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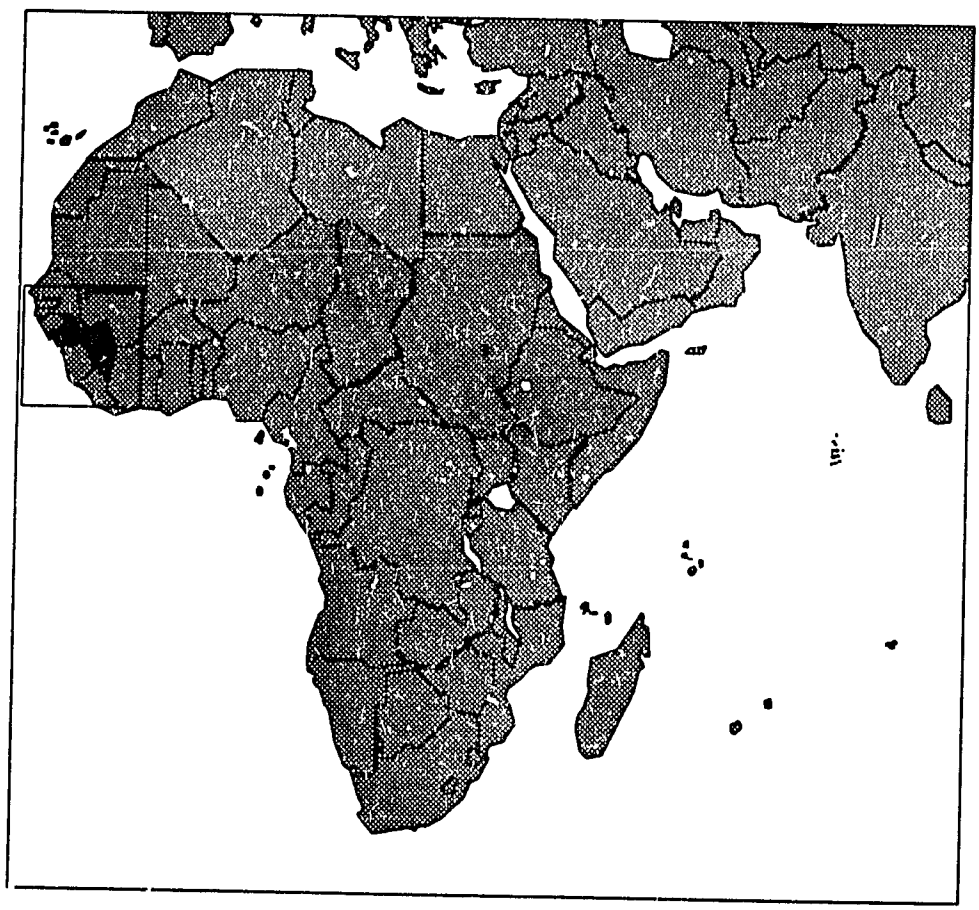
CIHI Country Health Profile Series

GUINEA

Country Health Profile
1995



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GUINEA

Country Health Profile

This is one of a series of Country Health Profiles produced by the Center for International Health Information (CIHI). Each profile provides quantitative and qualitative data on current health and demographic conditions and the health care system in a developing country. Profile information is compiled from CIHI's databases and reference library and through research and analysis of other data sources.

CIHI's Country Health Profiles, along with CIHI's Health Statistics Reports, are intended to provide data in a concise format for individuals and organizations involved in health sector policy and decision-making. Contact CIHI at the address on the preceding page for information on the availability of other country health profiles and health statistics reports, or look for these reports on the Internet at the following address: *gopher.info.usaid.gov*.

In order to enable CIHI to report the most current health and demographic data, readers are encouraged to provide any more recent or more accurate information by contacting the center directly or through USAID's Office of Health and Nutrition.

CURRENT DEMOGRAPHIC AND HEALTH INDICATORS

Demographic Indicators			
INDICATOR	VALUE	YEAR	SOURCE
Total Population	6,392,000	1994	UNP9400
Urban Population	1,843,000	1994	UNP9400
Women Ages 15-49	1,423,000	1994	UNP9400
Infant Mortality	139	1994	BUC9302
Under 5 Mortality	240	1994	JEE9504
Maternal Mortality	666	1992	DHS9412
Life Expectancy At Birth	45	1994	UNP9400
Number of Births	323,857	1994	UNP9400
Annual Infant Deaths	39,162	1994	CALXX01
Total Fertility Rate	6.9	1994	UNP9400

Child Survival Indicators			
INDICATOR	PERCENT	YEAR	SOURCE
Vaccination Coverage			
BCG	76	1993	WHE9401
DPT 3	55	1993	WHE9401
Measles	57	1993	WHE9401
Polio 3	55	1993	WHE9401
Tetanus 2	61	1993	WHE9401
DPT Drop Out	NA		
Oral Rehydration Therapy			
ORS Access Rate	45	1993	WHD9401
ORS and/or RHF Use	82	1993	WHD9401
Contraceptive Prevalence			
Modern Methods (15-49)	1.7	1992	DHS9412
All Methods (15-49)	1.0	1992	DHS9412
Nutrition			
Adequate Nutritional Status	NA		
Appropriate Infant Feeding	33	1992	DHS9412
A) Exclusive Breastfeeding	8	1992	DHS9412
B) Complementary Feeding	30	1992	DHS9412
Continued Breastfeeding	92	1992	DHS9412

Other Health Indicators			
INDICATOR	PERCENT	YEAR	SOURCE
HIV-1 Seroprevalence			
Urban	0.7	1991	BUC9408
Rural	0.3	1992	BUC9408
Access to Improved Water			
Urban	87	1991	JMP9301
Rural	57	1991	JMP9301
Access to Sanitation			
Urban	84	1991	JMP9301
Rural	5	1991	JMP9301
Deliveries/Trained Attendants	34	1992	DHS9412

NA = Data not available.
For definitions of indicators, see data notes in Appendix B. For full citations of sources, see Appendix C.

Table of Contents

Current Demographic and Health Indicators ii
List of Acronyms/Abbreviations v
Editor's Notes vi

I. COUNTRY OVERVIEW 1
- Geography 1
- History 1
- Social and Economic Conditions 2
- Population Dynamics 2

II. HEALTH SITUATION ANALYSIS 4
- Basic Health Indicators 4
- Causes of Mortality & Morbidity 5
  - Mortality among Children 5
  - Morbidity among Children 5
  - Maternal Mortality 6
- Specific Health Problems 7
  - Vector-Borne Diseases 7
  - Acute Respiratory Infections (ARIs) 9
  - Airborne Diseases 9
  - Diseases Related to Water and Sanitation 10
  - Vaccine-Preventable Diseases 13
  - Nutritional Deficiencies 16
  - Sexually-Transmitted Diseases 17

III. HEALTH SECTOR ASSESSMENT 18
- Health Care Services 18
  - Access and Utilization of Services 18
  - Personnel and Facilities 19
  - Public Sector Services 20
  - Private Sector Services 20
- Health Care Financing 21
  - Public Financing 22
  - Private Financing 24

IV. HIV INFECTION AND AIDS 25
  - National AIDS Control Program 26
  - Local Non-Governmental Organizations with AIDS Activities 27
  - International NGOs with AIDS activities in Guinea 27
  - International Donors supporting AIDS activities in Guinea 27

Appendix A: Statistical Appendix 28
Appendix B: Data Notes 30
Appendix C: Sources 32

List of Figures

1.1	Guinea: Regions for 1992 Demographic and Health Survey	1
1.2	Gross National Product per capita, 1991: How Guinea Compares	2
1.3	Current and Projected Population, by Age and Gender: 1990 - 2020	3
1.4	Population Estimates, 1950-2000	3
1.5	Crude Birth and Death Rates, 1950-2000	3
2.1	Life Expectancy at Birth, 1992: How Guinea Compares	4
2.2	Infant and Under-Five Mortality Rates, 1995: How Guinea Compares	4
2.3	Infant and Under-Five Mortality Rates, 1950-2000	4
2.4	Infant and Under-Five Mortality Rates, Findings of 1992 DHS, by Region	4
2.5	Causes of Child Mortality, 1992	5
2.6	Causes of Child Morbidity, 1991	5
2.7	Leading Causes of Child Mortality, 1986 & 1992	5
2.8	Leading Causes of Child Morbidity, 1986 & 1991	5
2.9	Maternal Mortality Rates, c. 1988: How Guinea Compares	6
2.10	Fever among Children Under Five, Findings of 1992 DHS, by Region	7
2.11	Cough and Difficulty Breathing among Under-Fives, Findings of 1992 DHS, by Region	9
2.12	Access to Safe Water and Adequate Sanitation: How Guinea Compares	10
2.13	Access to Safe Water, 1980-1991	10
2.14	Access to Adequate Sanitation, 1980-1991	10
2.15	Diarrhea Prevalence among Children Under Five, Findings of 1992 DHS, by Region	11
2.16	Use of Oral Rehydration Therapy for Children, c. 1993: How Guinea Compares	11
2.17	ORS Access and ORT Use Rates, 1985-1993	11
2.18	Treatment of Diarrhea among Children, Findings of 1992 DHS, by Region	12
2.19	Prevalence of Intestinal Parasites in Three Areas, Fouta Djallon Highlands, 1989	12
2.20	Vaccination Coverage, 1993	13
2.21	DPT3 Vaccination Coverage, c. 1993: How Guinea Compares	13
2.22	Vaccination Coverage, Findings of 1992 DHS, by Region	14
2.23	Measles Vaccination Coverage, 1986-1993	14
2.24	DPT3 Vaccination Coverage, 1986-1993	14
2.25	Polio 3 Vaccination Coverage, 1986-1993	14
2.26	Tuberculosis Cases Rates, 1990: How Guinea Compares	15
2.27	BCG Vaccination Coverage, 1986-1993	15
2.28	TT2+ Vaccination Coverage Rate, 1986-1993	15
2.29	Malnutrition as a Cause of Child Mortality, 1992	16
2.30	Acute and Chronic Malnutrition among Children, as reported by UNICEF, by Region	16
2.31	HIV Seroprevalence in Guinea and Neighboring Countries, 1991/92	17
3.1	Access to Health Care Services: How Guinea Compares	18
3.2	Prenatal Care for Pregnant Women, 1988-90: How Guinea Compares	18
3.3	Births Attended by Health Personnel, 1985-1990: How Guinea Compares	19
3.4	Population per Doctor and per Nurse, 1990: How Guinea Compares	19
3.5	Regional Distribution of Medical Personnel, 1988	19
3.6	Health Care Expenditure as % of GDP, 1990: How Guinea Compares	21
3.7	Health Care Financing in Guinea, by Source of Funds, 1990	21
3.8	Foreign Aid for Health as % of Total Health Spending: How Guinea Compares	21
3.9	Foreign Aid for Health: Per-Capita Aid Flows, 1990: How Guinea Compares	21
3.10	Health Care Financing in the Public Sector, by Source of Funds, 1989 & 1991	22
3.11	Central Govt. Expenditure on Health, as % of total govt expenditure and GDP, 1985-91	22
3.12	Health Care Financing in the Public Sector, by Source of Funds & Type of Expense, 1989	22
3.13	Central Government Expenditure on Health, per capita, 1988-1990	22
3.14	World Bank Support for Health Care in Guinea: Proposed Areas of Funding, 1993-97	23
3.15	MSPP recurrent Expenditures, by Type of Expense, 1989 estimate	23
3.16	Recurrent Health Expenditure in Guinea, by Source of Funds, 1983	24

4.1	Cumulative AIDS Cases Reported to WHO, 1987-1993	25
4.2	HIV Seroprevalence in Guinea, Recent Test Results by Area of Residence and Risk Group	25
4.3	HIV-1 Seroprev. among Urban Population, Guinea & Neighboring Countries, by Risk Group	25
4.4	HIV-2 Seroprev. among Urban Population, Guinea & Neighboring Countries, by Risk Group	25
4.5	HIV Seroprevalence among Blood Donors, Volunteers, Conakry, 1987-91	26
4.6	HIV Seroprevalence among STD Clinic Patients, by Area, 1990-91	26

List of Tables

Frontispiece	Current Health and Demographic Indicators	ii
2.1	Guinea: Reported Annual Incidence of EPI Diseases	13
A1	Population Growth and Mortality Trends, 1950-2000	28
A2	ORS Access and ORS/RHF Use, 1985-1993	28
A3	Access to Safe Water and Adequate Sanitation, 1980-1991	28
A4	Vaccination Coverage, 1986-1993	29
A5	Vaccination Coverage, by Region, DHS 1992	29
A6	Public Expenditure on Health Care in Guinea, 1985-1994	29

Acronyms/Abbreviations

AIDS	acquired immune deficiency syndrome
ARI	acute respiratory infection
BCG	Bacilius of Calmette and Guérin vaccine (to prevent tuberculosis)
DPT3	diphtheria, pertussis, tetanus vaccine (three shots)
CIDA	Canadian International Development Agency
CIHI	Center for International Health Information
DHS	Demographic and Health Survey
EEC	European Economic Community
GDP	gross domestic product
GNP	gross national product
HIV	human immunodeficiency virus
IMR	infant mortality rate
MMR	maternal mortality rate
MOH	Ministry of Health (MSPP)
MSPP	*Ministère de la Santé Publique et de la Population* (Ministry of Public Health and Population)
NGO	non-government organization
NT	neonatal tetanus
ORS	oral rehydration salts
ORT	oral rehydration therapy
PHC	primary health care
RHF	recommended home fluid (for ORT)
STD	sexually-transmitted disease
TB	tuberculosis
TBA	traditional birth attendant
TT	tetanus toxoid vaccine (see data notes for TT2+)
UN	United Nations
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
U5MR	under-five mortality rate
WDR	World Development Report (World Bank)
WHO	World Health Organization

EDITOR'S NOTES

1. References & Sources. *Sources in this profile are referred to by a seven-digit code. Generally, the first three letters refer to a source institution, the following two numbers refer to the year of publication or transmittal, and the final two numbers uniquely identify the individual source. A complete list of sources appears in Appendix C.*

2. Statistical Appendix. *Much of the quantitative data presented in graph form in this profile also appears in tabular form with specific references in Appendix A.*

3. Data Notes. *For definitions of indicators and commentary regarding their derivation, the reader is referred to Appendix B.*

4. Comparative Graphs. *Unless specified otherwise, indicator values for country groupings are median values for groups of available country-level values. Where no date is specified, values used refer to most recent available data. The groups are composed as follows: "Sub-Saharan Africa" includes available data for 47 countries comprising USAID's Africa Region, which does not include Egypt, Libya, Tunisia, Algeria, Morocco and Western Sahara. "Low-income Countries" includes available data for 54 countries classified as such in the World Bank's World Development Report 1993 (WDR 1993). "Developing Countries" indicators are drawn from available data for the 152 nations not classified as "Established Market Economies" in the WDR 1993.*

I. COUNTRY OVERVIEW

Geography

The Republic of Guinea is a tropical West African country of approximately 6.5 million inhabitants. With a total land area of 240,000 km², Guinea is divided into four natural regions: Lower, Middle, Upper and Forest Guinea (see figure 1.1; for a more detailed map, see inside back cover).

GUINEA: REGIONS FOR 1992 DHS

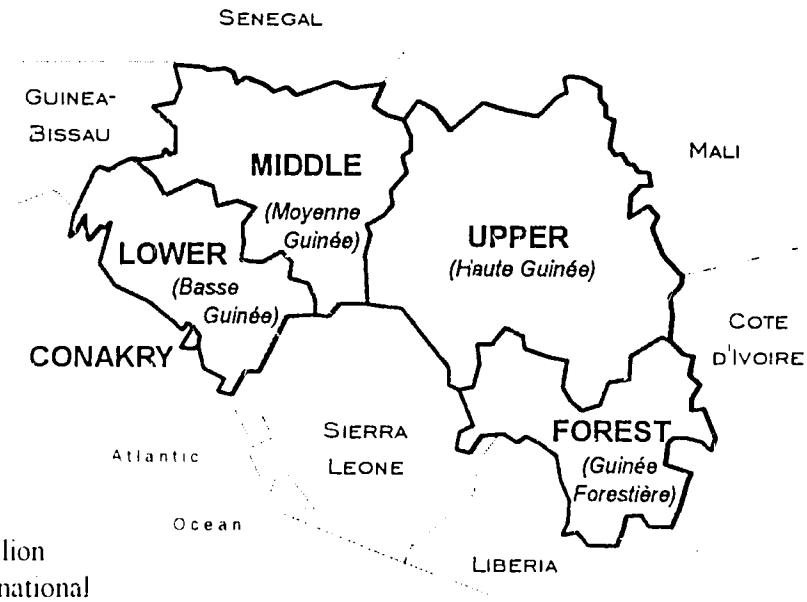


Figure 1.1

Lower Guinea, also known as Maritime Guinea, is located on the Atlantic coast between Guinea-Bissau and Sierra Leone. This region produces abundant export crops (particularly bananas and pinapples) and is home to the country's capital and largest city, Conakry, which with approximately 1.5 million inhabitants contains over twenty percent of the national population (UNP9401). Travelling inland, one enters the *Fouta Djallon* highlands which form the major watershed for West Africa's longest river, the Niger. The first part of these highlands is Middle Guinea, a mountainous region with abundant rainfall but overworked agricultural land and an impoverished economy. Next to the east is Upper Guinea, a predominantly savannah zone characterized by higher temperatures and a long dry season. These two regions form Guinea's northern border with Senegal and Mali. In the southeastern extreme of the country, Forest Guinea is a densely forested area tucked between Sierra Leone, Liberia and Cote d'Ivoire. With a rainy season covering eight months of the year, Forest Guinea is the country's source of agro-industrial plantation crops (coffee, tea, cacao) and forest products (DHS9412).

History

Guinea enjoys a vastly diverse ethnic and linguistic heritage. In addition to French, the government of Guinea recognizes eight national languages. The 1992 Guinea Demographic and Health Survey (DHS), the most useful recent source on health and demographic conditions in Guinea, provides data disaggregated not only along geographical lines indicated in figure 1.1 but also according to membership in various major ethnic groups, including Malinké, Soussou, Peulh, and "Forest ethnicities" (DHS9412). An estimated 90 percent of the national population is Muslim. Religious leaders continue to wield considerable power within Guinean society (AID9502).

The Republic of Guinea achieved independence from France in 1958. Since independence, national political power has been concentrated in the hands of a few civilian or military leaders on top of an expansive but corrupt and inefficient bureaucracy. Since the 1980s, the government of Guinea has responded to pressure from the International Monetary Fund (IMF) to liberalize its highly regulatory economic policies but has made little progress improving bureaucratic efficiency or divesting of parastatal enterprises. In December 1993, Guinea held its first multi-party presidential election with the participation of nearly 80 percent of the population. Although the electoral process was partly flawed due to tampering, the selection of Lansana Conté was eventually accepted by opposition parties. Legislative elections are currently planned in order to form a representative national assembly and preparations are under way to establish a strong and independent judiciary (AID9502).

