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CIHI Country Health Profile Series

UGANDA

Country Health Profile
1995

Center for International Health Information
1601 N. Kent Street, Suite 1014
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UGANDA

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	17,082,005	1993	CALXX02
Urban Population	2,319,400	1993	UNP9200
Women Ages 15-49	4,219,800	1993	UNP9200
Infant Mortality	101	1986	DHS8915
Under 5 Mortality	180	1986	DHS8915
Maternal Mortality	700	1989	WHM9151
Life Expectancy At Birth	42	1993	UNP9200
Number of Births	865,733	1993	CALXX02
Annual Infant Deaths	87,612	1993	CALXX01
Total Fertility Rate	7.2	1993	UNP9200

Child Survival Indicators			
INDICATOR	PERCENT	YEAR	SOURCE
Vaccination Coverage			
BCG	98	1992	WHE9301
DPT 3	71	1992	WHE9301
Measles	68	1992	WHE9301
Polio 3	70	1992	WHE9301
Tetanus 2	83	1992	WHE9301
DPT Drop Out	NA		
Oral Rehydration Therapy			
ORS Access Rate	68	1993	WHD9401
ORS and/or RHF Use	45	1993	WHD9401
Contraceptive Prevalence			
Modern Methods (15-49)	2.5	1989	DHS8915
All Methods (15-49)	5	1989	DHS8915
Nutrition			
Adequate Nutritional Status	68	1989	DHS8915
Appropriate Infant Feeding	NA		
A) Exclusive Breastfeeding	7%	1989	DHS8915
B) Complementary Feeding	67	1989	DHS8915
Continued Breastfeeding	86	1989	DHS8915

Other Health Indicators			
INDICATOR	PERCENT	YEAR	SOURCE
HIV-1 Seroprevalence			
Urban	29.5	1994	BUC9408
Rural	6.5	1994	BUC9408
Access to Improved Water			
Urban	43	1991	JMP9301
Rural	30	1990	WHO9200
Access to Sanitation			
Urban	63	1991	JMP9301
Rural	28	1991	JMP9301
Deliveries/Trained Attendants	38	1988	DHS8915

NA = Data not available.

For definitions of indicators, see data notes in Appendix B. For full citations of sources, see Appendix C.

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Acronyms/Abbreviations

AIDS	acquired immune deficiency syndrome
ARI	acute respiratory infection
BCG	Bacillus of Calmette and Guérin vaccine (to prevent tuberculosis)
DPT3	diphtheria, pertussis, tetanus vaccine (three shots)
CIHI	Center for International Health Information
DHS	Demographic and Health Survey
EPI	Expanded Programme of Immunization
GDP	gross domestic product
GNP	gross national product
HIV	human immunodeficiency virus
IMR	infant mortality rate
LSHTM	London School of Hygiene and Tropical Medicine
MMR	maternal mortality rate
MOH	Ministry of Health
NGO	non-government organization
NNT	neonatal tetanus
ORS	oral rehydration salts
ORT	oral rehydration therapy
PHC	primary health care
RHF	recommended home fluid (for ORT)
TB	tuberculosis
TBA	traditional birth attendant
TT2+	tetanus toxoid vaccine (two or more shots)
~~STD~~	~~sexually-transmitted disease~~
UDHS	Uganda Demographic and Health Survey (1988/89)
UN	United Nations
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

Uganda is a country of approximately 19 million inhabitants located on the northern shore of Lake Victoria in Eastern Africa. Uganda lies directly on the equator at about 1,000 meters above sea level and borders Kenya to the east, Zaire to the west, Sudan to the north, and Rwanda and Tanzania to the south (see figure 1.1, map inside back cover). The national territory covers a total area of 236,040 km^2, with a land area of 199,710 km^2 (WFB9401). Administratively, Uganda is divided into 34 districts which are in turn broken down into three smaller units: counties, sub-counties, parishes, and sub-parishes (DHS8915). The climate is tropical with annual rainfalls of 50 inches in the southwest and less than 20 inches in the semi-arid northeast. Two dry seasons span from December to February and from June to August (WFB9401).

