.1% in 1995); this percentage declined to 8.5% in children aged 3 to 5 months. Fifteen percent of infants younger than 3 months received breast milk and water, and 3.9% were given solids or baby food as well (27). Also in 2008, chronic malnutrition (low weight-for-age) affected 13.7% of all boys and girls under age 5 and 41.7% of indigenous children (48). In 2009, the National Plan for Food Sovereignty and Security was created to respond to conditions of vulnerability and to high rates of undernutrition and malnutrition (49).

**Accidents and Violence**

Traffic accidents and their consequences constitute one of the main public health problems in Paraguay. Accident-related mortality increased from 14.5 per 100,000 population in 2006 to 18.3 per 100,000 in 2009. In 2009, 73.5% of these deaths occurred in the 15–49-year age group, and 32.4%, in the 15–24-year age group. Also in 2009, motorcyclists and pedestrians accounted for 41.3% and 27.8% of the accident-related deaths, respectively. The highest mortality rate was found in San Pedro, a rural, low-income department (34.1 per 100,000), followed by the departments of Alto Paraná (22.7 per 100,000) and Caaguazú (21.5 per 100,000). The rate of traffic accident-related injury increased from 245 per 100,000 population in 2006 to 506 per 100,000 in 2010. Seventy-one percent of those injured were 15 to 39 years old (50). In 2011, a national road safety plan for the 2011–2020 decade was published, and a draft bill for the National Road and Traffic Safety Act was presented at Congress. The Ministry of Public Health and Social Welfare leads the national road safety observatory, a resource for information and data on road safety issues, and has promoted the creation of observatories for trauma and injury due to external causes in the departments of San Pedro and Alto Paraná and in the towns of Pilar (Neembucú) and Hohenau (Itapúa).

Between 2005 and 2009, the intentional homicide rate remained stable, ranging from 12.57 per 100,000 population in 2005 to 12.16 per 100,000 in 2009 (51).

In 2009, the Women's Support Service (SEDAMUR, for its Spanish name), an agency of the Secretariat for Women, received 2,409 reports of violence against women (985 of psychological violence, 667 of economic violence, 431 of physical violence, and 126 of sexual violence). In 2010, the number of cases handled by SEDAMUR declined (52). A total of 359 reports of rape were brought before the police in 2006 and 258 in 2009, and the number of reports received by SEDAMUR doubled (51).

**Disasters**

Fires, droughts, and floods are the main natural disasters that affect Paraguay cyclically, and it is predicted that climate change will worsen this situation. Fires in the Chaco and Concepción, San Pedro, Amambay, Paraguari, Paraná, and Canindeyú departments led to the declaration of a nationwide state of emergency in 2007. These fires are largely anthropogenic in origin, and are related to seasonal agricultural practices and to the incineration of solid waste.

Between 2007 and 2010, the national government had to mobilize resources to address the effects of droughts that affected the Chaco region. In 2011, the construction of a water supply system from the Paraguay River up to the central and most populated area of the Chaco, to provide drinking water, was approved (53). Floods occur particularly in the basins
of the Paraguay and Paraná rivers, especially in populated areas such as the cities of Pilar, Concepción, Encarnación, and Asunción.

The country promotes the construction of disaster-safe hospitals and views the Hospital Safety Index as a tool for structural, nonstructural, and functional assessment.

Mental Disorders

Pursuant to the Mental Health Policy approved in 2010 (54), Paraguay has increased access to specialized mental health care and pursued a program of de-institutionalization, as well as providing mental health care in various health facilities (family health units, health centers, and general and specialty hospitals) and through mobile community treatment teams.

An injunction was filed with the Inter-American Commission on Human Rights against Paraguay’s Neuropsychiatric Hospital. As of 2010, seven substitute facilities had been accredited (in San Ignacio, Limpio, Luque, and Asunción, among others), and in that year, by means of distribution of psychiatric drugs free of charge and on an outpatient basis, the number of patients institutionalized at the Neuropsychiatric Hospital declined by 17%. This process has restored these individuals’ right to live in the community, as enshrined in the United Nations Convention on the Rights of Persons with Disabilities.

Other Health Problems

Oral Health

As of 2008, the DMFT (decayed, missing, filled teeth) index for temporary dentition was 3.99 and 5.77 in children aged 5 and 6 years, respectively, whereas the index for permanent dentition was 2.79 in 12-year-olds and 4.34 in 15-year-olds (55). With the passage of resolutions 533 and 568 in 2009 (56), the dental services of health networks have been strengthened and are free of charge. Specialty dental care has been made available as part of the services of the health care network. Oral health professionals were redistributed, and as of 2010, services (including mobile clinics) were staffed by 723 dentists.

Ocular Health

In Paraguay, 24,000 people are affected by blindness, and it is estimated that 80% of such blindness is avoidable, preventable, or treatable. There are 170 ophthalmologists for the entire country, 54 of whom work in the public services of the Ministry of Public Health and Social Welfare (57).

In 2008, a national eye health program was created, and in December of the same year, a 2020 action plan for the prevention of blindness was approved.