Social and Economic Conditions

Although Guinea is generally considered to be one of the world's poorest nations, the country's level of gross national product (GNP) per-capita was about $460 in 1991, above the median for sub-Saharan nations (see figure 1.2). The nation's economy has been maintaining an annual growth rate of about four percent since the late 1980s. Agriculture is thought to employ 80 percent of the labor force (DHS9412) but only accounted for 29 percent of gross domestic product (GDP) in 1991 (WBK9303). Mining is the major source of national income: Guinea is the world's second-largest producer of bauxite, which accounted for 60 percent of export value in 1991, and also has significant reserves of diamonds, gold, and iron (WIA9291). Bauxite mining and aluminum production have declined drastically in the 1990s. Traditionally the major source of public finances, mining revenues dropped from over two-thirds of total government revenues in 1989 to just thirty percent in 1994. The direct effects of this predicament have been magnified by the government's need to comply with austerity measures (AID9502).

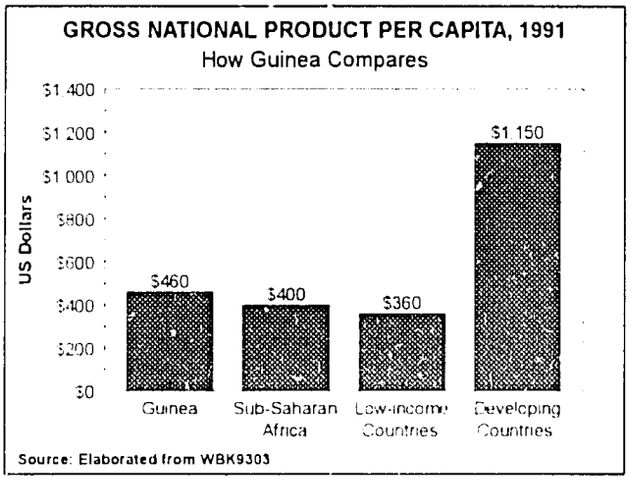


Figure 1.2

On the positive side, the rate of expansion in Guinea's economy has surpassed population growth, inflation has been curtailed and the exchange rate has been stabilized. USAID's mission in Guinea credits this success to macroeconomic reforms enacted in the mid-1980s and suggests that economic growth in the 1990s has been more significant than officially indicated due to substantial but unassessed expansion of the informal sector. On the other hand, the formal sector has continued to lag and the government has made little progress on its plans to privatize public enterprises. Public investment in basic infrastructure has been grossly inadequate due to limited revenues and inefficient use of existing resources, according to USAID/Guinea (AID9502).

In most categories of social development, Guinea's performance is wanting: only about thirty percent of adult Guineans are literate, including just 19 percent of adult women, according to USAID's mission in Guinea. Although basic education is improving, the prospects for the future are not bright. Only forty percent of the nation's school-age population is currently enrolled in primary school. In the UNDP's Human Development Index, a composite score based on various indicators of education, health and economic conditions, Guinea finished dead last for 1992 (UND9402). As the USAID mission points out, this poor rating seems to be contradicted by the fact that 600,000 refugees from "more developed" neighboring countries – Sierra Leone and Liberia – have sought asylum in Guinea (AID9502).

Population Dynamics

Much of what is known about current demographic and health trends in Guinea is based on the findings of a 1983 General Population and Housing Census and the 1992 Demographic and Health Survey (DHS). Both indicate that the national population is dominated by younger Guineans, with the 1983 survey finding 41.5 percent and the 1992 DHS 47 percent of the population to be under age fifteen (DHS9412). According to estimates for 1990 by the U.S. Bureau of the Census, 44 percent of the population was under fifteen and 18 percent was under five years old (see population pyramid, figure 1.3).

Estimates by the United Nations of Guinea's total population, crude birth rate (CBR), and crude death rate (CDR) between 1950 and 2000 are illustrated in figures 1.4-1.5. Annual population growth is estimated at 3.0 percent for 1995, higher than for any previous period but still below the regional average of about 3.1 percent (UNP9400).

Overall population density is about 26 persons per square kilometer, comparable to most of Guinea's coastal neighbors except for Sierra Leone, whose density is more than twice as high (UNP9400). About 28 percent of the population is thought to live in urban areas. According to the projections by the United Nations, by 2000 one in four Guineans will live in or around Conakry, which currently holds three-quarters of the country's urban population. Conakry has been among Africa's fastest-growing cities since 1950, when it had less than 40,000 inhabitants. According to the UN, Conakry's growth has slowed to an annual rate of about 5.2 percent in 1995, still third-highest among large sub-Saharan cities (UNP9401).

The 1992 DHS measured Guinea's total fertility rate (TFR) at 5.7 children per woman of reproductive age (15-49 years old), nearly the same level found in 1983 (5.8). The highest TFR was found in Upper Guinea (6.6) while women in Conakry were found to average just five children (DHS9412). Previous estimates by the UN Population Division held that total fertility had been been stable in Guinea at seven children per woman since the 1950s (UNP9400).

Extremely low levels of contraceptive prevalence in Guinea suggest that the TFR will not be declining significantly in the near future. The 1992 DHS found contraceptive prevalence among married women of reproductive age to be 1.7 percent for all methods and just one percent for modern methods only (DHS9412). These levels are minimal even in comparison to relatively low modern methods prevalence rates reported for 1993 for neighboring Senegal (4.8 percent) and Mali (3.5 percent)(DHS9309,AID9505).

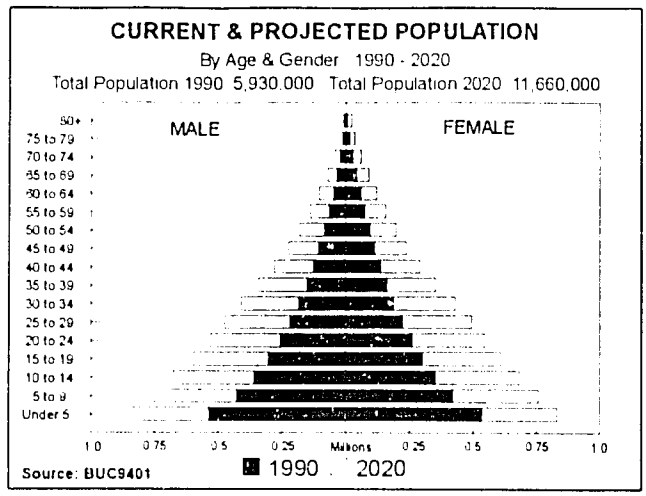


Figure 1.3

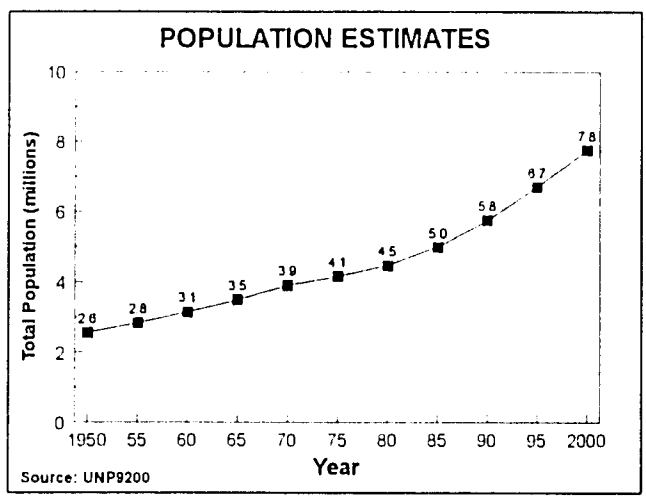


Figure 1.4

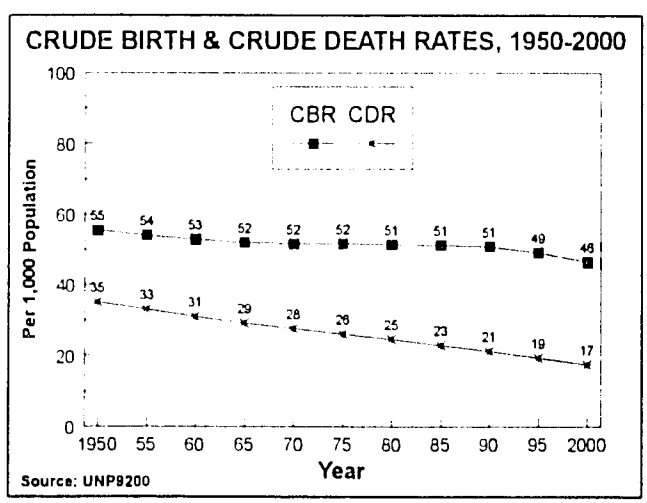


Figure 1.5

II. HEALTH SITUATION ANALYSIS

Basic Health Indicators

Basic measures of life expectancy and age-specific mortality indicate that health conditions in Guinea are among the world's worst. The 1994 Human Development Report listed Guinea's life expectancy at birth at 43.9 years for 1992, well below the median among sub-Saharan African nations (see figure 2.1). Of 173 countries examined, only four were listed with lower life expectancies, two of which were Guinea's coastal neighbors, Guinea-Bissau and Sierra Leone (UND9402).

To a large extent, lower life expectancy in Guinea and other developing nations is a result of high infant and child mortality. The 1992 DHS found that 153 infants died per thousand live births in the ten-year period preceding the survey. The under-five mortality rate (U5MR) found for this period was 252, implying that one in four children dies before the age of five (DHS9412).

Examination of DHS data combined with other available information suggests that the infant mortality rate (IMR) may now be below 140 and the U5MR below 240 deaths per thousand live births. Although both rates are thought to have improved substantially since the 1950s, these current rates for Guinea tower above median values among sub-Saharan nations, low-income nations and developing countries in general (see figures 2.2 and 2.3).

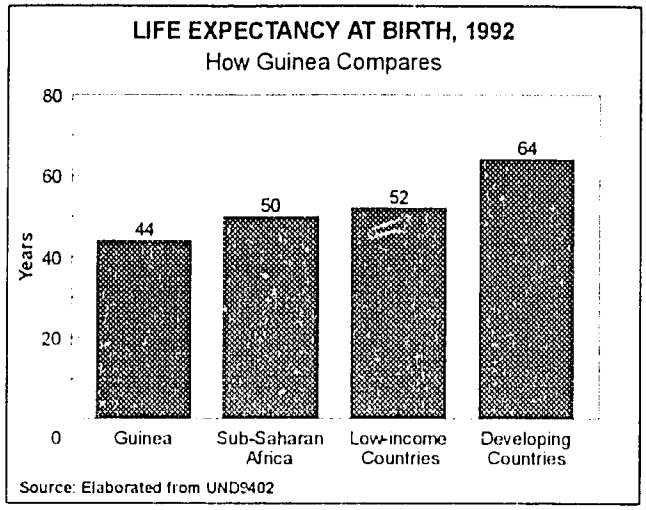
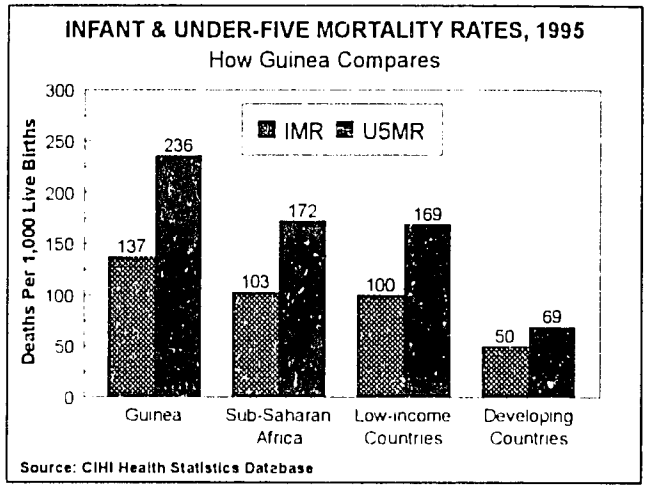


Figure 2.1



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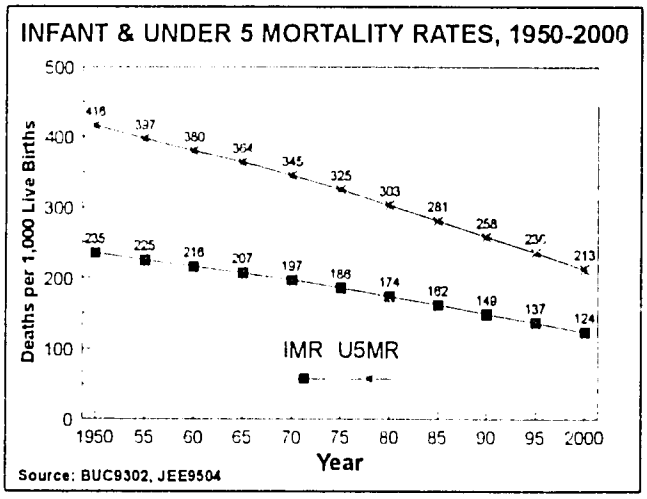


Figure 2.3

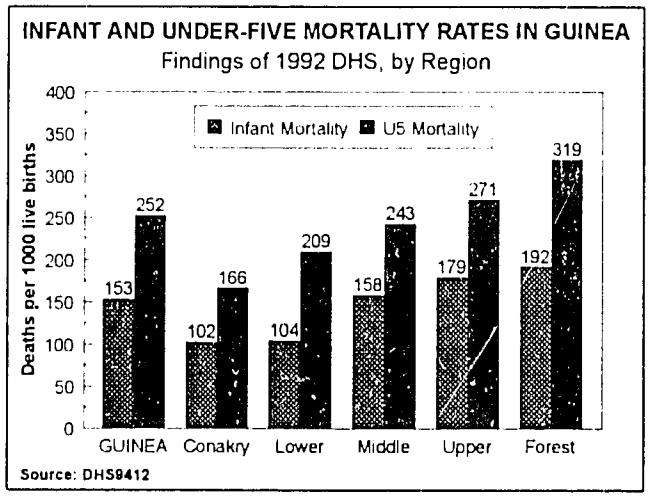


Figure 2.4

The 1992 DHS found infant and under-five mortality rates to be significantly higher in rural over urban areas. The IMR found for rural places was 60 percent higher than for urban residents (respectively 167 and 108 deaths per thousand live births), roughly the equivalent proportion found for the U5MR (respectively 276 and 176). Data disaggregated by region paint a clear picture: as one travels from Conakry and the coast into the interior, health conditions are progressively worse (see figure 2.4).

Causes of Mortality & Morbidity

Mortality among Children

The vast majority of illness and mortality in Guinea results from preventable diseases. Among children under five years of age, the most commonly reported causes of death in 1992 were acute respiratory infections (ARIs), measles, malnutrition, and malaria (see figure 2.5). Also of significance were diarrheal diseases, tetanus and meningitis. Tallies based on recorded deaths are subject to various biases inherent to reporting techniques. Estimates provided by USAID of the top causes of child deaths in Guinea in 1986 placed malaria at the top of the list, followed by diarrheal diseases and malnutrition (see figure 2.7).

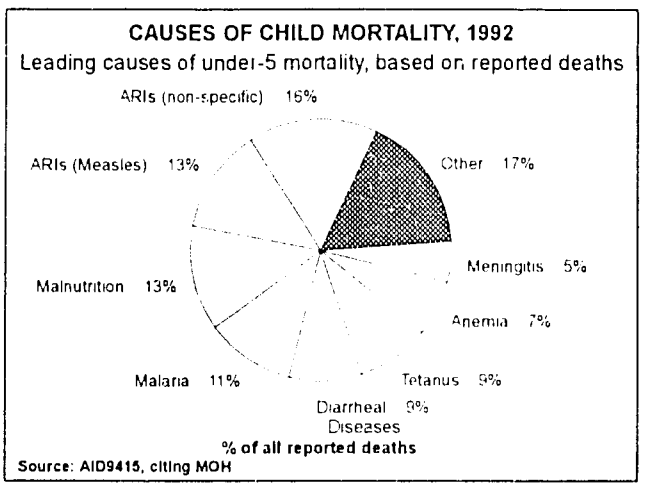
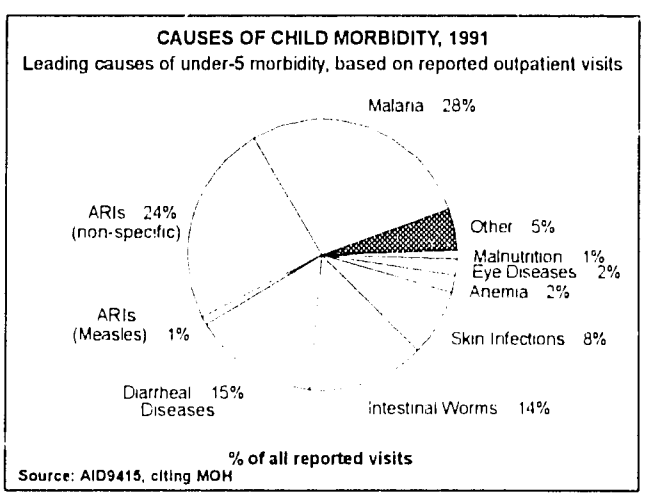


Figure 2.5

Morbidity among Children

Estimates of disease-specific morbidity can be derived from outpatient clinic tallies recording causes of visits, though these statistics are viewed as considerably less reliable than inpatient data. In 1991, malaria accounted for over twenty-five percent of visits, followed closely by ARIs (including measles), diarrheal diseases, intestinal worms and skin infections (see figure 2.6). Estimates for 1986 listed the same top three causes – malaria, ARIs, and diarrheal diseases (gastroentiritis) – and attributed slightly higher percentages to measles and malnutrition (see figure 2.8)



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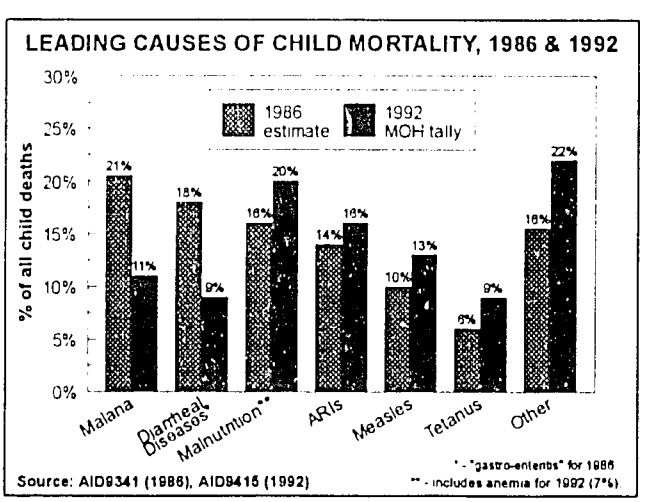


Figure 2.7

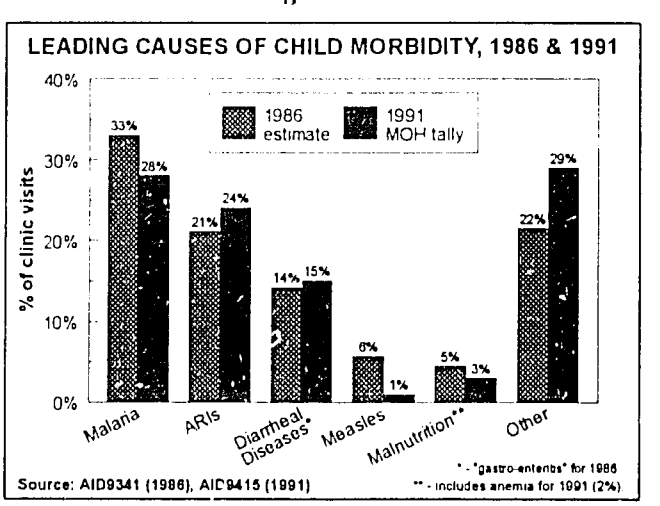


Figure 2.8

Maternal Mortality

Women in Guinea are at considerable risk of death related to childbirth. Estimates of Guinea's maternal mortality rate (MMR) vary widely, reflecting the difficulties typically experienced in accurately defining and measuring this indicator (see data notes). A 1989-90 study in Conakry found a maternal mortality rate of 559 deaths per 100,000 live births. The study cited abortion, complications linked with hypertension, and postpartum bleeding as the main causes of maternal deaths and found that low family income was the only significant socio-demographic variable indicating higher risk (IJG9201,IJG9202).