UGANDA: REGIONS FOR 1988/89 DHS

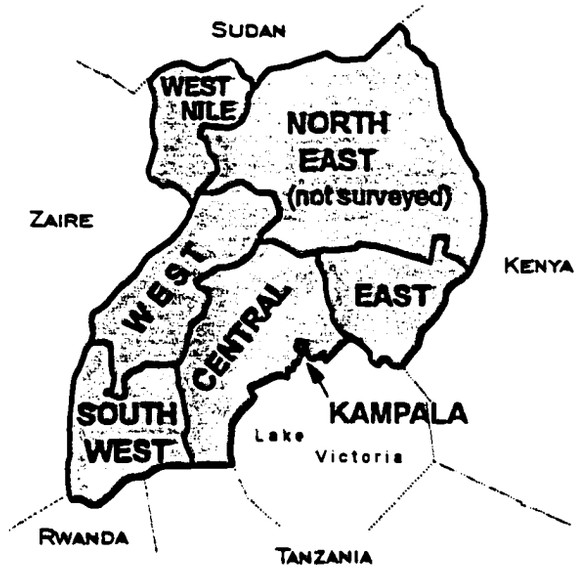

Figure 1.1

Much of what is known about current demographic and health trends in Uganda relies on the findings of the Uganda Demographic and Health Survey (UDHS), which was carried out throughout the nation, with the exception of nine northeastern provinces, during 1988 and 1989. UDHS data on trends in maternal and child health and reproductive patterns are available disaggregated into six regions, including the city of Kampala as a separate region (see figure 1.1). A second DHS, scheduled for mid-1995, will amplify these findings considerably. Other recent sources of data on Uganda include the January 1991 population census and a social sector review conducted by the World Bank in 1991-92.

History

Formerly part of British East Africa, Uganda achieved independence in October 1962. The nation's inhabitants have a diverse tribal heritage including Bantu, Nilotic, Nilo-Hamitic and Sudanese groups. Luganda is the most widely spoken language, followed by Swahili and English (DHS8915). Following a brief period of economic growth in the 1960s, Gen. Idi Amin seized power in January 1971, ushering in an era of social and insitutional deterioration. As the 1970s wore on, the incidence of atrocities mounted, the security situation worsened, goods disappeared from the shelves of stores, coffee exports were sabotaged, and the strengths of the country's once respected institutions gave way (UGA8501). After Amin was ousted in April 1979, successive governments attempted to restore international confidence in the economy through a mixture of development plans and austere government budgets. Civil conflicts and internal power struggles continued through the early 1990s with the government facing rebel forces in the Northern and Eastern provinces (WFB9401).

After taking power in January 1986, the National Resistance Movement (NRM) led by Yoweri Museveni, published a political manifesto which set out specific goals for achieving self-sufficiency, including improvement of basic social services such as water, health care, and housing (UGA9201). In the 1990s, Uganda's economic, education, and health care institutions have been steadily recovering. Political reform has also been substantial: in 1994, Uganda had its first free and fair national elections. A constituent assembly is expected to complete and ratify a national constitution by mid-1995 and elections for presidency and parliament are scheduled for the following December (AID9503).

Economy

Uganda has substantial natural resources, including fertile soils, regular rainfall, and sizable mineral deposits of copper and cobalt. Agriculture accounts for 57 percent of gross domestic product (GDP) and over 80 percent of the labor force, much of which is strictly engaged in subsistence farming. Coffee, the major export crop, accounts for the bulk (97 percent) of export revenues. Following two decades of widespread political instability, mismanagement, and civil war, Uganda's level of gross national product (GNP) per-capita was only about $170 in 1991, far below the median for sub-Saharan nations (see figure 1.2). Overall GDP as well as industrial production remained below levels attained in the early 1970s (WFB9401).