Risk and Protection Factors

According to the 2011 national survey of risk factors for noncommunicable diseases (ENFRENT-2011), conducted in people aged 15 to 74 years, the prevalence of tobacco use was 22.8% in men and 6.1% in women; in 2008, prevalence in 13- to 15-year-olds was 20.8% in boys and 12.9% in girls (58). The year 2010 was key to the offensive of the tobacco industry against the Framework Convention on Tobacco Control. At the end of 2009, the Supreme Court of Justice ruled in favor of the protective remedies requested in April of the same year by the tobacco industry against the publication of two presidential decrees that supported the Framework Agreement. The tobacco industry promoted draft legislation that was approved in both Houses and subsequently vetoed by the President of the Republic. The local tobacco industry is strong and deeply entrenched at the political and judicial levels. The country has a major smuggling problem, and it is estimated that 1 of every 10 smuggled or counterfeit cigarettes smoked in the world comes from Paraguay (59).

The ENFRENT-2011 survey reported that 50.9% of the population between the ages of 15 and 74 years had consumed alcohol during the 30 days preceding the survey. Overweight and obesity constitute another serious public health problem, affecting 57.6% and 22.8% of the population,
respectively, while average fruit and vegetable intake is low (2.19 and 0.58 daily servings, respectively).

HEALTH POLICIES, THE HEALTH SYSTEM, AND SOCIAL PROTECTION

The Health System’s Stewardship Role

Leadership in the health sector is the responsibility of the Ministry of Public Health and Social Welfare, which is in charge of financing and is the main provider of health services. The health system is mixed, segmented, and fragmented, which restricts coordination and functional integration. The public sector comprises the Ministry of Public Health and Social Welfare; the National University of Asunción; the Military, Police, and Navy Health Services; municipal and departmental health services; and the Institute of Social Welfare, a decentralized entity.

The Health System’s Performance

The system for delivery of social protection services in health is highly segmented and fragmented. Health insurance coverage, both that provided by the Institute of Social Welfare and private insurance, is low, and concentrated mainly in Asunción and the Central department. Social security covers 17% of the economically active population. The welfare systems of the Institute of Social Welfare, the Fiscal Fund, and other regulated funds have marked differences with regard to financing, age and seniority requirements, and systems used to calculate pensions.

The public sector is responsible for providing health services throughout the country, in accordance with Law 1,032 of 1996. The private sector comprises both nonprofit and for-profit institutions (private universities with teaching hospitals and nongovernmental organizations). The fragmentation and uncoordinated operation of the health sector, including the Ministry of Public Health and Social Welfare and the Institute of Social Welfare, foster deficiencies in quality and access to health services. Nevertheless, the number of physician visits in the public sector increased significantly across the board between 2007 and 2010, including prenatal, dental, and general medical consultations. In 2008, only 12.2% of the indigenous population had health insurance, a percentage that ranged between 2% and 27% according to linguistic family.

Since August 2008, services provided at facilities that are part of the Ministry of Public Health and Social Welfare network have been exempt from fees; this, together with the Government’s strategy for fighting poverty, has reduced the out-of-pocket health expenditures of families.

Health Legislation

The Government undertook important administrative reforms in response to the national development plan and to a public policy proposal for social development (2010–2020). However, most of the regulations have no legislative support due to the minority standing of the executive branch in parliament, which constitutes an important weakness.

Health Expenditures and Financing

Total health expenditure as a percentage of GDP increased every year of the 2005–2009 period, from 7.3% in 2005 to 8.5% in 2009 (an average of 7.6%). Private expenditure on health during that period averaged 4.6% of GDP, whereas the public health expenditure was 3.1%. The Ministry of Public Health and Social Welfare and the Institute of Social Welfare account for approximately 90% of public health expenditures.

In 2009, total public spending increased 23.2% as compared to 2008, and in 2009, the public health expenditure amounted to 10.2% of overall public spending. From 2005 to 2009, the budget of the Ministry of Public Health and Social Welfare accounted, on average, for 9.4% of funds assigned to the executive branch, rising to 11.0% in 2009.
**Human Resource Development Policies**

Structural problems persist in the area of human resources; limited labor regulation permits a variety of types of employment contracts, various work schedules, inappropriate distribution of the workforce, and training that is not adapted to the requirements of the model of care. At the end of 2010, a project for health careers, developed with ample involvement from the health sector, was presented to the National Congress.

As of 2011, the Strategic National Directorate of Human Resources for Health, in its function of registration and oversight of professionals, had over 65,000 registered health care providers at the professional, technical, and allied levels.

The Ministry of Public Health and Social Welfare, the Institute of Social Welfare, and the Clinics Hospital absorb 98% of the workforce of the public health sector, and many health workers are employed simultaneously in the public, private, and social security sectors for part-time work. In 2007, the databases of the General Directorate of Human Resources of the Ministry had 22,995 registered employees distributed across 24,146 positions (with a position-to-person ratio of 1.15). This ratio spiked to 1.39 in 2010, mainly for health care workers. At the end of 2010, the Ministry had 16,891 permanent employees and 14,851 contractors.