The 1992 DHS found a nationwide rate of 666 maternal deaths per 100,000 births for the ten-year period preceding the survey. Among seven African countries with a DHS including data on maternal mortality, this rate places Guinea at the top of the list, along with Niger (DHS9412). Citing the World Health Organization (WHO), UNDP's Human Development Report 1994 suggests an MMR of 1,000 for Guinea, implying that for every 100 children born, one mother dies due to complications related to pregnancy or childbirth. This level of maternal mortality is the maximum reported by UNDP and stands high above values reported for most other countries (see figure 2.9).

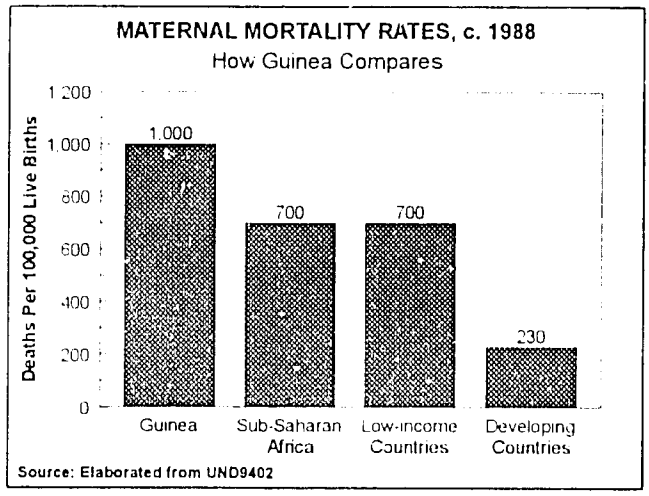


Figure 2.9

Specific Health Problems

Vector-Borne Diseases

Several of Guinea's greatest public health hazards are diseases carried by mosquitos and flies. Malaria is by far the worst, but river blindness (onchocerciasis) and sleeping sickness (trypanosomiasis) also pose formidable threats. Less common conditions include leishmaniasis and lassa fever, both of which originate in wild rodents, and yellow fever, which does not appear frequently but has dangerous epidemic potential. Available data on the nature of these diseases in Guinea appear below. Another vector-borne disease, schistosomiasis, is discussed under diseases related to water and sanitation.

Malaria. Mosquito-borne malaria is generally considered to be Guinea's major health problem, taking an enormous toll in terms of mortality, morbidity, and overall impact on society. Throughout tropical Africa, and especially in highly endemic areas like Guinea, the vast majority of deaths due to malaria occur among young children. When malaria occurs among adults, its social and economic impact can be far-reaching, especially in rural areas, where recurrent infections during warm and rainy seasons may prevent many workers from participating in agricultural labor. Malaria among pregnant women is a major contributing factor to anemia, premature deliveries and low birthweight (OUP9301).

According to reports by the Ministry of Health (MOH), malaria is the major reason for seeking medical care in Guinea, accounting for nearly thirty percent of all reported morbidity (AID9339). Among children under five, malaria has accounted for up to one-third of reported morbidity and about one-fifth of mortality in past years (AID9339), though the statistics presented in figures 2.5 and 2.6 above indicate slightly lower levels. In any case, outpatient tallies and reported deaths fail to capture the full scope of the problem. A 1988 study found, for example, that just eight percent of malaria sufferers consulted formal health services (VBC9001). The 1992 DHS found that just under one-third of children with fever were taken to a medical facility, a considerably higher share but still quite low relative to DHS findings in other countries (DHS9412,DHS9115).

Seeking data to illustrate the prevalence of malaria among Guinean children, the 1992 DHS found two-week prevalence of fever among under-fives to be 35 percent. While this level may seem fairly high, it is slightly lower than most figures reported by DHSs in tropical African countries (DHS9115). Little variation was found between children in urban areas (33.1 percent) and rural areas (35.5 percent), but mothers in Middle Guinea reported fever among nearly half (49.3 percent) of children in the two weeks preceding the survey (see figure 2.5). Among ethnic groups surveyed, fever prevalence was by far highest among the Peulh at 44 percent (DHS9412).

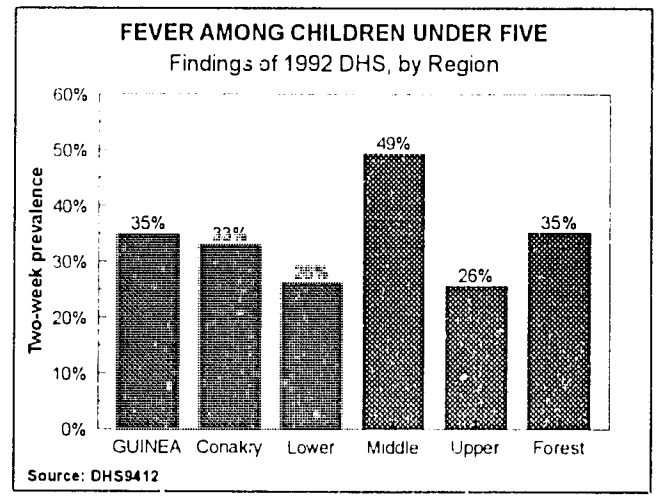


Figure 2.10

We do not know what proportion of the fever episodes reported by mothers were actually attributable to malaria, but we can be certain it is significant, for the WHO estimates that about half of fever episodes experienced by sub-Saharan Africans are due to malaria (WHO9406). Another limitation of the data is that prevalence of malaria in general is highly subject to seasonal and annual variations. A 1992 assessment of the malaria situatuion in Guinea identified various "malariological" zones based on climate and prevalence of the malaria parasite found among children ages two through nine. Mountain/forest zones were found to have the lowest prevalence and were classified as mainly meso-endemic. Areas considered to be a mix of meso- and hyper-endemic include lowland/river and mountain/river zones, where prevalence generally

ranged from 16 to 45 percent but reached up to 63 percent in focal areas, and wet savannah zones, which also contained strong foci of malaria infection. Foci in forest/savannah zones bordering Sierra Leone exhibited prevalences ranging from 76 to 92 percent and were classified as hyper- and holo-endemic (MPP9201).

The 1992 DHS found that only about 18 percent of children with fever were treated with anti-malarial drugs (typically chloriquine), a much lower share than found elsewhere. Despite efforts by the Government of Guinea to promote chemoprophylaxis during pregnancy as part of standard PHC practice, use of anti-malarials among pregnant women also remains low, especially in rural areas, primarily due to lack of access as well as common misconceptions about the effects of anti-malarials on the fetus (SSM9304).

Self-treatment, typically self-administrion of chloriquine, is practiced by a growing number of Africans but may actually lead to loss of immunity and increased susceptiblility to more severe illness. A 1985 study in Guinea found that 19 percent of sufferers practice "self-treatment" (VBC9001). Although this figure has probably risen with increased knowledge and availability of chloriquine, concurrent increases in chloriquine-resistant strains of malaria could render even proper self-treatment worthless. Chloriquine-resistant strains of *p. falciparum* were first reported in Guinea in 1987 (VBC8801). However, as of 1992 the majority of strains were still sensitive to chloriquine and its analogs, according to a study by a Russian research team (MPP9202). A 1993 health information assessment for USAID reported that national-level studies of chloriquine resistance had been negative to date even though resistance had been indicated on an individual basis (AID9339).

Onchocerciasis (River Blindness). Onchocerciasis is a chronic but non-fatal eye disease transmitted to humans by blackflies. The upper Niger River basin, including ten major tributaries in Guinea, is one of several large areas in West Africa at high risk. Although an estimated one to two million people are exposed to onchocerciasis in Guinea, the population group at greatest risk is inhabitants of villages along or near rivers with blackfly breeding sites in Upper Guinea. Levels of infection are thought to be around 60 percent in Upper Guinea, between 40 and 60 percent in Middle and Forest Guinea, and 40 percent in the river basins of lower Guinea (AID9339). An estimated 20,000 Guineans are blind due to the disease (AID9415).

In 1989, the WHO's Onchocerciasis Control Programme commenced the "attack phase" of its long-term control strategy in Guinea, combining vector control activities with the distribution of ivermectin, a microfilaricide drug which kills the *Onchocerca volvulus* parasite, the small, fly-borne worm which causes blindness in humans. Covering almost 80,000 km^2, the zone treated with ivermectin over the years spans six river basins in Upper and Forest Guinea, starting in the Milo river basin in 1988, then expanding to the Niandan, Mafou, and Niger basins in 1989, and the Sanakaranni and Tinkisso basins in 1990. The two-pronged strategy has reportedly decreased blackfly infectivity by nearly 80 percent in less than five years, presenting the possiblility of decreasing larvicide (vector control) operations in favor of ivermectin distribution (TMP9301,WHO9510).

Sleeping Sickness (African Trypanosomiasis). Sleeping sickness is a disease borne by tsetse flies which prohibits the use of large areas of central and eastern Africa for settlement or livestock grazing. One variety of the disease known as *T.b. gambiense* occurs in parts of West Africa as well. Reporting on cases in Guinea has been sporadic: Guinea notified WHO of nearly 200 cases annually in the early 1980s, among the highest in West Africa, but ceased to report case totals after 1984 (VBC9101). In 1994, a survey was being planned with the support of WHO and the French government to assess the situation (AID9415). Although sleeping sickness was recently limited to just a few foci in Guinea, it is now thought to have spread considerably since the interruption of control services. Recent efforts use mobile teams to track and combat the disease (AID9339).

Lassa Fever. Lassa Fever is an acute viral illness transmitted to humans from rodent excreta. A recent study in Guinea found prevalence of Lassa virus antibodies to be highest (25-55 percent) among inhabitants of tropical secondary forest areas (near Gueckedou, Yomou and Lola) and guinea-savannah areas near the southern frontiers

with Sierra Leone and Liberia (Faranah and Kindia). Much lower prevalence levels (4-7 percent) were found in mountainous (Pita, Labe, and Mali) and coastal (Boffa and Boke) areas. No discernible differences in prevalence were found according to sex or age group (JMV9301).

Leishmaniasis. Leishmaniasis is a potentially fatal feverous condition resulting from infection with *leishmania* protozoa transmitted through sandfly bites. In savannah zones of sub-Saharan Africa, reservoirs of the disease include wild rodents, dogs, and man. According to a study by Russian researchers published in 1992, seropositivity levels for leishmaniasis vary in different parts of Guinea from about one to five percent of the population. Positive sera were most commonly found in far northern and northeastern savannah areas but rodents capable of spreading the disease appear to circulate throughout the country (MPP9203).

Yellow Fever. Yellow Fever occurs only sporadically in Guinea but tends to arrive in epidemics, the last of which occurred in 1990 (AID9415). Previously, it had not been reported in Guinea since a minor outbreak resulted in six deaths in 1966 (WHO8601).

Acute Respiratory Infections (ARIs)

ARIs, including measles, are the leading cause of child mortality and the second most frequent reason for outpatient clinic visits, according to the MOH tallies presented in figures 2.5 and 2.6 above. Incidence of respiratory infections is generally inversely related to age, peaking at four to nine infections in each of the first two years of life, dropping to three to four by school age, and remaining at two to three per year for adults. Measles primarily affects children and is easily preventable through immunization (more on measles appears under vaccine-preventable diseases). Pneumonia, a serious and potentially fatal lower respiratory infection, most frequently afflicts the very young and the very old (OUP9301).

To obtain information on the prevalence of respiratory infections among children in Guinea, the 1992 DHS asked mothers whether each of their children had had a cough with short and rapid breathing in the two weeks preceding the survey. Overall prevalence was found to be 14 percent, slightly above the mean for sub-Saharan DHS reports with a comparable question but the highest level found among West African countries. Like almost all of the other surveys, the Guinea DHS found prevalence to be slightly higher in rural areas (14.7 percent) over urban (12.4 percent) and highest among children under two years of age. In Middle Guinea, 22 percent of children had had a cough with difficulty breathing, roughly twice as high as the rate found elsewhere (see figure 2.11).

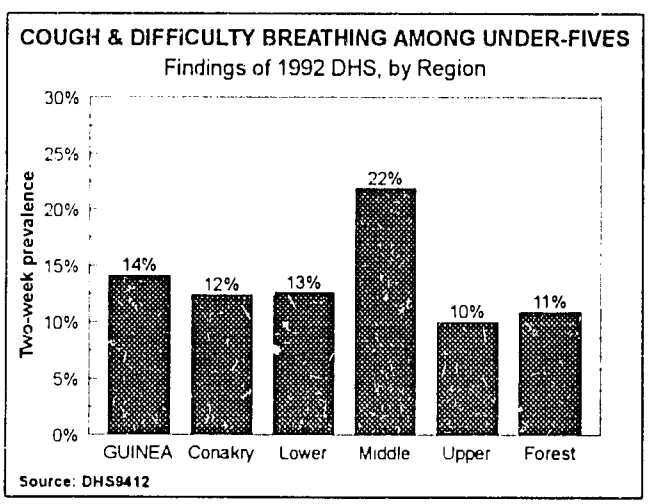


Figure 2.11

Airborne Diseases

Meningitis. Most of the common airborne diseases in Guinea – tuberculosis, measles, pertussis, and diphtheria – are preventable through immunization and are discussed here under vaccine-preventable diseases. Meningococcal meningitis, however, is a notable exception which is far more difficult to prevent. Guinea lies within a large, primary Sahelian belt of Africa where epidemic outbreaks of meningococcal meningitis are frequent. According to USAID's 1994 Health and Population Sector Assessment, meningitis is a problem almost every year in Guinea from January until the rainy season begins. Between January and the end of March 1994, an outbreak of over 500 cases was reported in the prefecture of Siguiri in Upper Guinea; the incidence rate for March in Siguiri was 25 cases per 10,000 population (AID9415).

Diseases Related to Water and Sanitation

A great deal of death and suffering in Guinea could be prevented through improvements in water supply and sanitation. The most common illnesses related to poor water and sanitatio.. – diarrheal diseases – are responsible for a high propc rtion of deaths among children in particular. A host of other conditions, such as worm infections, skin diseases, and some eye diseases, greatly affect the health of children and adults as well. Together, these illnesses accounted for nearly 40 percent of reported causes of outpatient visits in 1990 (see figure 2.6 above).

Reported levels of access to safe water and adequate sanitation in Guinea vary greatly. Just over one-quarter of the population is said to have access to adequate sanitation measures, a level which is far below the median reported for sub-Saharan nations but closer to the typical level among low-income nations (see figure 2.12). As indicated in figure 2.14, just five percent of rural households are thought to have adequate sanitation measures. On the other hand, nearly three-quarters of Guineans reportedly benefitted from safe sources of drinking water in 1991, a sharp rise over previously reported levels (see figure 2.13). The high level of access to water appears to have little basis in fact but perhaps serves better to illustrate the subjectivity of reporting on access levels (see data notes).

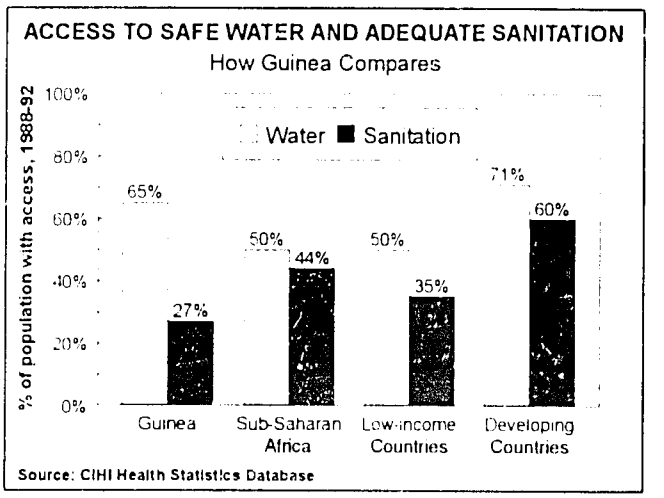


Figure 2.12

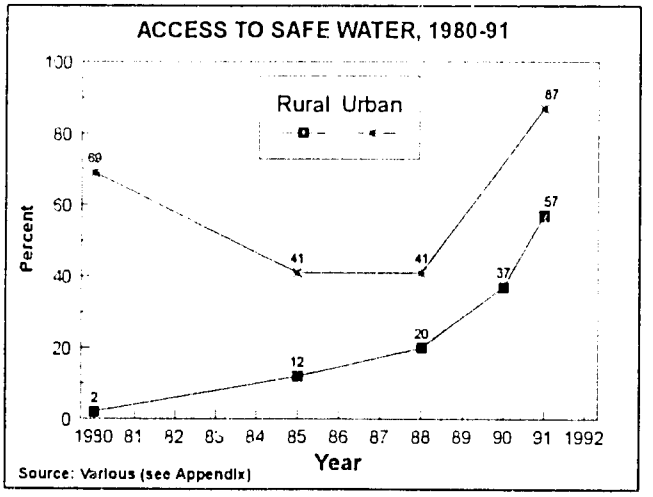


Figure 2.13

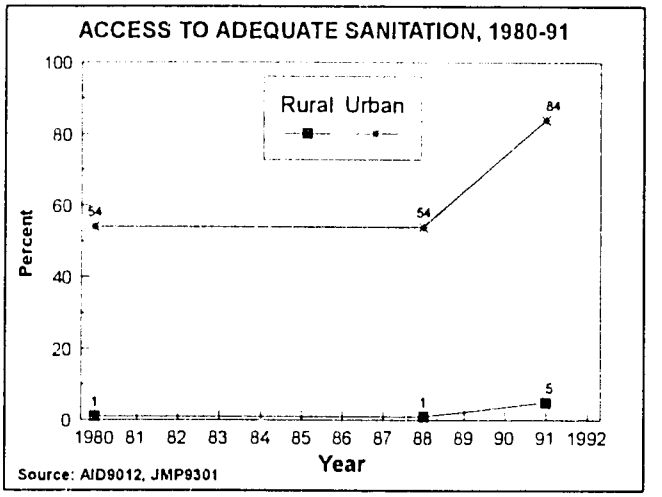


Figure 2.14

The 1992 DHS found that 49 percent of rural households surveyed collect surface water, 39 percent rely on wells for their drinking water, and just over ten percent had access to piped water, almost all from public spigots. Among urban households, nine percent reported collecting surface water, 27 percent used wells, and 61 percent had access to running water, including 37 percent of the total with indoor plumbing (DHS9412). These figures are illustrative of the problems of water supply but fail to provide data indicating true levels of access as defined by WHO because no data is provided regarding time spent gathering water or the quality of the water. A 1992 country study by WHO commented that Guinea has one of the least developed urban water supply networks in West Africa, noting that only nine of Guinea's 35 urban centers even have pipe systems. In rural Guinea, water quality is a problem throughout the country; in the northern savannah zones of Middle and Upper Guinea, acute shortages of water can also adversely affect health status (WHO9201).