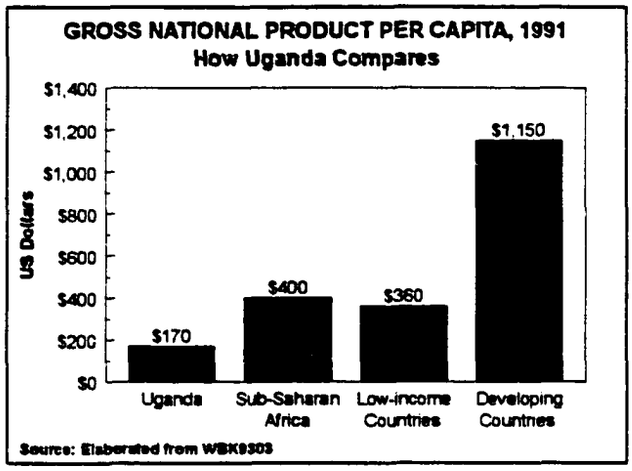

Figure 1.2

In the 1990s, however, Uganda's economy has undergone a remarkable recovery, growing at an average annual rate of six percent (AID9503). Since 1986 the government has acted to rehabilitate and stabilize the economy by undertaking currency reform, raising producer prices on export crops, increasing prices of petroleum products, and improving civil service wages. These policy changes were specifically aimed at dampening inflation, which was running at over 300 percent in 1987 and boosting production and export earnings. The economy has since turned in a solid performance based on continued investment in the rehabilitation of infrastructure, improved incentives for production and exports, and gradually improving domestic security (WFB9401). At the end of 1994, inflation has reportedly dropped to just seven percent (AID9503).

Population Dynamics

Annual population growth is estimated at 3.1 percent for 1990-95, which is typical for sub-Saharan Africa but well above the average for low-income countries. More rapid population growth has been checked in the 1980s and -90s only through "extraordinary" mortality due to civil strife and HIV/AIDS. On the basis of the final count from the 1991 census (approximately 16.7 million persons), Uganda's average annual population growth rate was 2.5 percent during the period 1980-91. However, the rate of *natural* increase, arising from births and "normal" mortality, is estimated by the World Bank to have been about three percent during the 1980s (WBK9402). According to projections by the UN, the national population will reach 23 million by the year 2000 (see figure 1.3).