There is no established, permanent training program, except for nursing and midwifery. Noteworthy educational innovations include the training of high-level technicians in health informatics and biomedical equipment maintenance, the conversion of nurse’s aides to high-level nursing technicians, and the creation of an institution in the Chaco that trains high-level nursing technicians to serve the indigenous population.

**The Health Services**

August 2008 saw the beginning of a reform process based on the primary health care strategy as the focal point of the entire national health system. To this end, the Government developed a network of family health units, which, as of December 2010, consisted of 503 units staffed by health teams made up of a physician, a registered nurse, a nurse’s aide, and community health workers. This network gave free access to health services to more than 2 million people from the most vulnerable groups of society. A strategic challenge will be to advance toward effective decentralization of health services delivery.

In 2009, 258,238 patients were discharged from public hospitals, which had 6,108 beds. The integrated, primary care-based health services networks coordinate the operation of health facilities and are strategic operations, promoted by the Ministry of Public Health, that have had a great deal of success in the departments of Asunción, Central, Guairá, and Cordillera (62). Agreements between the Ministry and the Institute of Social Welfare have been developed for the joint or coordinated use of the networks of both institutions.

**Drugs and Health Technology**

The National Directorate of Health Surveillance regulates medications and oversees quality control of pharmaceutical products, with the collaboration of national laboratories. Strategies and actions are being implemented to strengthen the Directorate’s regulatory and inspection role, promote best practices in the pharmaceutical industry, and set up a drug surveillance system. In 2008, the General Directorate of Strategic Supply Management was created to ensure efficient management of medical supplies and devices and to secure access to drugs and supplies for the operation of the country’s health care network. A national list of essential medicines (441, including vaccines) was established (63), and initiatives are under way to promote the rational use of drugs and establish a national drug formulary.

In 2010, 67,000 blood donations were made, with 50% in Ministry facilities, 30% in Institute of Social Welfare facilities, 14% at the School of Medicine, and 6% in the private sector. In recent years, donation centers have begun to reorganize with the objective of increasing donations and ensuring access to safe blood.
KNOWLEDGE, TECHNOLOGY, INFORMATION, AND HUMAN RESOURCE MANAGEMENT

Through the leadership of the General Directorate for Strategic Health Information, the Ministry of Public Health and Social Welfare leads and coordinates the Health Information System (SIS for its Spanish name), which is defined in accordance with the standards of the Health Metrics Network. Initial assessment of the SIS showed uncertain development, at around 50% of the optimal level.

The 2007–2011 Strategic Plan redesigned the SIS, incorporating a new policy of information management and information and communications technology (ICT). This was based on the use of free and open-source software and a Web-based access platform, for which 10 comprehensive subsystems were devised with the objective of eliminating the unnecessary and inefficient fragmentation observed at the time of initial assessment.

Scientific Production in Health

In 2007, the number of publications per 10,000 population was 0.01, a very low figure as compared to the rest of the Southern Cone. Between 2007 and 2011, research and innovation in health was promoted by the National Council of Science and Technology. The health sector has the greatest number of international publications, and is represented by 104 professionals who make up 23% of the total number of researchers in the country (64).

In 2010, the Ministry of Public Health and Social Welfare launched the national health research policy (65); furthermore, in 2008, Paraguay was the first country in Latin America to establish a network to support evidence-based decision making and policy making for health (EVIPNet) (66).

Health and International Cooperation

The political change that occurred in Paraguay in 2008 also represented a significant change in the country’s foreign policy, marked by a greater presence in international forums such as MERCOSUR, the Union of South American Nations (UNASUR), and the Ibero-American Community of Nations (67, 68). Between 2008 and 2011, the country held the presidency pro tempore of MERCOSUR for two terms (2009 and 2011) and that of the Ibero-American Community of Nations for one term (2011), as well as the co-presidency pro tempore of UNASUR (2011).

Synthesis and Prospects

Paraguay still has unsolved public health problems, including maternal mortality, congenital syphilis, dengue outbreaks, cervical cancer, availability of safe blood, and absence of a strong human resources policy, among many others. All of these issues share a common denominator: the lack of access to and quality of the health services. An exclusive and fragmented health system led to the failure or limited success of many of the corrective policies and remedies that have been implemented over the years.

The process of change that began in 2008 brought free health services and access to primary care to more than 2 million Paraguayans and should lead to structural reforms; it promises real change for a population that has long been excluded from health promotion and health care. The main challenges for this process are to achieve intersectoral and community involvement in decision-making on health, while taking into account the social determinants of health and full participation of the population, and to ensure that there are sufficient financial resources to carry out the structural changes required by public health in the 21st century.

References


43. Equipo técnico de MyE [monitoreo y evaluación] de respuesta nacional al VIH. Indicadores y metas, escalamiento hacia el acceso universal; 2011.
52. Paraguay, Ministerio del Interior. La atención especializada a víctimas de violencia intrafamiliar y de género en la policía nacional: una política de seguridad ciudadana desde el enfoque de derechos humanos. Asunción: Ministerio del Interior; 2011.
68. Paraguay, Presidencia de la República, Gaceta Oficial [Internet]. Available at: http://www.presidencia.gov.py Accessed on 21 January 2012.