Diarrheal Diseases. Diarrheal diseases accounted for nine percent of child deaths and 15 percent of child morbidity reported by the MOH for 1990. Such figures tend to underestimate the true level of suffering attributable to diarrheal diseases as cases are seldom treated in a medical facility in Africa and commonly go unreported. According to mother responses' to the 1992 DHS, however, this generalization may not apply to Guinea, where roughly the same proportion of children with diarrhea (31 percent) reportedly visited formal health facilities as did children with fever (35 percent) or a cough and difficulty breathing (32 percent)(DHS9412).

Diarrheal diseases are most common among children at the time of weaning and as children start to become more mobile. According to WHO, a 1991 survey found that Guinean children suffer an average of 4.6 episodes of diarrhea each year, just above the median of 4.5 episodes among sub-Saharan nations for which WHO has reported survey results (WHD9201). The 1992 DHS found two-week prevalence for diarrhea among under-fives at 15.9 percent. This is fairly low compared with previous DHS results for sub-Saharan nations, but figures can vary greatly according to time of year and prevalence rates are thus not strictly comparable across surveys. Nearly one-quarter of the children with diarrhea (3.6 percent of the total) had experienced bloody stools, indicating dysentery, in the two-week period and over half (8.6 percent) had had diarrhea in the previous 24 hours. Within Guinea, the highest two-week prevalence of diarrhea was reported in remote Forest Guinea and in the capital, Conakry, where peri-urban residents probably suffer worse sanitary conditions than found in most rural areas. Dysentery was found to be most prevalent in Middle and Forest Guinea (see figure 2.15).

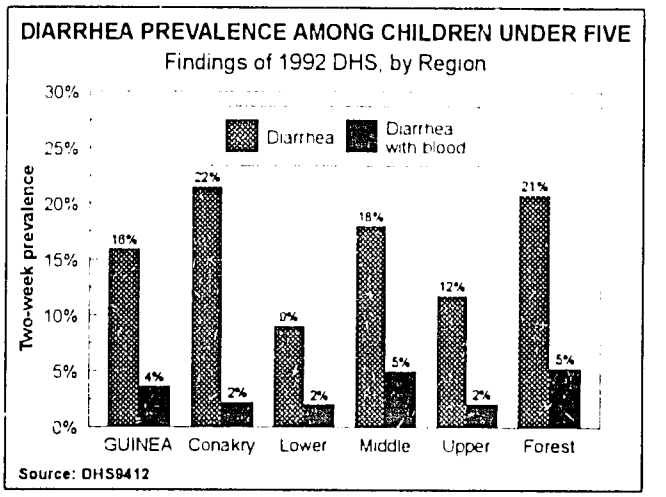


Figure 2.15

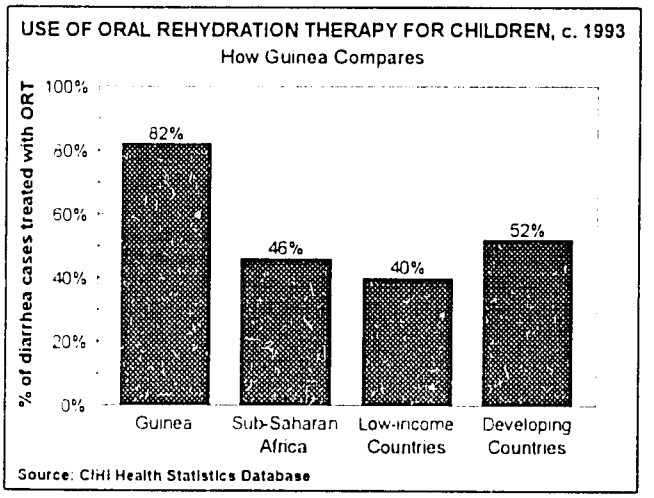


Figure 2.16

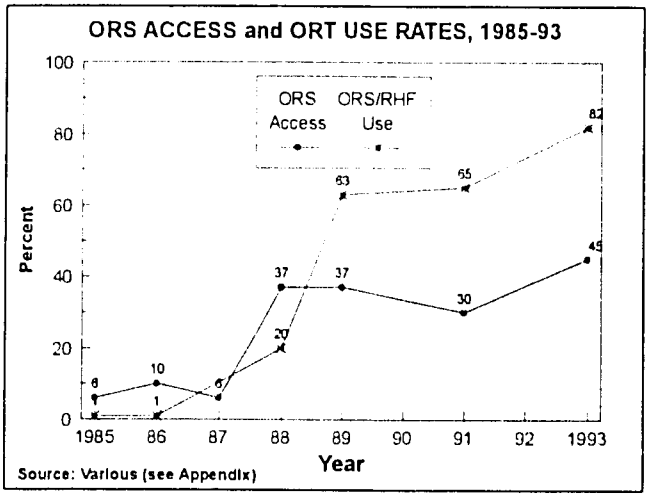


Figure 2.17

According to WHO, the use of oral rehydration therapy (ORT) to treat diarrhea among children has risen astronomically since 1985 to a level of 82 percent of diarrhea episodes in 1993, more than twice the median among low-income nations and well above use levels reported for most sub-Saharan countries (see figures 2.16 and 2.17). This high level ORT use represents a significant rise over previously reported figures and is somewhat difficult to reconcile with WHO's estimate that just 45 percent of the population had access to oral rehydration salts (ORS) in 1993. Although the 1992 DHS found a much lower level of ORT use at about 42 percent of diarrheal cases, its findings support the notion that high use does not necessarily rely on use of ORS packets *per*

se. As illustrated in figure 2.18, ORS packets were most frequently used to treat children's diarrhea in Conakry and in Forest Guinea, but among the regions with the lowest use of ORS, reported use of increased fluids to treat diarrhea was still quite high, particularly in Lower and Upper Guinea.

Cholera. Africa's first cholera epidemic of this century is believed to have started in Guinea in 1970 (LAN9101). Cholera has since tended to appear in eight-year cycles. The areas at highest risk are refugee camps in Forest Guinea and densley crowded urban and periurban zones of Conakry (AID9415). A vast epidemic in mid-1994 led to over 20,000 cases reported in the Conakry area alone between June 24 and Aug. 20, 1994. While Conakry appears to have been the geographic focus of the epidemic, other coastal areas near the border with Sierra Leone were also greatly affected. A low case fatality rate (1.3 percent) is said to reflect the government's rapid and effective response to the epidemic (CAB9414).

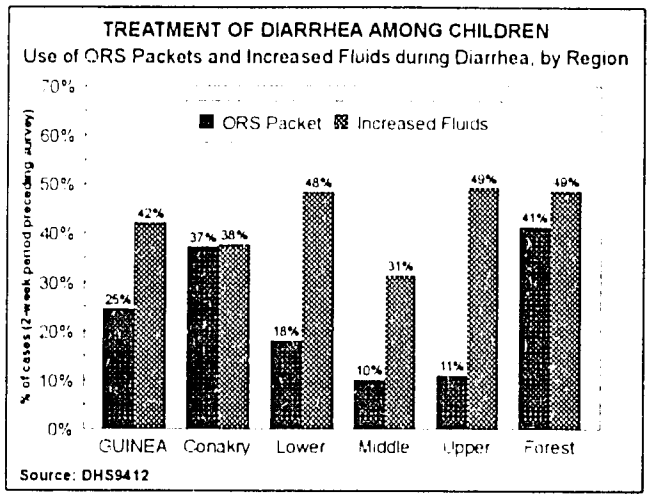


Figure 2.18

Salmonellosis. Like cholera, salmonellosis is a diarrheal disease which has occasionally appeared in epidemic proportions in Guinea. The most recent outbreak was reported in 1993 (AID9415).

Helminth Infections. Helminth infections include a wide variety of diseases caused by worms which contribute to malnutrition, anemia, and other health disorders. While many are treatable on a case-by-cases basis, the most effective strategy against helminths is prevention through improved water supply, sanitation and hygiene practices. Typical examples of helminth infections are ascaris, hookworms, and trichuris. As previously indicated in figure 2.6, intestinal worms accounted for 14 percent of outpatient visits in 1990, but this represents only a fraction of the actual incidence, for children and adults alike commonly live with such infections without seeking treatment.

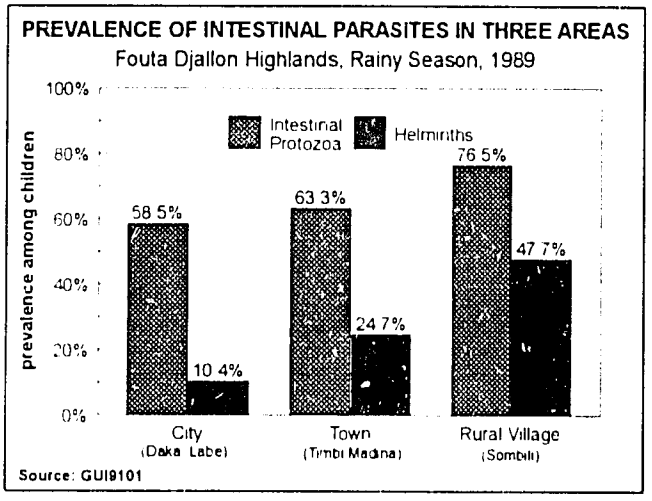


Figure 2.19

Very little hard data exists on prevalence or incidence of most types of helminth infections. However, a 1989 study during the rainy season in the Fouta Djallon highlands found residents of a rural village to suffer higher susceptibility to oral-fecal contamination than residents of a city district and a town. Prevalence of intestinal parasites found in each area are presented in figure 2.19. Most of the protozoa parasites discovered were non-pathogenic. Hookworms were the most prevalent helminths. Multiple infections were found in about one-third of the cases (GUI9101).

Guinea Worm (dracunculiasis). Once common throughout the Sahelian zone of Africa, Guinea Worm was reportedly endemic to the extreme northeast corner of Guinea in the late 1980s, but may have since been eradicated through the combined efforts of WHO, UNICEF, and the Government of Guinea. In 1988, active surveillance and a search for cases in areas suspected to be endemic produced no evidence of Guinea Worm; in

1989, a total of three cases were reported, all three of which were said to have been imported into the country. Guinea has not reported any cases of the disease since reporting eight cases in 1990 (AID9339).

Schistosomiasis (Bilharziasis). Schistosomiasis is caused by parasitic worms carried by snails. Data on the disease is limited, but along with 60 percent of sub-Saharan nations, Guinea is considered a "high prevalence" country (AID9416). Among regions the problem is worst in Forest Guinea (AID9415). The immediate effects of schistosomiasis infection include failure to thrive, anemia, and impaired cognition. These can now be rapidly reversed by low-cost, single-dose oral therapy.

Vaccine-Preventable Diseases

Vaccine-preventable diseases accounted for at least twenty-two percent of total child deaths reported in 1990. Although they hardly appear under the morbidity listing, their share as a contributor to illness among children and adults is very significant. As is the case throughout sub-Saharan Africa, reported cases represent only a fraction of the actual incidence of a given disease. Case totals of these diseases reported to the WHO's Global Programme for Vaccines between 1989 and 1994, presented in table 2.1, are more an indication of how little we know about actual incidence, for complete annual reporting occurred for only three of the six diseases. Rises and falls in these incidence figures may better reflect fluctuations in reporting than actual changes in disease incidence.

GUINEA: REPORTED ANNUAL INCIDENCE OF VACCINE-PREVENTABLE DISEASES

Disease	1989	1990	1991	1992	1993	1994
Measles	4,152	12,756	6,708	1,617	5,228	237
Tuberculosis	1,869	1,388	2,274	-	3,130	-
Tetanus (total)	428	524	-	-	-	-
Neonatal Tetanus	119	53	452	81	30	12
Pertussis	314	412	-	-	-	-
Poliomyelitis	85	155	190	59	15	23
Diphtheria	25	37	-	-	-	-

Source: WHO9502, Reported Cases as of April 6, 1995

Table 2.1

Presumably, incidence of the common childhood diseases preventable through immunization has decreased significantly as coverage rates have improved dramatically in the last ten years (see figures 2.23 - 2.28 on following pages). In 1986, coverage by each of the five major vaccines was still under ten percent; by 1993, coverage rates were reported by WHO to have risen above fifty percent for all five (see figure 2.20). Increases in coverage for BCG vaccine, which protects against tuberculosis, have been the most dramatic, reportedly reaching 76 percent in 1993. As figure 2.21 illustrates for the case of immunization against diphtheria, pertussis, and tetanus (DPT3), Guinea has reached the median level among sub-Saharan African countries but its performance still pales compared to median coverage levels among low-income countries and developing countries in general.

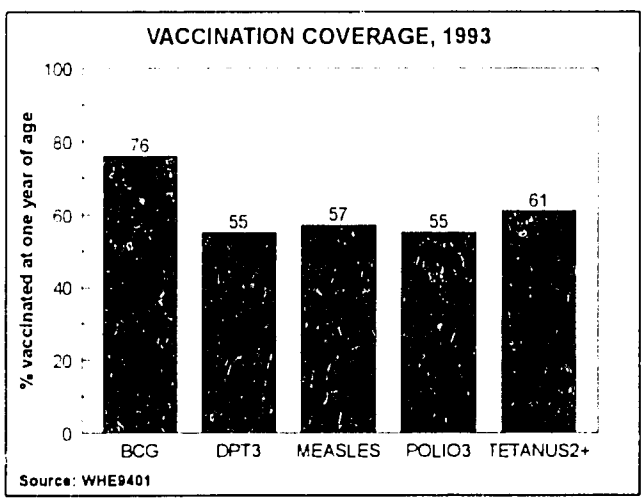


Figure 2.20

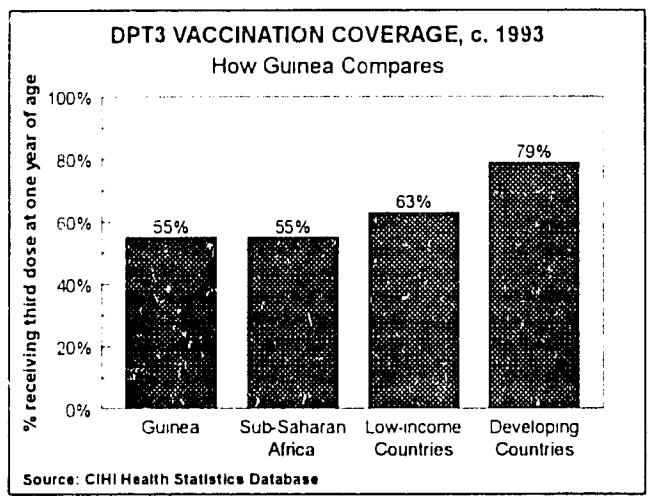


Figure 2.21

The 1992 DHS found somewhat lower coverage rates indicated by mothers' responses. Figure 2.22 illustrates these findings disaggregated by region. Except for Forest Guinea, where rates are somewhat higher than in other interior regions, immunization coverage generally declines with increased distance from the capital. Complete data appears in Appendix A.

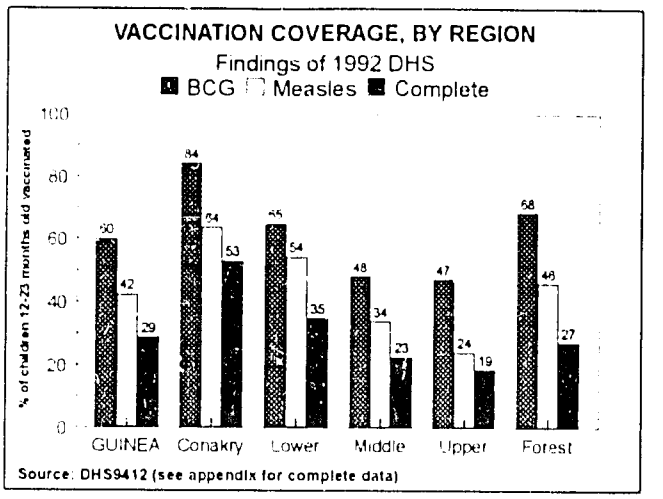


Figure 2.22

Measles. In 1990, reported cases of measles hit a high of over 12,000 for the year, accounting for over one-fifth of reported child deaths. The disease may have been responsible for an even greater proportion of deaths and outpatient visits than indicated, for post-measles pneumonia is generally the main cause of measles-associated mortality in developing countries. In 1991, immunization levels finally began to take off and the number of annual reported cases was halved (see figure 2.23, table 2.1). Reported incidence of measles was five times higher in Forest Guinea than in each of the country's other three regions in 1991 at over 250 cases per 100,000 population (AID9339). The WHO estimates that roughly six percent of measles cases in Guinea are fatal (WHO9103). While the impact of non-fatal measles infection is not very well understood, long-term disabilities known to follow measles infection include blindness and malnutrition (OUP9301).

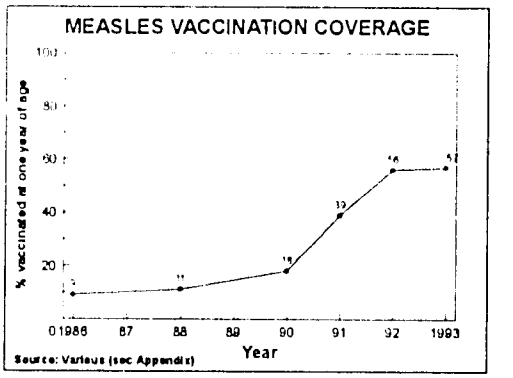


Figure 2.23

Diphtheria. The epidemiology of diphtheria in the developing world is poorly understood. Although the causative organism is widely present in Africa, there are few reported cases of this disease. Generally, over 96 percent of unvaccinated adults are immune to infection; it has been suggested that immunity may result from subclinical or misdiagnosed infections (OUP9301). Although coverage rates for the diphtheria, pertussis, and tetanus (DPT) vaccine were minimal in Guinea before 1991, less than forty cases of diphtheria were reported to WHO in 1989 and -90 (see table 2.1).

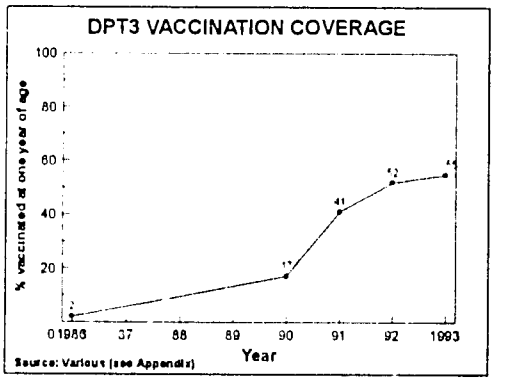


Figure 2.24

Pertussis. The majority of cases of the pertussis syndrome, better known as whooping cough, are infections preventable through the DPT vaccine. Although pertussis occurs endemically, it tends to produce epidemics every three to four years, with up to 90 percent of those at risk developing the disease. Incidence is generally higher among girls than boys. The case-fatality rate for pertussis is typically about one percent, with the highest mortality observed among children under two (OUP9301).