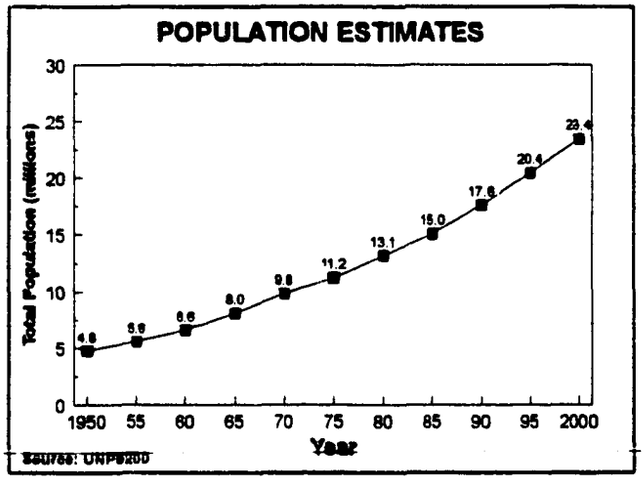

Figure 1.3

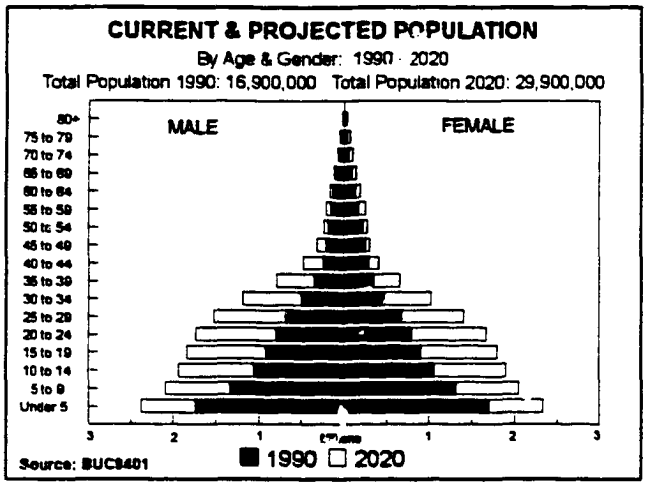

Figure 1.4

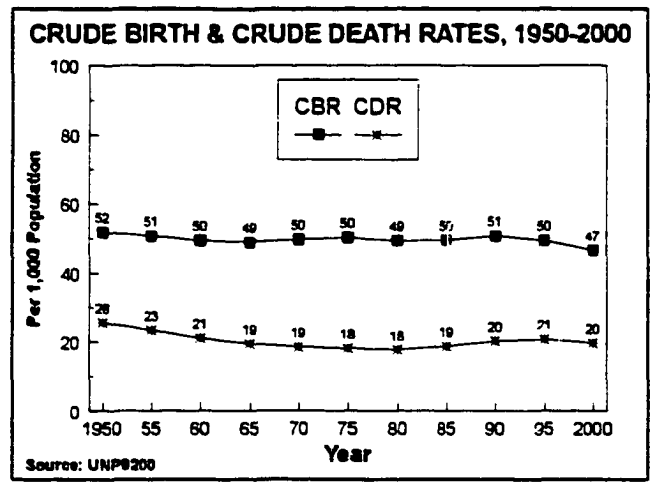

Figure 1.5

According to estimates by the U.S. Bureau of the Census, in 1990 over 20 percent of the population was under the age of five and nearly half (48.4 percent) was under the age of fifteen. Figure 1.4 presents a population pyramid based on the Bureau's estimates and projections for 1990 and 2020. Estimates by the United Nations of Uganda's crude birth rate (CBR), and crude death rate (CDR) between 1950 and 2000 are illustrated in figure 1.5. While CBRs and CDRs are uniformly decreasing in most countries, both rates are thought to have risen slightly in Uganda in the 1980s.

The UDHS measured Uganda's total fertility rate (TFR) to be 7.3 children per woman of child-bearing age. The desired total fertility rate (DTFR) was estimated at 6.5 in Uganda, in comparison with an average of 5.4 in other sub-Saharan nations covered by DHS, and an average of 3.7 for all twenty-five developing countries surveyed through 1991. The UDHS found the contraceptive prevalence rate in Uganda to be only 5 percent, which was second-lowest among all countries surveyed. Modern methods were being used by only about 2.5 percent of married women (DHS8915,WBK9402). Encouragingly, USAID/Uganda has recently reported a contraceptive prevalence rate of 8.7 percent for modern methods among women in eight districts where the agency is monitoring impact of population programs (AID9503).

II. HEALTH SITUATION ANALYSIS

Basic Health Indicators

Indicators of life expectancy and mortality have scarcely improved since Uganda gained independence in 1962, a reflection of the severe hardships of civil war in the late 1970s and -80s and, more recently, the HIV/AIDS pandemic. The crude death rate, currently estimated at about 20 per thousand inhabitants, is twice the average for low-income countries in general and substantially above the average for sub-Saharan Africa. The 1994 Human Development Report listed Uganda's life expectancy at birth at 43 in 1990, one of the world's lowest (see figure 2.1). Life expectancy ordinarily increases as countries develop, but in Uganda it is thought to have decreased to just 37 years now due to AIDS-related mortality (BUC9403).

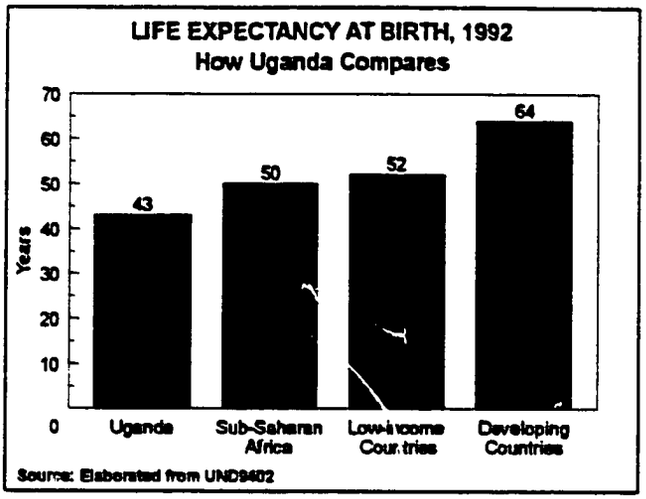

Figure 2.1

The 1988/89 UDHS found an infant mortality rate (IMR) of 101 and an under-five mortality rate (U5MR) of 180 deaths per thousand live births in the mid-1980s. Further analysis of available data suggests that actual mortality rates were slightly higher (see data notes in Appendix B on mortality estimation). Estimates integrating UDHS findings with other available information place the IMR at 112 and the U5MR at 191 in 1995, well above median levels for sub-Saharan Africa and low-income countries (see figure 2.2). The implication is that a newborn Ugandan baby has only slightly better than an 80 percent chance of reaching age five.

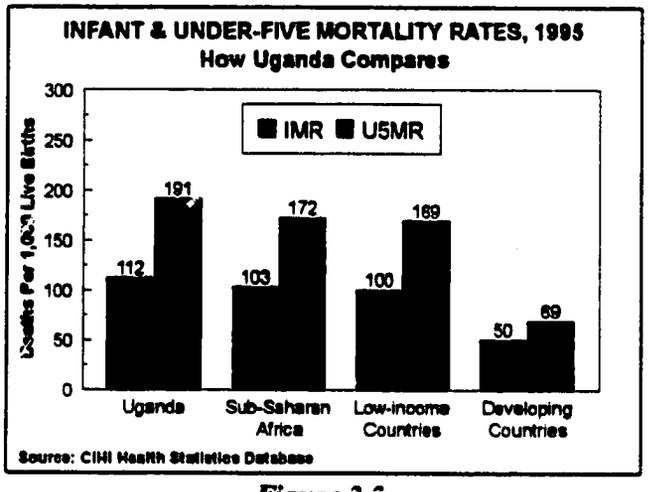

Figure 2.2

While infant and under-five mortality have gradually lowered elsewhere in the region, Uganda's rates have scarcely improved since the mid-1960s. In fact, CIHI's estimates indicate a slight rise in both rates in the 1970s before resuming a downward trend in the 1980s (see figure 2.3). This pattern is supported by mothers' responses to the UDHS.

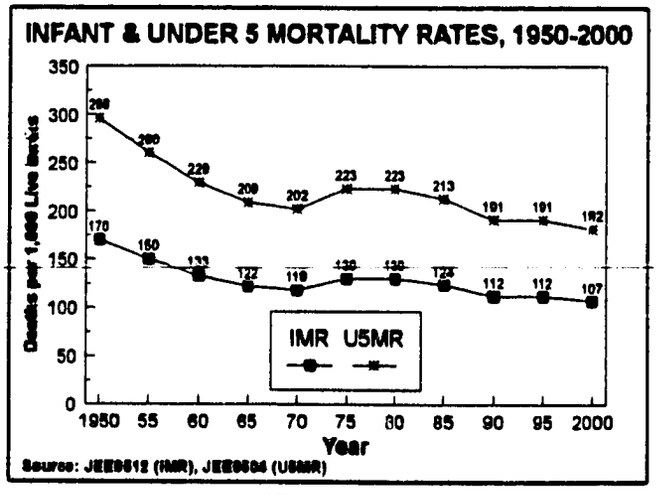

Figure 2.3

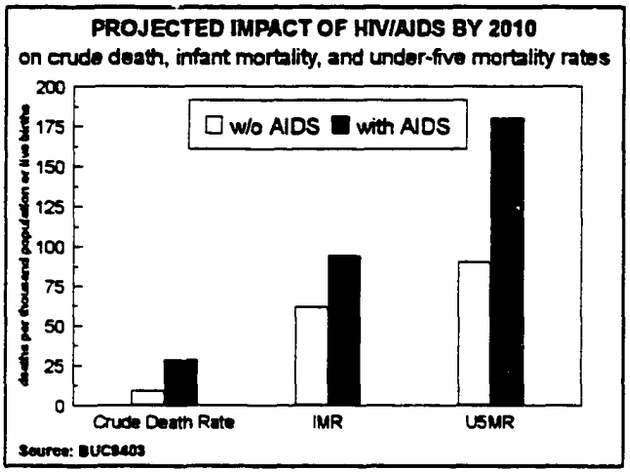

Figure 2.4

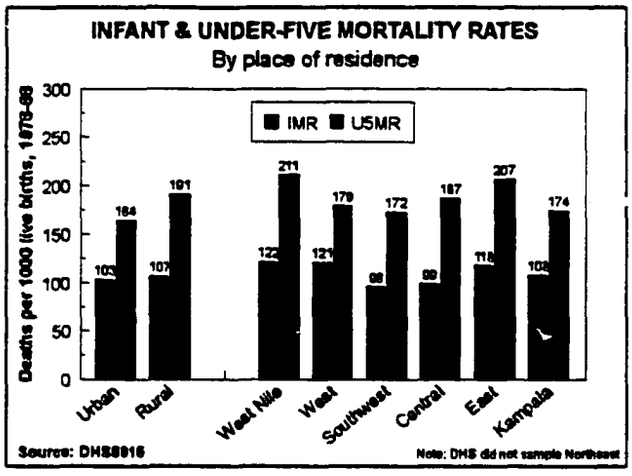

Figure 2.5

Unfortunately, projections after the mid-1980s do not account for the growing impact of HIV/AIDS on mortality among children. Long-term projections which do account for AIDS paint a bleak picture for the future if the epidemic cannot be combatted more effectively (see figure 2.4).