Polio. Guinea has made some progress toward the elimination of polio. After reporting nearly 200 cases of poliomyelitis in 1991, vaccination coverage increased (see figure 2.25) and the number of cases dwindled to a few dozen per year (see table 2.1). However, with at least 45 percent of children still lacking protection, Guinea is a country where the complete eradication of polio may not be achieved for some time.

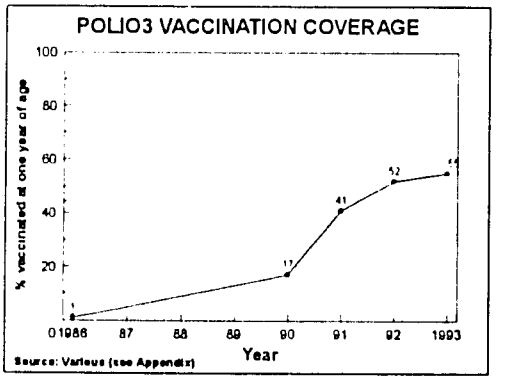


Figure 2.25

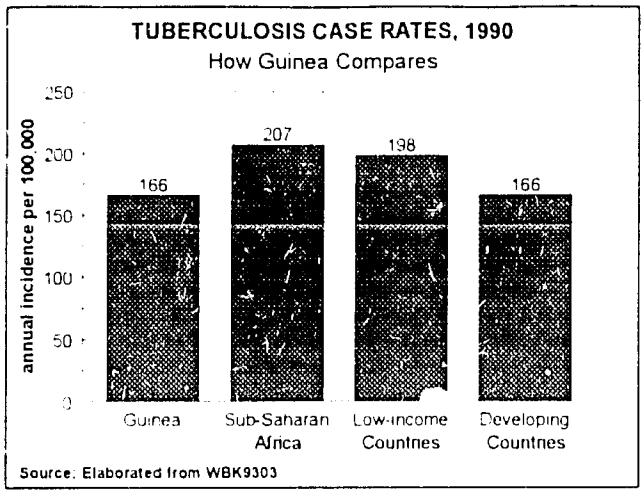


Figure 2.26

Tuberculosis (TB). As illustrated in figure 2.26, the annual incidence rate for TB reported for Guinea is right on par with developing nations in general and much lower than rates reported for other African nations. This outcome is in large part due to Guinea's limited exposure to the HIV/AIDS pandemic. However, the close relationship between HIV infection and clinical TB which is widely observed in more heavily impacted areas is also evidenced in Guinea: in 1993, blood testing of nearly two thousand TB patients found an overall HIV seroprevalence of 5.5 percent, well above levels found for other high-risk groups (BUC9408).

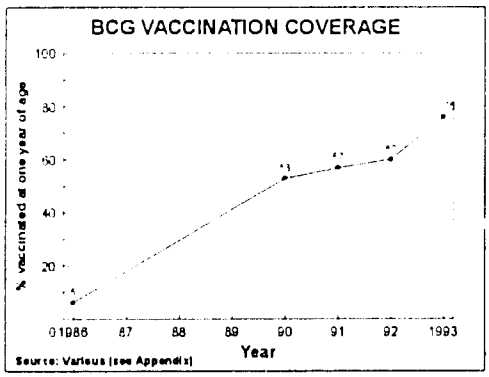


Figure 2.27

Coverage rates among children for the BCG vaccine to prevent tuberculosis reportedly reached 76 percent in 1993, higher than for any other vaccine (see figure 2.27). In the developing world, TB is generally concentrated in the adult age groups (OUP9301). Health information systems in Guinea are too incomplete to provide more meaningful information on the incidence or mortality of TB. The total annual cases reported to WHO in table 2.1 are a gross underrepresentation of the scope of the problem. Guinea's MOH estimates that there are roughly 6,000 sputum-positive cases and 12,000 other TB cases each year but that only about 20 percent of these are diagnosed and treated appropriately (AID9339).

Leprosy. BCG has also been shown to be partially effective in preventing leprosy as well. Leprosy is still a serious public health problem in Guinea but the situtation is improving. In 1991, the WHO reported a total of over 15,000 cases in Guinea for a prevalence rate of 23 per 10,000 inhabitants. Multi-drug therapy (MDT), introduced in 1986, covered about only about 14 percent of these cases. In 1995, WHO reported that MDT coverage had reached 100 percent, a total of 22,510 Guineans had completed MDT and were cured of leprosy, and the country's number of registered cases had dropped to 4,811. Although the new prevalence rate of 7.6 cases per 10,000 inhabitants is still one of Africa's highest, the reported progress is very encouraging. Existing leprosy control activities are designed to be integrated into general PHC programs (WHO9105).

Tetanus. Tetanus is a completely preventable disease caused by contamination of wounds with an anaerobic bacillus. It ranked fifth among the major causes of child mortality in Guinea in 1990, according to the MOH, accounting for nine percent of total reported child deaths (see figure 2.5 above). The case totals reported to WHO (table 2.1) vastly understate the actual incidence of tetanus and neonatal tetanus (NT). NT may be the most underreported lethal infection in the world, for its young victims are rarely registered or seen within the formal health care system. After measles, NT kills more children around the world than any other vaccine-preventable disease, but routine disease surveillance systems in most developing countries detect less than five percent of total cases, according to WHO. Tetanus is also a significant cause of preventable maternal mortality (OUP9301). In Guinea, vaccination of pregnant women to prevent NT only began to reach significant levels in the late 1980s, surpassing fifty percent in 1992 (see figure 2.28).

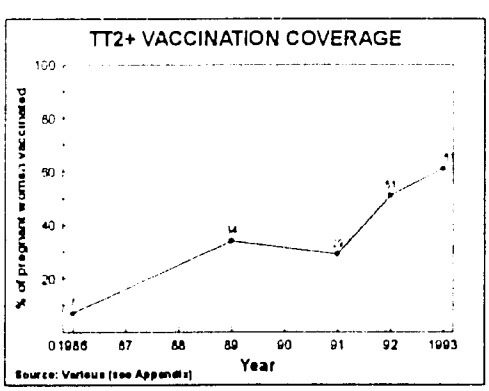


Figure 2.28

Nutritional Deficiencies

The interplay between malnutrition and disease is complex. Because malnutrition – including inadequate intake of protein and energy as well as micronutrient deficiencies – can be a major proximate cause of death and suffering, its contribution is typically underestimated by simple tallies of causes of death or morbidity. The total of 20 percent of reported child deaths specifically attributed to nutritional deficiencies in 1992 may thus be viewed as a bare minimum of their proportional role as a cause of mortality. By the same token, many infectious diseases contribute significantly to malnutrition, creating a vicious and, for children, frequently fatal cycle.

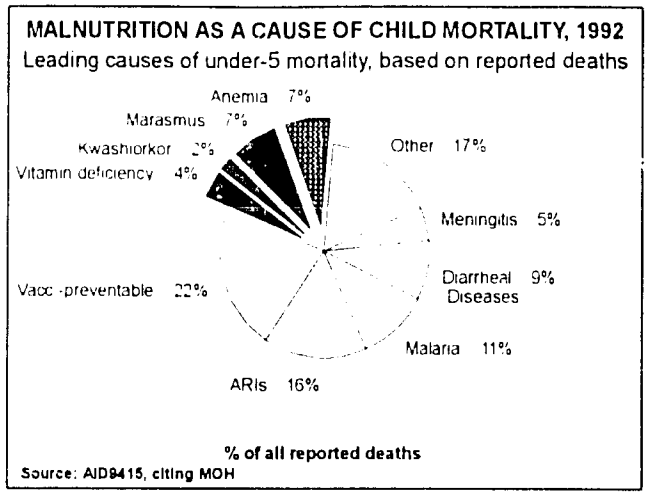


Figure 2.29

The summary of the 1992 child mortality tallies illustrated in figure 2.5 actually referred to four distinct categories of malnutrition resulting in twenty percent of child deaths in Guinea. Eleven percent of total child deaths were attributed to micronutrient deficiencies, including anemia (seven percent) and vitamin deficiencies (four percent), while marasmus, a form of protein-energy malnutrition (PEM), and Kwashiorkor, an African term for acute PEM, accounted for an additional nine percent of reported child deaths (see figure 2.29).

Protein-Energy Malnutrition (PEM). PEM results from two mutually-reinforcing causes: infectious diseases and insufficient intake of energy and protein. In Guinea, PEM is reported to be widespread among children and women of reproductive age. Daily caloric intake was estimated to total only 77 percent of requirements in the mid-1980s, when Guinea was a recipient of massive amounts of food aid (WHO9201), but the Human Development Report 1994 reports intake at 100 percent of requirements for 1988-90 (UND9402). According to a report by WHO, the regions most affected by malnutrition are Upper and Middle Guinea, which commonly experience droughts and pre-harvest food shortages (WHO9201). Figures provided by UNICEF, however, indicate that prevalence of chronic malnutrition (usually low height for age, or wasting) has been highest among children in Upper and Forest Guinea and nutritional status generally improves with closer proximity to Conakry (see figure 2.30).

Children are generally at highest risk during and immediately following the weaning period (6-24 months of age), the period during which prevalence of low weight-for-height, or wasting, is highest. The 1992 DHS found that only eight percent of infants less than four months old were being exclusively breastfed and that just thirty percent of six-to-nine-month-olds were still breastfeeding but also receiving complementary weaning foods (DHS9412).

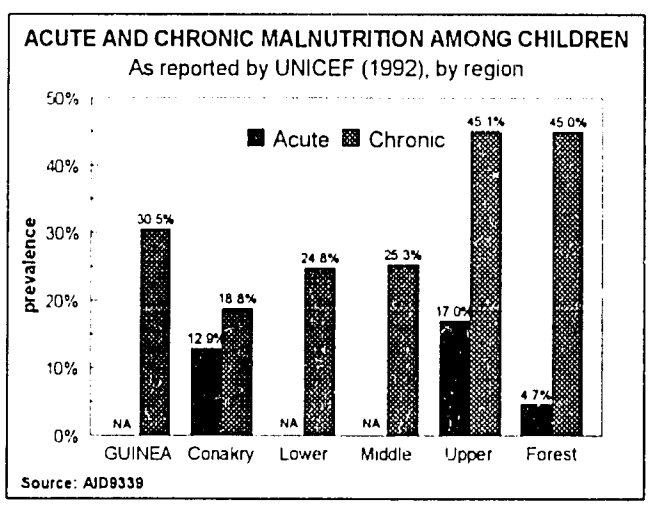


Figure 2.30

Iron Deficiency (anemia). Iron deficiency, when severe, can result in anemia, a shortage of iron in the blood which reduces physical productivity and children's learning capacity and, by reducing appetite, may diminish children's intake and growth. Anemia accounted for two percent of reported morbidity among children in 1991 and seven percent of child deaths in 1992 (AID9415). Women are particularly susceptible to anemia because menstruation and childbearing raise their need for iron; anemia among pregnant women increases the risk of death from hemorrhage in childbirth. Malaria is a major contributor to anemia.

Iodine Deficiency (goiter). In Africa, prevalence of iodine deficiency is generally higher in mountainous and flood-prone areas where iodine-deficient soils prevail. Women and children seem to be the most vulnerable to the serious and irreversible consequences of iodine deficiency (OUP9301). Guinea is one of the most severely affected countries in Africa. The most serious manifestation of iodine deficiency is "cretinism," a permanent mental and physical disability caused by profound lack of thyroid hormone before birth. According to a 1991 survey, two percent of the national population suffers cretinism. In Middle Guinea, the geographic region which would appear at greatest risk, visible goiter was evident in twenty percent of women; overall goiter prevalence was found to be 70 percent of women, including 79 percent in rural areas and 63 percent in urban. A 1992 report by UNICEF listed prevalence of goiter at ten percent for three of Guinea's four regions (AID9339).

Sexually-Transmitted Diseases

HIV/AIDS. Both major strains of the human immunodeficiency virus – HIV-1 and HIV-2 – are present in Guinea, but the HIV/AIDS pandemic has not impacted the country nearly as hard as elsewhere in Africa. HIV seroprevalence levels among low-risk groups have not yet topped one percent in urban areas, much lower than levels found in some neighboring countries, particularly Cote d'Ivoire (see figure 2.31).

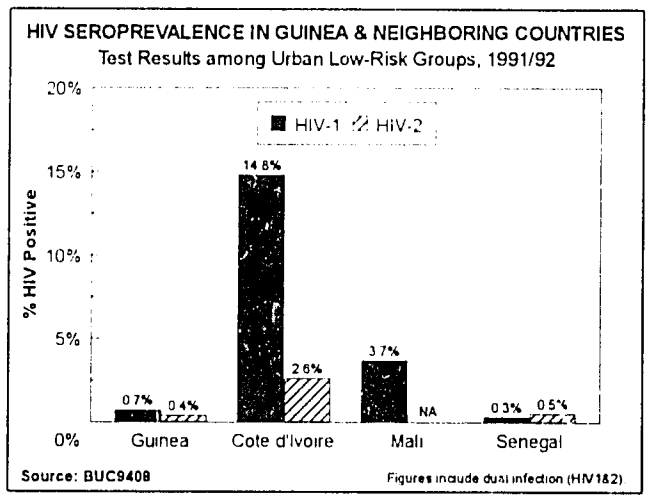


Figure 2.31

In 1993, Guinea reported a total of 328 new cases of AIDS to raise its cumulative total to 976. Based on this report, one can calculate an incidence rate of 4.4 new cases per 100,000 population, the same rate reported for Senegal, which has exhibited similar levels of HIV seroprevalence. Reported cases and incidence rates based on these reports inevitably underestimate the true scope of the epidemic. More information on HIV/AIDS in Guinea and efforts to combat the epidemic appears in Section IV below.

Other STDs. Although presence of more common STDs has important implications regarding general reproductive health as well as the spread of HIV/AIDS, little is known about prevalence or incidence of other STDs in Guinea. According to a USAID Health Sector Assessment, a survey of 1,200 people in 1992 found 27 percent positive for gonnorhea and three percent positive for syphilis. The U.S. Bureau of the Census reports that testing of 450 female STD patients in Conakry in 1993 found a prevalence of 20.9 percent for syphilis (BUC9502). The 1992 DHS found that among Guinean women who were aware of at least one STD, only one-third in urban areas and one-quarter in rural areas thought that it was possible to treat STDs. Among men, on the other hand, thre - quarters thought that STDs were treatable (DHS9412).

III. HEALTH SECTOR ASSESSMENT

Health Care Services

The formal health care system in Guinea suffers a marked deficiency of facilities, equipment, and personnel. These problems are most pronounced in the case of rural-based primary health care (PHC) services but are common to basic health services in the capital, Conakry, as well. The resulting lack of access to modern services and low utilization rates have severely inhibited the nation's ability to more rapidly improve health status. A recent assessment by the World Bank cites weak organizational and institutional capacity, a lack of sector-wide coordination, and severe financial constraints as some of the health sector's greatest shortcomings. Specific problems identified by the bank along with other donors include the government's failure to fully decentralize the planning process to regional and local operational levels, the lack of continued training opportunities for medical personnel, and poor availability of quality drugs in the private sector. The World Bank has prepared a loan project to provide about $24 million over six years to address these issues, with priority on expanding and improving health care coverage and assuring the availability of low-cost, high-quality drugs. The loan will focus on prefectures in Middle and Lower Guinea (AID9339).

Access and Utilization of Services

For the population of Guinea, the shortages in personnel and facilities translate to very limited access to relatively poor quality services. Estimates of the share of the population with reasonable access to health services vary widely. In the State of the World's Children 1995, UNICEF reports that eighty percent of Guinea's population lives within one hour's travelling time to modern health services, including all of the urban population and 70 percent of rural inhabitants (UNI9501). These estimates are significantly higher than those previously reported by UNICEF and double figures reported elsewhere, which conform with the general conclusion that access is severely lacking. The UNDP's Human Development Report 1994 (HDR) reports Guinea's level of access at 40 percent, well below typical levels among sub-Saharan and developing nations in general (see figure 3.1).

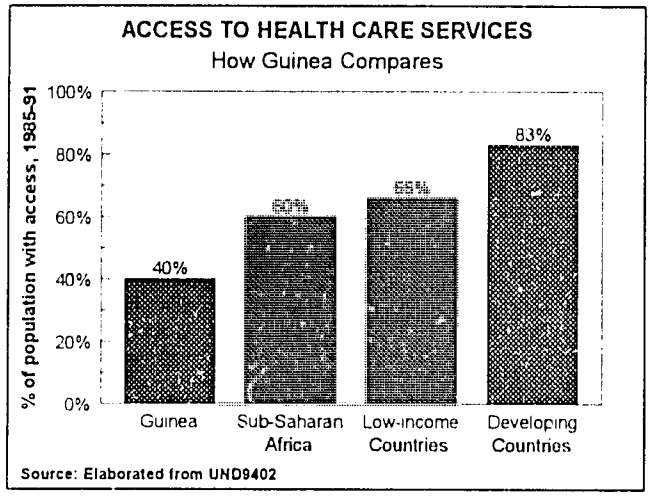


Figure 3.1

As might be expected, a study by WHO found that utilization of public hospitals and health centers likewise remains relatively low (WHO9201). Various estimates of the use of maternal and child health (MCH) services support this conclusion. UNDP reports that only 36 percent of pregnant women receive prenatal care, about half the median level among sub-Saharan nations (see figure 3.2). The 1992 DHS found that nearly twenty percent of pregnant women had visited a doctor at least once during their pregnancy, 38 percent had visited a nurse, and 1.6 percent had consulted a trained traditional birth attendant (TBA)(DHS9412).

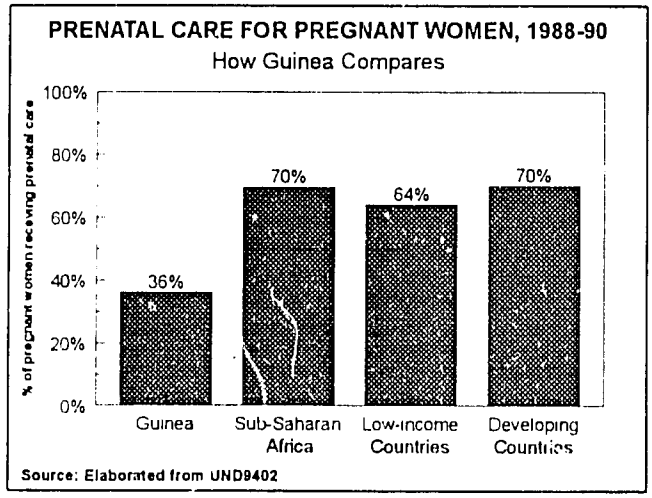


Figure 3.2

The HDR reports that one-quarter of births are attended by trained health personnel, also well below standards among developing nations in Africa and elsewhere (see figure 3.3). The 1992 DHS found that six percent of births in the preceding five years were attended by a doctor, 24 percent by qualified nursing personnel, and five percent by a trained TBA. According to mothers' responses, one-quarter of births took place in a medical facility, including 58 percent of births in urban areas but only 14 percent of those in rural areas. The regions with the lowest share of births in health facilities were Middle and Upper Guinea. Forest Guinea had the lowest share attended by doctors (three percent) but much higher levels of assitance by nurses (25.5 percent), trained TBAs (15.8 percent), and untrained TBAs (39.2 percent)(DHS9412).

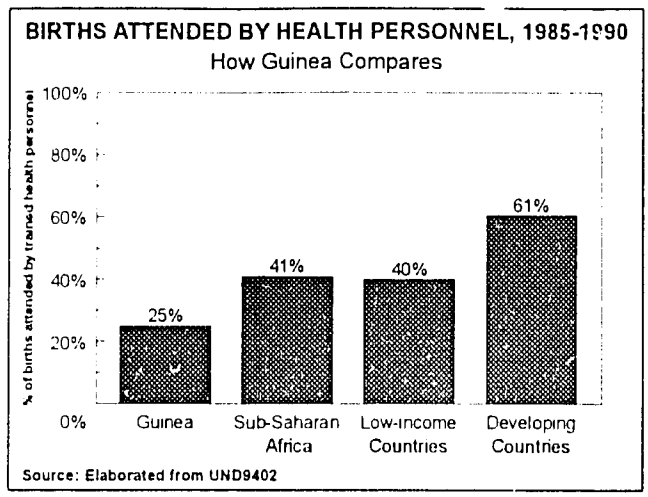


Figure 3.3

Personnel and Facilities

Ratios of health care personnel to population reported for Guinea have consistently been among Africa's worst. In 1984, Guinea was reported to have 57,400 inhabitants per doctor and 6,400 per nurse (WHO9201). For 1990, the World Bank's World Development Report 1993 reports a comparable figure of 50,000 inhabitants per doctor but lists a population per nurse ration of roughly 11,600:1. Both figures are three to four times higher than the median among sub-Saharan nations (see figure 3.4).

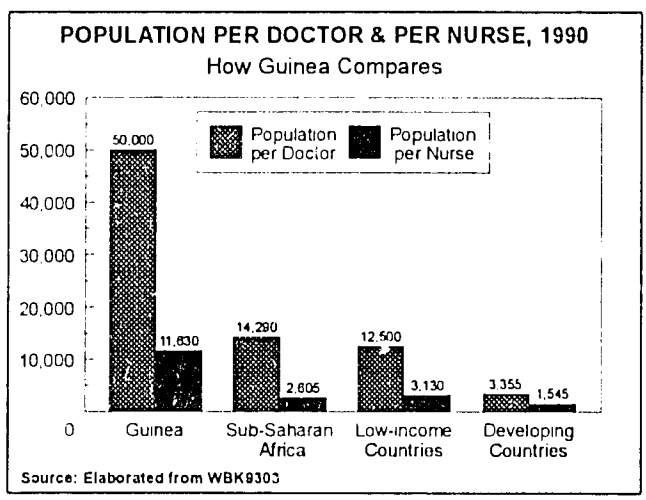


Figure 3.4

Guinea's health ministry has reported much better ratios of population per physician (9,700) and nurse (4,300) for 1988. Regional differences indicated by the ministry are illustrated in figure 3.5. The best health personnel coverage is found in Lower Guinea, which includes Conakry in the ministry's calculations. According to the ministry's figures, Middle Guinea suffers the greatest dearth of doctors and nurses while Upper and Forest Guinea are have the fewest midwives relative to population (WHO9201).

Public hospitals tend to be excessively staffed while lower-level facilities in rural areas typically suffer a lack of personnel. In 1986, the city of Conakry was home to about 12 percent of the national population but had 45 percent of the nation's physicians, 58 percent of pharmacists and midwives and 39 percent of nurses (WHO9201).

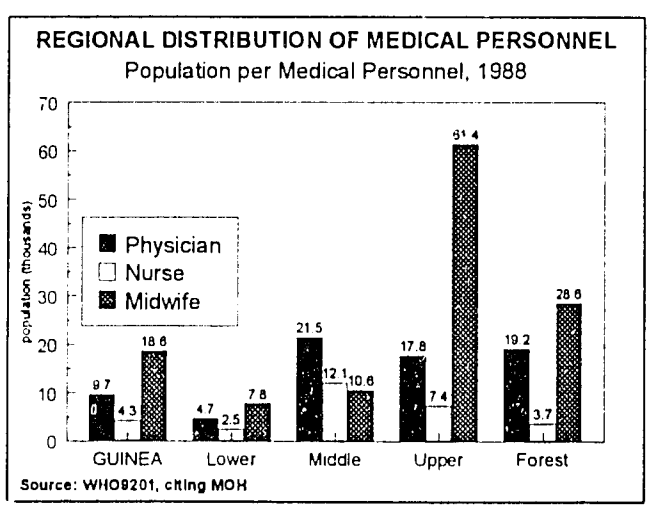


Figure 3.5

Public Sector Services

Ministry of Health. The Ministry of Public Health and Population (***Ministère de la Santé Publique et de la Population / MSPP)*** formulates and implements national health policy and coordinates and manages the national health system. It was created in early 1988 to replace the former Ministry of Health and Social Affairs. The MSPP is managed on central, regional, district (prefectoral), and sub-district (sub-prefectoral) levels. A medical officer coordinates activities at the regional level (*Inspection Régionale de la Santé*). In each of the country's 34 prefectures, a director of health (*Direction Préfectorale de la Santé*) supports PHC programs in health centers and is assisted by the head of the prefectoral hospital. Chiefs of health centers are responsible for supervising personnel at the sub-prefectoral level (WHO9201).

Public health facilities in 1990 included two university hospitals belonging to the *Centre Hospitalier Universitaire* (CHU), six regional hospitals, 29 prefectural hospitals and 344 health centers (WHO9201). The MSPP's Division of Finance and Administration is planning to decentralize responsibilities for all health activities to the district level, where prefectoral hospitals will be instructed to set up a Board of Directors with overall responsibility for financial and treatment policies. On the local level, health committees are encouraged to facilitate community participation (AID9339).

Public health institutions within the MSPP include the National Blood Transfusion Center, the National Public Health Laboratory, and *Pharmaguinée*, a state enterprise responsible for procurement and distribution of drugs within the national health system (WHO9201). The MSPP's expanded program of immunization (EPI) and essential drug supply system are heavily supported by UNICEF, which also works with the government in the areas of nutrition, water and sanitation, education, urban development, social mobilization and refugee assistance (AID9339). Other collaborators in the development of local PHC systems in Guinea include the World Bank, the European Economic Community (EEC), French Cooperation, and *Medecines Sans Frontieres* (MSF)(CAB9316). Integrated family planning efforts are pursued with assistance from the United Nations Population Fund (UNFPA) and from USAID through Population Services International (PSI)(AID9339). Activities of the MSPP's AIDS Prevention and Control Program are supported by several donor agencies including USAID, the WHO, UNDP, the EEC, and the Canadian International Development Agency (CIDA)(CAB9317).

The government of Guinea was one of the first to adopt the Bamako Initiative (BI) as its main strategy for the development and expansion of primary health care (PHC) services. A recent review of BI activities in various African countries found that only Guinea's national program could claim any significant success in creating a PHC "umbrella" through local participation and financing (WHO9201). By 1993, BI cost recovery mechanisms had reportedly been implemented in 236 of the nation's 360 health centers (CAB9316). More populated villages have benefitted through related service improvements, but according to the World Bank about 100 villages cannot afford these mechanisms. The bank also estimated that the city of Conakry would need about 60 more health centers to meet the health needs of its growing population (AID9339); in 1994, the city was reported to have only ten functioning health centers (CAB9404).

Private Sector Services

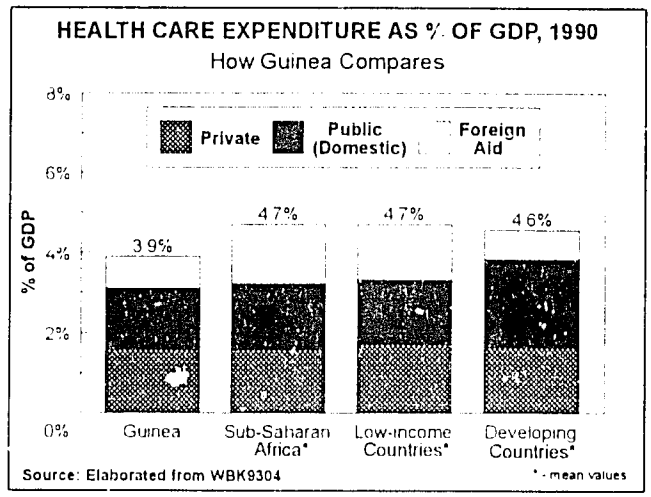
The private sector includes the health services of modern for-profit practitioners, local and international NGOs, pharmacies, and traditional practitioners. The private sector has been criticized for high prices for essential drugs and unwillingness to import less expensive varieties from abroad. Private health care services expanded considerably in the 1980s with the encouragement of the Government of Guinea. The latter half of the decade saw the establishment of two private clinics, 53 medical and dental practices, five biomedical analysis laboratories, 58 nursing practices, 128 private pharmacies and 28 private sales outlets supplied by six major wholesale traders.

Private voluntary organizations (PVOs) such as *Medicines Sans Frontieres* (MSF), *Medecines du Monde*, and the *Association Francaise des Voluntaires du Progrés* (AFVP) play an important role in targetting needy

populations. PVOs commonly jointly manage prefectoral hospitals with the MSPP. Also in the private modern sector are two hospitals run by bauxite companies in Kamsar and Boké. Practitioners of traditional medicine include an estimated 6,000 traditional healers and an undetermined number of TBAs (WHO9201).

Health Care Financing

Severe financial constraints pose a formidable obstacle to improvement of Guinea's health care system. Estimates prepared for the World Bank's World Development Report 1993 (WDR), which in the case of Guinea are based on broad assumptions about levels of local public and private funding, indicate that total spending on health amounted to less than four percent of Guinea's GDP in 1990, well below average levels for sub-Saharan Africa and elsewhere (see figure 3.6). Foreign aid plays a major role in supporting the public health care system, which provides the majority of health services in Guinea, while domestic sources of funding are somewhat lacking. The WDR background paper lists the share of aid flows at 20 percent of total health expenditure in Guinea in 1990 (see figure 3.7). Measured as a percentage of total spending or on a per-capita basis, this level of foreign aid for health is actually lower than found in most other African nations (see figures 3.8 and 3.9). Other sources, however, indicate that external support funds the vast majority of public health expenditure and, by implication, as much as half of overall spending on health (AID9339,WHO9201)(see figure 3.10).



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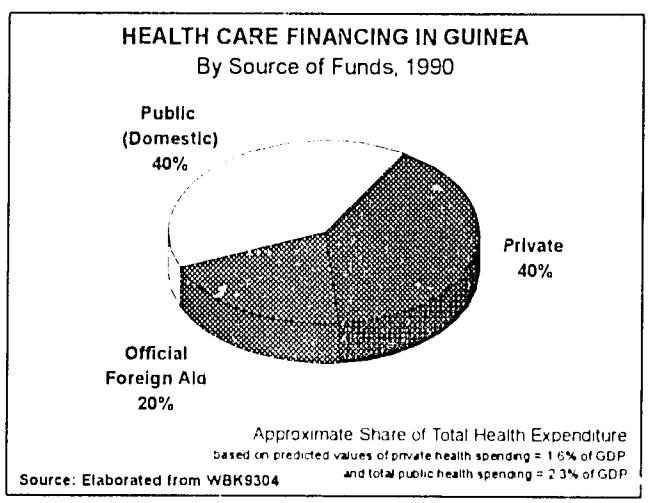

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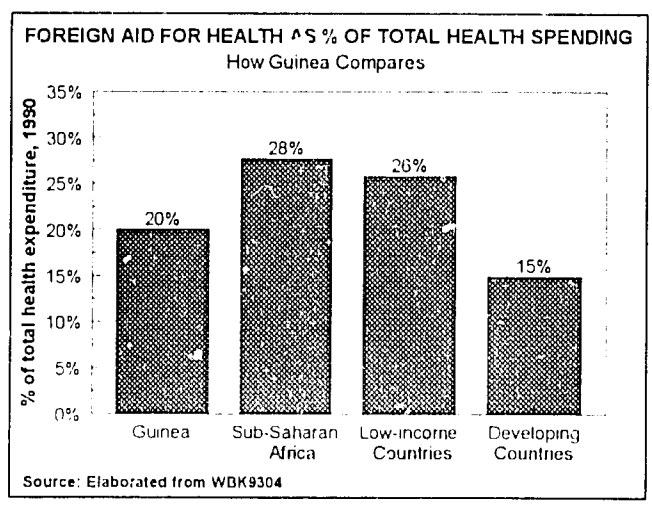

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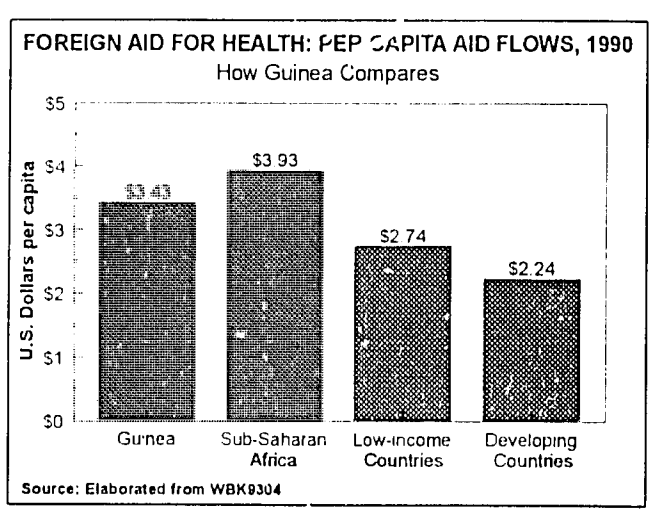


Figure 3.9

Public Financing

Domestic Funding. Real levels of funding by the Government of Guinea have reportedly declined significantly in the 1990s (AID9339). After increasing in the late 1980s, the national government's health budget diminished sizably from 30.1 billion Guinean Francs (FG) in 1991 to a projected 15.6 billion FG for 1994 [exchange rate in Sept. 1993: 960 FG = $1 U.S.]. It is important to note that less than one-third (8.9 billion FG) of the 1991 budget was provided by the government of Guinea, down from an estimated level of 40 percent in 1989 (see figure 3.10). The remainder was provided by external donors.

This level of domestic funding in 1991 represented just 2.2 percent of total domestic government expenditures. In the past, domestic health spending exceeded 5 percent of the national budget, closer to the norm for sub-Saharan African nations. Now this level of spending is attainable only if one includes foreign aid (see figure 3.11). Domestic funding amounted to only little more than $1.50 per person between 1988 and 1990 (see figure 3.13). The World Bank has conditioned its recent health sector loan on increased government expenditure on health (AID9339).

Foreign Aid. The country paper by the WHO estimated that external sources accounted for 82 percent of capital funding and 60 percent of overall funding for the public health system in 1989 (WHO9201)(see figure 3.12). Figures reported by the MSPP for 1991 put external funding at over 70 percent of total public health spending (AID9339). Some of the most active

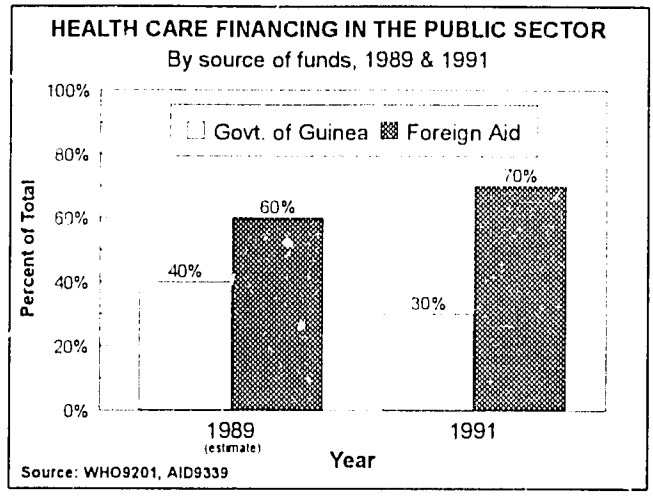
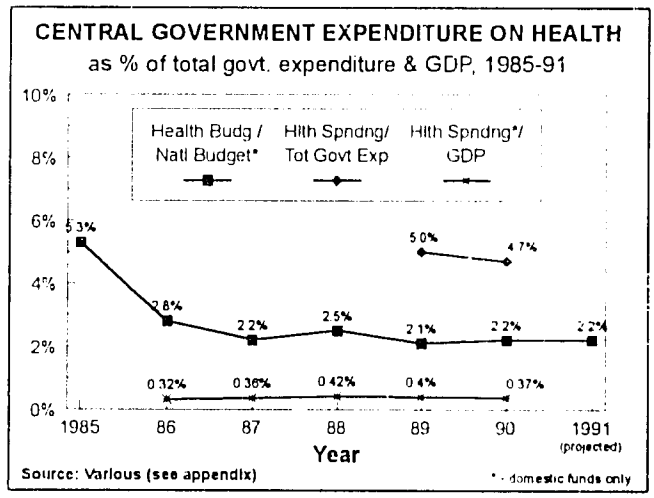


Figure 3.10



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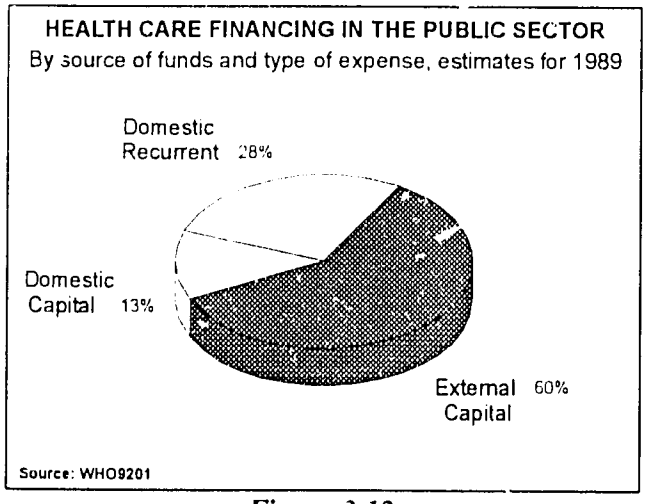

Figure 3.12

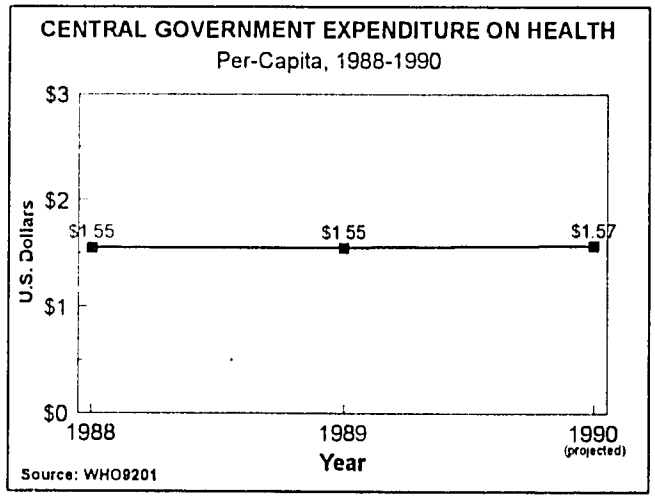

Figure 3.13

donors and lending institutions are the European Economic Community, the African Development Bank, Italian Cooperation, KFW (Germany), Japan, the World Bank, UNICEF and USAID (AID9339,WHO9201). UNICEF invested about $10 million to implement the Bamako Initiative in 1987-90 and added $10 million more for 1991-93 (CAB9316). USAID has recently decided to emphasize child survival activities to complement its involvement in the population sector. The World Bank, which provided a $19.7 million credit for health services development in 1986-91, is now extending a $24 million loan to be disbursed through 1997 (AID9339,WHO9201). Planned areas of emphasis for this funding are indicated in figure 3.14.

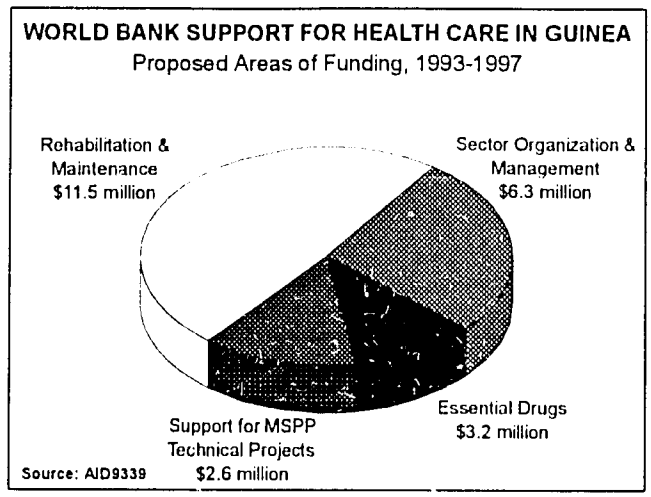

Figure 3.14

Allocation of Funds. Domestic government funding primarily applies to recurrent costs in the public health system, particularly salaries, infrastructure maintenance, fuel and other costs related to service delivery and outreach (AID9339). According to estimates for 1989, recurrent costs of the MSPP consumed roughly two-thirds of domestic government funds for health; about 60 percent of this amount was applied to salaries (see figure 3.15). Capital outlays continue to dominate overall public health spending (including foreign aid): over half (53 percent) of the MSPP's 1992 combined budget was devoted to capital costs associated with constructing or rehabilitating health centers. The cost of providing facilities with essential drugs and equipment required nearly 15 percent of this budget (AID9339).

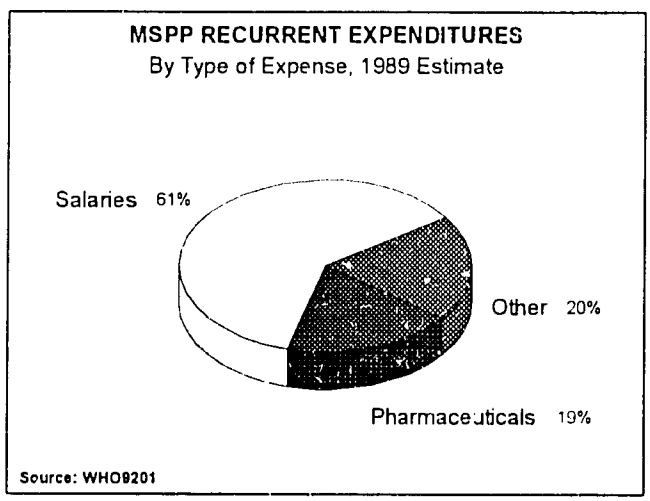

Figure 3.15

Cost Recovery. Guinea has made major advances towards establishing sustainable PHC and essential drug programs through cost recovery mechanisms. Following the community-based, self-financing model proposed by the Bamako Initiative, health plans since 1992 have routinely included the sale of essential drugs and a fee schedule for some basic services (AID9339). A recent study cited in the WDR indicates that new user fees, accompanied by reduction of indirect costs and improvement of service quality, have increased utilization of health services in Guinea and benefit the nation's poor most (WBK9303). However, the bank has also pointed out the inability of the poorest communities to afford cost recovery mechanisms as a major constraint to further progress in the health sector (AID9339).

Health centers have achieved some degree of autonomy in budgeting services and administering revenue. The centers use fee revenues to cover some operating costs, including the payment of incentives to personnel. However, revenues are still insufficient to cover the costs of pharmaceuticals, which are effectively financed by the national PHC program (WHO9201). Guinea thus has yet to fully wean itself from donors supporting these efforts, particularly UNICEF (AID9339), and has made little if any progress in the area of hospital financing at the district level and above (HPP9301). Hospitals charge fees for admission and consultations, but all revenues revert directly to the central treasury (WHO9201).

Local Government. Local prefecture funds are allocated to finance salaries of certain support personnel, such as maintenance workers, and defray other operating costs. Most funds are derived from local taxes (*ristournes*) while some are provided directly by the national government. Prefectures tend to allocate roughly 30 percent of their budgets to health and education. Total annual health expenditures by local governments are estimated at about GF 225 million, a level of no more than five percent of the national government's allocations in 1989 and 1990 (WHO9201).

Social Insurance. Although a 1990 World Bank review found no evidence of any social insurance providing health benefits (WBK9004), a more recent report by the U.S. Department of Health and Human Services indicates that Guinea has a social security system providing both cash and hospitalization benefits for sickness, injury, and maternity (HHS9201). Government employees are exempt from public hospital admission charges, which are then theoretically covered through transfers from the Ministry of Finance to the MSPP (WBK9004).

Private Financing

Private spending on health includes out-of-pocket expenditure for user fees in the public sector, payment for modern and traditional services in the private sector, and purchases of drugs from private pharmacies and other sources. No private health insurance is known to exist in Guinea (WBK9004). Total private funding for health was estimated by the World Bank at 1.6 percent of GDP and about 40 percent of total health expenditures in 1990 (WBK9304)(see figure 3.7). An earlier attempt to quantify recurrent expenditures in Guinea's health sector calculated the share of private funds at about 30 percent for 1983 (see figure 3.16). Surveys conducted in Conakry indicate that households allocated 16 percent of total expenditures to health care in 1986 and nine percent in 1988 (WHO9201).

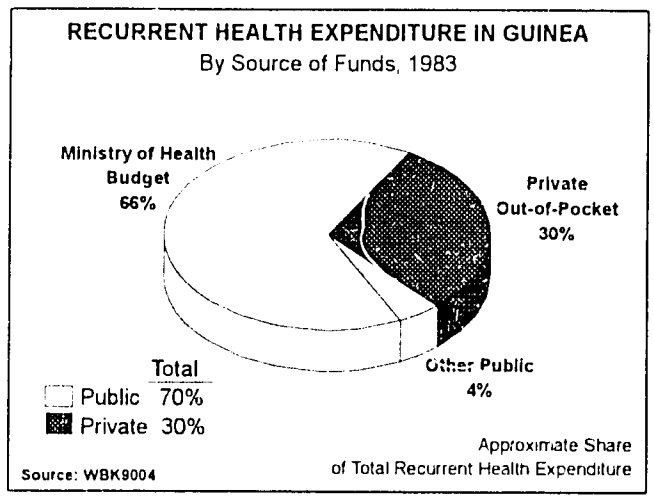

Figure 3.16

PVOs which co-manage hospitals with the MSPP have been able to establish their own cost recovery schemes and drug aquisition policies. This arrangement has permitted such hospitals to exhibit superior drug availability, higher utilization rates, and more effective cost recovery (WHO9201).

IV. HIV INFECTION AND AIDS

The HIV/AIDS epidemic in Guinea has progressed relatively slowly since the first case was reported in 1987, but by the end of 1993, nearly one thousand cases of AIDS had been reported to WHO. Underreporting is suspected to be very significant: past delays in the reporting process are reflected in a sharp rise in reported cases at the end of 1993 (see figure 4.1). Of the total number of AIDS cases reported through the end of 1992, 70 percent were males and the majority were aged 30-39 years old (AID9339). Pediatric cases represented 2.9 percent of the total (AID9415).

Levels of HIV infection in detected through seroprevalence tests in Guinea are among the lowest in West Africa (see figures 4.2-4.4). Although testing of higher-risk groups has indicated seropositivity levels of up to three percent (see figures 4.2 and 4.6), infection levels found among low-risk groups remain below one percent (see figure 4.5). Testing has been limited in recent years by lack of the required reagent, according to the government's AIDS program manager. Both strains of HIV are present, but HIV-1 accounts for 90 percent of infections detected (AID9339).

As elsewhere in sub-Saharan Africa, the primary mode of HIV transmission in Guinea is heterosexual contact. The Ministry of Health has identified the major risk factors leading to AIDS as sexual contact during foreign travel (70 percent) and having multiple sex

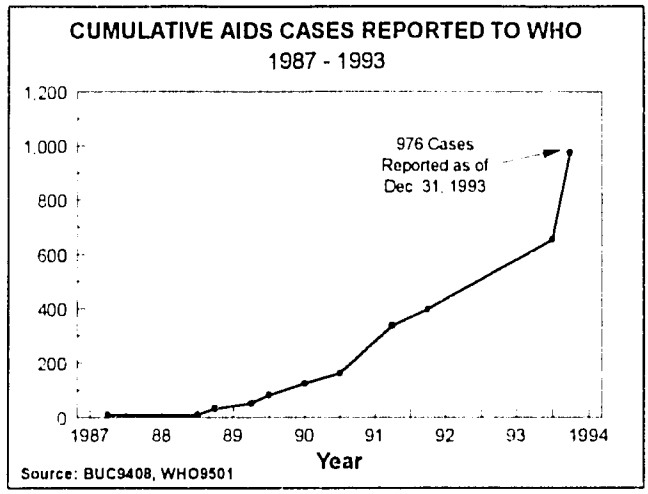

Figure 4.1

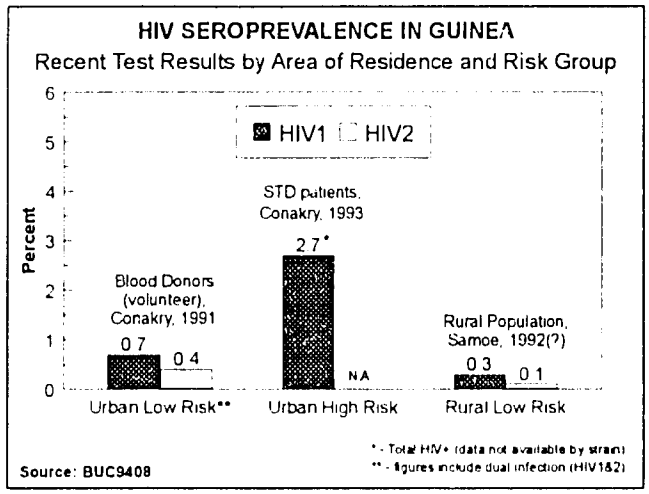

Figure 4.2

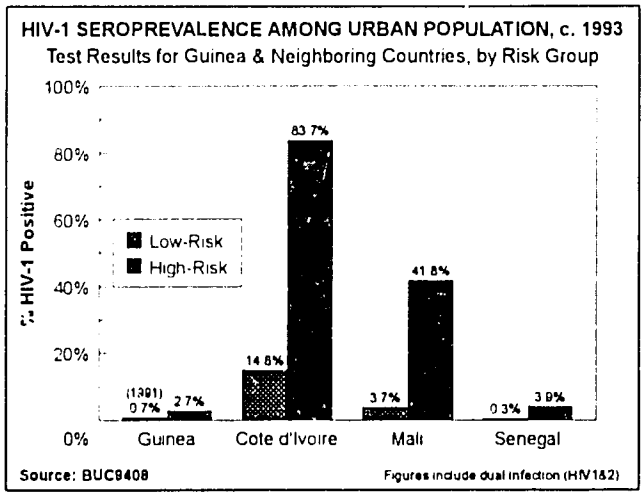

Figure 4.3

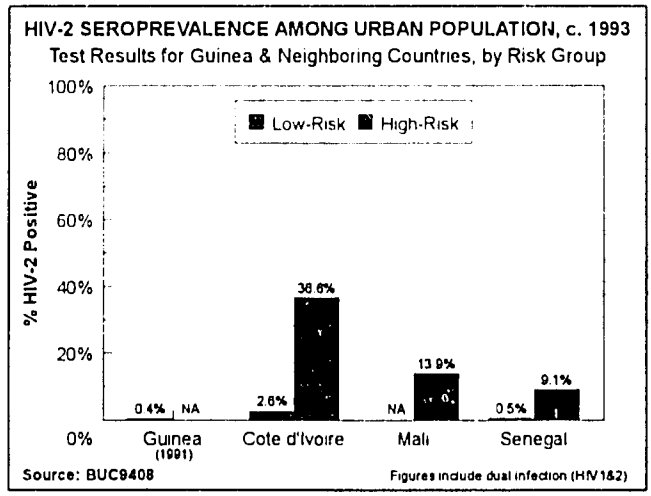

Figure 4.4

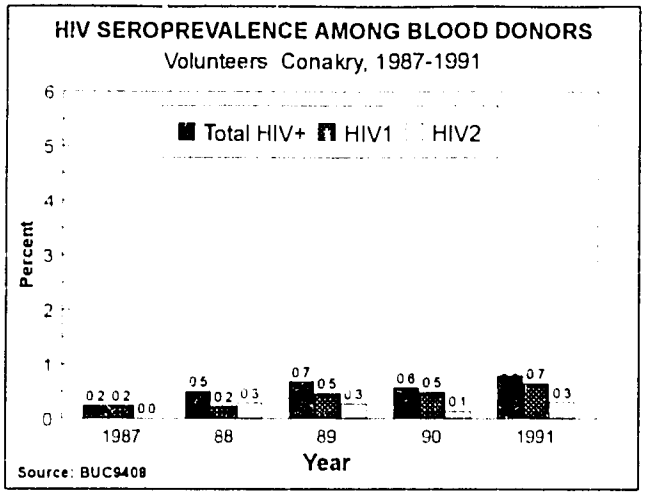

Figure 4.5

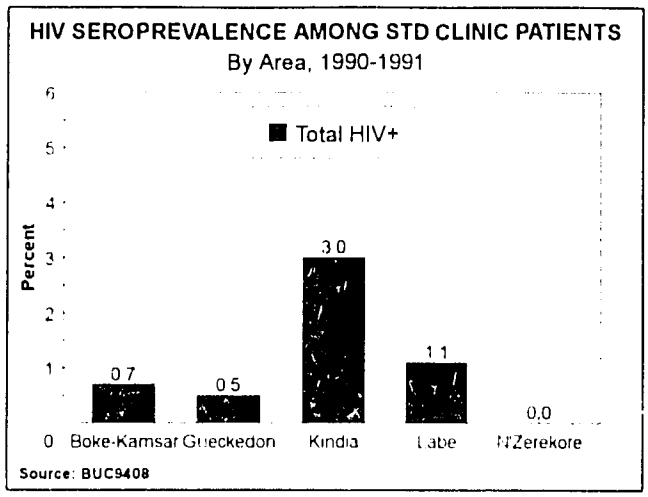

Figure 4.6

partners (97 percent) (AID9339). Of all cases of AIDS reported through mid-1992, 61 percent occurred among married persons and ten percent among persons in a polygamous marriage. The most affected socio-economic groups are traders among men and homemakers among women (CAB9317). Women with HIV represent a rising proportion of detected infections, reaching thirty-eight percent in 1994 (AID9502). Factors which favor the continued spread of HIV are sexual promiscuity, a high rate of genital infections and a highly mobile population in certain areas (CAB9317). There is also concern that the continued flow of refugees from Liberia and Sierra Leone may increase HIV exposure (AID9339).

National AIDS Control Program

AIDS Prevention and Control Program (APCP), Ministry of Public Health and Population, Conakry. Directed by a National AIDS Committee (NAC/CNLS), the APCP is pursuing HIV/AIDS control through improvements in surveillance, laboratory operations, and health worker training. The APCP conducts HIV testing and bloodscreening, but Guinea's lack of an adequately sensitive reporting mechanism is thought to contribute to continued low reported incidence of HIV and other STDs. There are now some sentinel surveillance sites (AID9339). Prevention is emphasized through community-based information/education/communications (IEC) interventions based on the peer educator approach. The program also coordinates mass media AIDS awareness campaigns and externally-funded condom promotion activities. As of late 1993, fifteen national television messages had been aired in four languages and 20 national and 84 regional radio spots had been broadcast in five languages. With assistance from USAID's Family Planning Options (FAMPOP) project and particularly social marketing efforts by Population Services International (PSI), over four million condoms had been sold to wholesalers and retailers by September 1993, facilitating access to condoms for 68 percent of the country's population (AID9415,CAB9317).

A recent group of visitors from USAID's AIDSCAP project were highly impressed with the level of effort displayed by APCP staff and volunteer outreach and education workers (particularly considering funding limitations) and with the NAC's success in working with Islamic leadership to promote AIDS intervention within the tenants of the Koran (CAB9319). Working to involve all sectors of the government in the effort to control AIDS, the APCP secured the participation of eleven ministries in the 1992 annual work plan for HIV prevention. Despite a clear commitment by the NAC and assistance provided by WHO/UNDP, CIDA, the EEC and USAID, Guinea's AIDS control program remains one of the most under-funded in sub-Saharan Africa (CAB9317).

Local Non-Governmental Organizations with AIDS Activities

With strong encouragement from the APCP, a total of 14 non-governmental organizations (NGOs) and numerous youth groups have reportedly become involved in the fight against AIDS and particularly the peer counselling program (CAB9317). Some of Guinea's NGO activities are described below.

Association Guinéenne pour le Bien-Etre Familial (AGBEF / Guinean Family Welfare Association), an affiliate to the International Planned Parenthood Federation (IPPF), integrates family planning and HIV prevention activities (CAB9318).

Fondation Guinéenne pour la Promotion de la Santé (Guinean Foundation for Health Promotion), Conakry, provides blood services, donates vouchers to patients for free medical examinations, and promotes public awareness about HIV/AIDS, particularly among transport drivers, youth, and peri-urban poor (WHO9102).

Ligue Islamique Nationale has collaborated with the NAC, PSI, and regional Islamic Leagues to design and participate in mass media campaigns promoting HIV/AIDS awareness as well as family planning (WHO9301,AID9502).

SIDALERTE Guinee, the local affiliate of SIDALERTE International, has conducted educational activities for health personnel and women's organizations in Conakry and rural areas (WHO9301).

SWAA/Guinee (Society for Women and AIDS in Africa, Guinea Chapter) has promoted the role of women as health educators and provided training in communication to prevent the spread of HIV/AIDs and other STDs (WHO9301).

International NGOs with AIDS activities in Guinea

(NCI9201,WHO9102,CAB9318)

American Foundation for AIDS Research
Center for Blood Transfusion/AIDS Reference Center, U. of Liège, Belgium
Civil Volunteers Group (GVC), Bologna, Italy
French Association of Volunteers for Progress (AFVP)
International Planned Parenthood Federation (IPPF)
Population Services International (PSI)

International Donors supporting AIDS activities in Guinea

(CAB9317)

Canadian International Development Agency (CIDA)
European Economic Community (EEC)
French Cooperation
United Nations Development Programme (UNDP)
United States Agency for International Development (USAID)
World Health Organization, Global Programme on AIDS (WHO/GPA)

APPENDIX A: STATISTICAL APPENDIX

Trends in Selected Demographic and Health Indicators

INDICATOR	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	SOURCE
Total Population (000s)	2,550	2,826	3,136	3,488	3,900	4,149	4,461	4,987	5,755	6,700	7,759	UNP9200
Infant Mortality	235	225	216	207	197	186	174	162	149	137	124	BUC9302
Under Five Mortality	416	397	380	364	345	325	303	281	258	236	213	JEE9504
Crude Birth Rate	55	54	53	52	52	52	51	51	51	49	46	UNP9200
Crude Death Rate	35	33	31	29	28	26	25	23	21	19	17	UNP9200
Avg. Annual Growth Rate	2.1	2.1	2.1	2.2	1.7	1.3	1.8	2.5	3.0	3.0	2.9	UNP9200
Total Fertility Rate	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.3	UNP9200

Table A1. Population Growth and Mortality Trends, 1950-2000

YEAR	ORS Access	ORS/RHF Use	SOURCE
1985	6	1	WHD8700
1986	10	1	WHD8800
1987	6	NA	WHD8900
1988	37	20	WHD9000,WHD9001
1989	37	63	WHD9100
1990	NA	NA	-
1991	30	65	WHD9201
1992	NA	NA	-
1993	45	82	WHD9401

Table A2. ORS Access and ORS/RHF Use, 1985-1993

Table A3. Access to Safe Water and Adequate Sanitation, 1980-1991

YEAR	ACCESS TO SAFE WATER		ADEQUATE SANITATION		SOURCE
	Rural	Urban	Rural	Urban	
1980	2	69	1	54	AID9012
1981	NA	NA	NA	NA	-
1982	NA	NA	NA	NA	-
1983	NA	NA	NA	NA	-
1984	NA	NA	NA	NA	-
1985	12	41	NA	NA	WHO9101
1986	NA	NA	NA	NA	-
1987	NA	NA	NA	NA	-
1988	20	41	1	54	AID9012
1989	NA	NA	NA	NA	-
1990	37	NA	NA	NA	WHO9200
1991	57	87	5	84	JMP9301
1992	NA	NA	NA	NA	-
1993	NA	NA	NA	NA	-

YEAR	VACCINATION COVERAGE					SOURCE
	BCG	DPT3	Measles	Polio 3	Tet. 2	
1986	6	2	9	1	7	WHE8900
1987	NA	NA	NA	NA	NA	-
1988	NA	NA	11	NA	NA	AID8802
1989	NA	NA	NA	NA	34	WHE9200
1990	53	17	18	17	NA	WHE9100
1991	57	41	39	41	29	WHE9202
1992	60	52	56	52	51	WHE9301
1993	76	55	57	55	61	WHE9401

Table A4. Vaccination Coverage, 1986-1993

VACCINATION COVERAGE, BY REGION % of children 12-23 months					
Region	BCG	DPT3	Measles	Polio3	Complete
Conakry	84.1%	59.3%	63.6%	59.3%	52.9%
Lower	64.8%	38.8%	54.2%	38.8%	34.9%
Middle	48.0%	28.2%	33.8%	28.2%	22.5%
Upper	47.1%	30.4%	24.0%	30.4%	18.5%
Forest	68.4%	38.7%	45.9%	38.7%	27.2%
National	59.9%	36.5%	42.3%	36.5%	28.7%
Source DHS9412					

Table A5. Vaccination Coverage, by Region, DHS 1992

Health Care Financing

PUBLIC EXPENDITURE ON HEALTH CARE IN GUINEA					
Year	Domestic health budget as % of dom. govt. budget		Expenditure on health as % of total govt. expenditure (including aid)	Domestic govt. expenditure on health	
	total budget	recurrent budget only		% of G.D.P.	$ per capita
1985	5.3%	-	-	-	-
1986	2.8%	-	-	0.32%	-
1987	2.2%	-	-	0.36%	-
1988	2.5%	-	-	0.42%	$1.55
1989	2.1%	2.2%	5.0%	0.40%	$1.55e
1990	2.2%	1.9%	4.7%	0.37%	$1.57p
1991	2.2%	2.0%	-	-	-
1992	-	1.8%	-	-	-
1993	-	2.6%	-	-	-
1994	-	2.8%	-	-	-
Source	LSH9001 AID9339 ('91)	AID9415	WHO9201		
e - estimate p - projection					

Table A6. Public Expenditure on Health Care in Guinea, 1985-1994

I. Note On Mortality Estimation

Various organizations produce mortality estimates for the developing countries and regions. The three largest sources are the United Nations Population Division, the World Bank and the United States Bureau of the Census. CIHI's Health Statistics Database draws upon the work of these three larger organizations as well as other sources in order to reconcile the various estimates and provide the most reasonable current and historical estimates available.

CIHI has also created the only comprehensive time series of under-five mortality estimates for all developing countries. This has been accomplished by developing mathematical equations from empirical data that describe the relationship between infant and under-five mortality. Using these equations it is possible to make estimates of under-five mortality from infant mortality or *vice-versa*. More details regarding CIHI's methodology for specific data sets are provided in the source references.

II. Definitions

Demographic indicators:

Annual Infant Deaths: An estimate of the number of deaths occurring to children under age one in a given year.
Average Annual Rate of Population Growth: An estimate of the rate at which a population is increasing (or decreasing) in a given year.
Children Under Age 1: Mid-year estimate of the total number of children under age one.
Contraceptive Prevalence Rate: Estimate of the proportion of women aged 15 through 44 (sometimes 15 through 49) currently using a modern method of contraception. For some countries, this data is only available for women in union or married. Where sources fail to distinguish modern and traditional methods, the combined rate is shown.
Crude Birth Rate: An estimate of the number of live births per 1,000 population in a given year.
Crude Death Rate: An estimate of the number of deaths per 1,000 population in a given year.
Infant Mortality Rate: The estimated number of deaths in infants (children under age one) in a given year per 1,000 live births in that same year. This rate may be calculated by direct methods (counting births and deaths) or by indirect methods (applying well-established demographic models).
Life Expectancy At Birth: An estimate of the average number of years a newborn can expect to live. Low life expectancies in developing countries are, in large part, due to high infant mortality.
Maternal Mortality Rate (or Ratio): Estimated number of maternal deaths per 100,000 live births where a maternal death is one which occurs when a woman is pregnant or within 42 days of termination of pregnancy from any cause related to or aggravated by the pregnancy or its management. Extremely difficult to measure, maternal mortality can be derived from vital registration systems (usually underestimated), community studies and surveys (requires very large sample sizes) or hospital registration (usually overestimated).
Total Population: Mid-year estimate of total number of individuals in a country.
Total Fertility Rate: Estimate of the average number of children a woman would bear during her lifetime given current age-specific fertility rates.
Under 5 Mortality Rate: The estimated number of children born in a given year who will die before age five per 1,000 live births in that same year. May be calculated by direct or indirect methods.
Urban Population: Population living in urban areas as defined according to the national definiton used in the most recent population census.

Child survival indicators:

Adequate Nutritional Status: An individual child of a certain age is said to be adequately nourished if his/her weight is greater than the weight corresponding to "two Z-scores" (two standard deviations) below the median weight achieved by children of that age. The median weight and the distribution of weights around that median in a healthy population are taken from a standard established by the National Center for Health Statistics, endorsed by WHO. The indicator for the population as a whole is the proportion of children 12 through 23 months of age who are adequately nourished.
Appropriate Infant Feeding: A composite estimate of the proportion of infants (children under age one) being breastfed and receiving other foods at an appropriate age according to the following criteria: breastfed through infancy with no bottle-feeding, exclusively breastfed through four months (120 days) of age, and receiving other foods if over six months of age (181 days). Water is not acceptable in the first four months (120 days). ORS is considered acceptable at any age. A number of sub-indicators may be calculated from the data used to form the composite, of which two may be presented here:
Complementary Feeding: An estimate of the proportion of infants six to nine months of age (181 days to 299 days) still breastfeeding but also receiving complementary weaning foods.
Continued Breastfeeding: An estimate of the proportion of children breastfed for at least one year. Values presented in this report are the proportion of children 12 to 15 months of age at the time of the survey still receiving breast milk.
DPT Drop-out Rate: An estimate of the proportion of living children between the ages of 12 and 23 months who received at least one DPT vaccination but who did not receive the entire series of three vaccinations before their first birthdays.
Exclusive Breastfeeding: An estimate of the proportion of infants less than four months (120 days) of age who receive no foods or liquids other than breast milk.
ORS Access Rate: An estimate of the proportion of the population under age five with reasonable access to a trained provider of oral rehydration salts who receives adequate supplies. This indicator is particularly difficult to measure and may fluctuate dramatically as various

methods of estimation are devised.

ORT Use Rate: Estimate of the proportion of cases of diarrhea in children under five treated with **ORS and/or RHF** (a recommended home fluid). ORT use may be determined using administrative means or surveys. Administrative estimates are generally based on estimates of the number of episodes of diarrhea in the target population for a given year and the quantity of ORS available; these estimates are highly sensitive to changes in estimates of the frequency of diarrhea episodes. Surveys more precisely focus on the actual behavior of mothers in treating diarrhea in the two-week period prior to the survey.

Vaccination Coverage In Children: Estimate of the proportion of living children between the ages of 12 and 23 months who have been vaccinated before their first birthday (three times in the cases of polio and DPT and once for both measles and BCG). Rates are calculated in two ways: Administrative estimates are based on reports of the number of inoculations of an antigen given during a year to children who have not yet reached their first birthday divided by an estimate of the pool of children under one year of age eligible for vaccination. Survey estimates are based on samples of children between the ages of 12 and 23 months.

Vaccination Coverage In Mothers: Estimate of the proportion of women in a given time period who have received two doses of tetanus toxoid (TT) during their pregnancies. A revised indicator, referred to as **TT2+**, is now commonly used to account for the cumulative effect of TT boosters. A woman and her baby are protected against tetanus when a mother has had only one or perhaps no boosters during a given pregnancy so long as the woman had received the appropriate number of boosters in the years preceding the pregnancy in question. (This number varies with number received previously and the time elapsed.) Rates are computed using administrative methods or surveys.

Other health sector indicators:

Access to Adequate Sanitation: Definitions vary over time. In the past, this has been an estimate of the proportion of the population with sanitation service provided through sewer systems or individual in-house or in-compound excreta disposal facilities (latrines). After WHO changed its indicators and definitions in the late 1980s, this is now defined as the proportion with reasonable access to sanitary means of excreta and waste disposal, including outdoor latrines and composting.

Access to Health Services: An estimate of the proportion of the population that can reach appropriate local health services by local means of transport in no more than one hour. Recently WHO has revised its definition to the proportion of the population having treatment for common diseases and injuries and a regular supply of the essential drugs on the national list within one hour's walk or travel.

Access to Safe Water: Proportion of the population with reasonable access to safe water supply, including treated surface waters or untreated but uncontaminated water such as that from springs, sanitary wells or protected boreholes. Reporting can be highly subjective. Varying definitions are used for reasonable access in urban/rural areas:

Access to Safe Water, Urban: Estimate of the proportion of all persons living in urban areas (defined roughly as population centers of 2,000 or more persons) who live within 200 meters of a standpipe or fountain source of water.

Access to Safe Water, Rural: Estimate of the proportion of all persons not living in urban areas with a source of water close enough to home that household members do not spend a disproportionate amount of time fetching water.

Anemia among Pregnant Women: (prevalence): Estimate of the proportion of pregnant women whose blood hemoglobin level is below the WHO norm of 110 grams per liter.

Births Attended by Trained Personnel: An estimate of the proportion of births attended by at least one physician, nurse, midwife, trained primary health care worker, or trained birth attendant.

Gross Domestic Product: Total output of goods and services for final use produced by residents and non-residents, regardless of allocation to domestic and foreign claims.

Gross National Product: Total domestic and foreign value added claimed by residents.

Health Care Expenditure. Data from the World Development Report 1993 on health expenditure include "outlays for prevention, promotion, rehabilitation, and care; population activities; nutrition activities; program food aid; and emergency aid specifically for health." Spending on water and sanitation is not included. Expenditure is expressed in official exchange rate U.S. Dollars. **Public Expenditure** includes government and parastatal health expenditure and foreign aid. Domestic public expenditure does not include foreign aid. Where IMF data is used for time series, these definitions may vary. **Private Expenditure** comprises total household spending on health based on surveys or (where indicated) imputed from regressions based on GDP per capita. **Foreign Aid** represents total official aid flows, the sum of all assistance for health by bilateral and multilateral agencies and by major international NGOs.

HIV Seroprevalence: Estimate of the proportion of a given population infected with HIV. Where specified, data are disaggregated by strain (HIV-1 or HIV-2) and by risk group. **Low-Risk Population** includes persons with no known risk factors; estimates are typically drawn from test results among pregnant women, the general population, or blood donors. **High-Risk Population** includes persons with known risk factors; these estimates are typically drawn from test results among commercial sex workers, their clients, or patients at STD clinics.

Population per Doctor & per Nurse: Estimates of the ratios of total population per doctor and total population per nursing person. Because definitions of doctors and nursing personnel vary, the data for these two indicators are not strictly comparable across countries. "Nursing persons" may include auxiliary nurses and paraprofessional personnel such as trained traditional birth attendants.

Prenatal Care for Pregnant Women: The proportion of pregnant women who attended prenatal (antenatal) care clinics in a given year.

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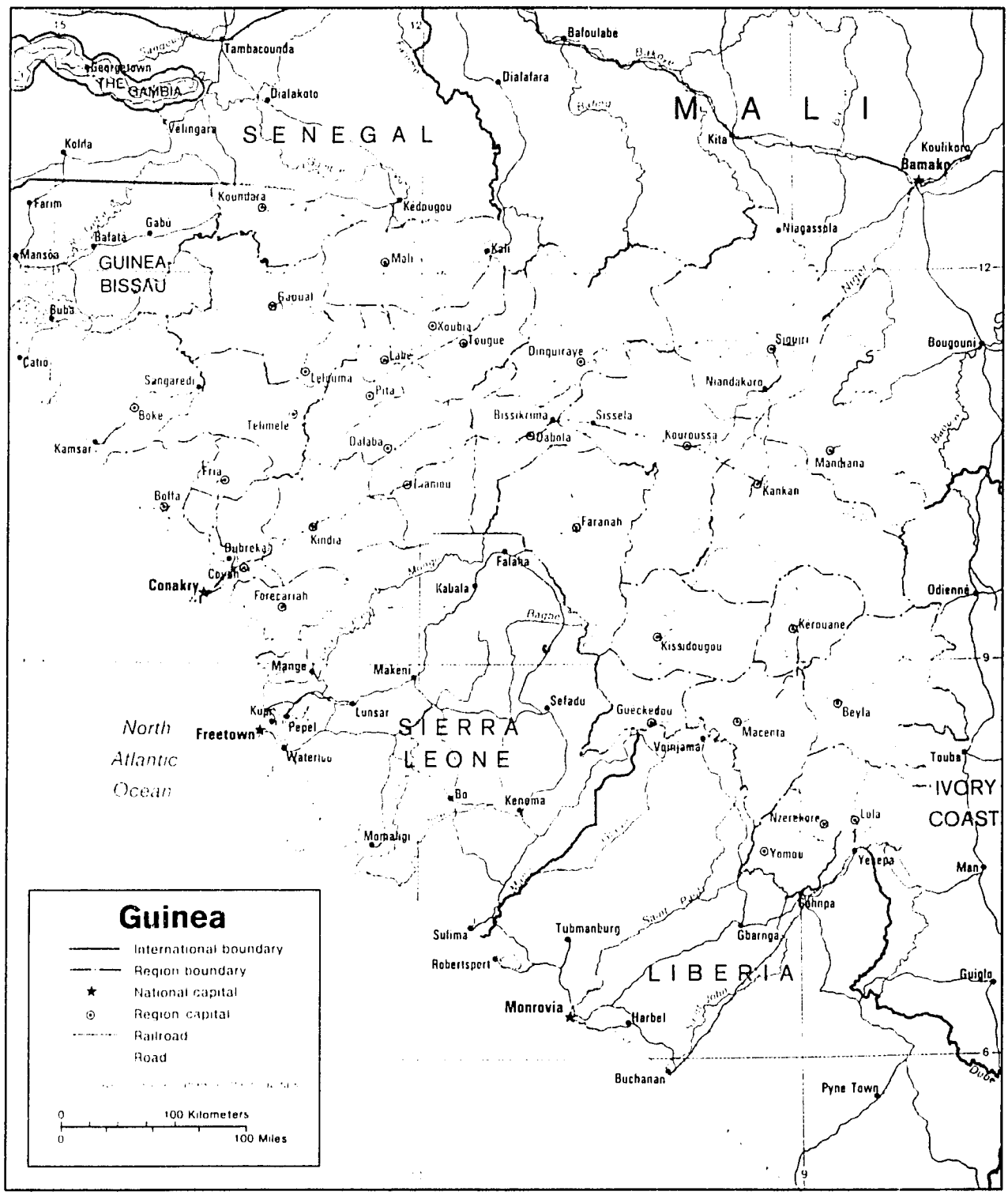
Guinea
International boundary
Region boundary
National capital
Region capital
Railroad
Road
0
100 Kilometers
0
100 Miles
SENEGAL
MALI
GUINEA BISSAU
SIERRA LEONE
LIBERIA
IVORY COAST
THE GAMBIA
North Atlantic Ocean
Tambacounda
Georgetown
Dialakoto
Velingara
Kolda
Farim
Gabu
Bafata
Mansoa
Koundara
Kedougou
Bafoulabe
Dialafara
Kita
Koulikoro
Bamako
Niagassola
Kati
Mali
Gaoual
Buba
Catio
Koubia
Tougue
Labe
Dinguiraye
Siguiri
Bougouni
Sangaredi
Leloma
Pita
Niandakoro
Boke
Telimele
Bissikrima
Sissela
Kamsar
Dalaba
Dabola
Kouroussa
Mandiana
Fria
Lainou
Kankan
Boffa
Faranah
Kindia
Bubreka
Falaba
Conakry
Coyah
Forecariah
Kabala
Odienne
Kerouane
Kissidougou
Mange
Makeni
Sefadu
Kuk
Lunsar
Pepel
Freetown
Waterloo
Guckedou
Beyla
Macenta
Voinjama
Touba
Bo
Kenema
Nzerekore
Lola
Mamaligi
Yomou
Yekepa
Man
Gohnpa
Sulima
Tubmanburg
Gbarnga
Robertsport
Guiglo
Monrovia
Harbel
Buchanan
Pyne Town

36