The UDHS found under-five mortality to be significantly higher in rural areas, primarily due to a child mortality rate (children ages one through four years) thirty percent higher than that found in urban areas. Among regions surveyed, the U5MR was found to be highest in the West Nile and East (see figure 2.5). The situation is thought to be still worse in the Northeast, which was not surveyed by the 1988/89 UDHS due to civil unrest. The planned 1995 UDHS will contribute greatly to our knowledge of health conditions in the neglected and impoverished North of Uganda.

Causes of Mortality & Morbidity

Mortality

The vast majority of illness and mortality in Uganda is caused by preventable diseases. According to the tallies of twenty hospital records illustrated in figure 2.6, malaria was the leading killer in Uganda in 1990, followed by HIV/AIDS, diarrheal diseases, pneumonia, and anemia. Children under five accounted for 54 percent of the deaths recorded, with malaria, pneumonia, diarrhea, and malnutrition accounting for 55 percent of these child deaths. Tetanus is another common deadly illness for children. Among adults, AIDS was the leading cause of death, followed by tuberculosis, malaria, meningitis, and diarrhea (WBK9402).

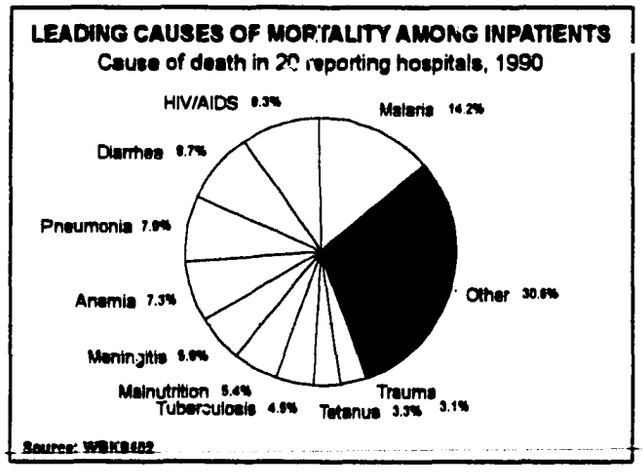

Figure 2.6

Morbidity

Outpatient statistics are viewed as considerably less reliable than inpatient data. Nevertheless, causes of outpatient morbidity in 1990 are almost identical to the causes of mortality, with malaria and upper respiratory diseases being the primary diagnoses for nearly 40 percent of outpatient visits in 17 reporting districts (see figure 2.7)(WBK9402). Many other common parasitical diseases do not appear in these tallies but are major contributors to overall morbidity in Uganda, including schistosomiasis, trypanosomiasis (sleeping sickness), onchocerciasis (river blindness), and Guinea Worm, each of which is discussed below under specific health problems.

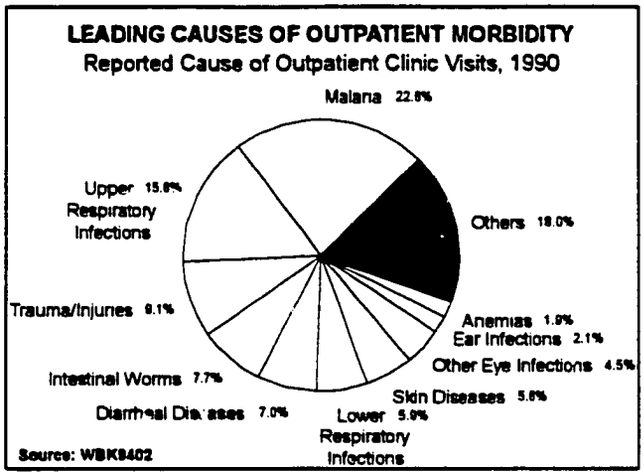

Figure 2.7

Maternal Mortality

Estimates of Uganda's maternal mortality rate (MMR) vary widely, reflecting the difficulties typically experienced in accurately defining and measuring this indicator (see data notes). The World Bank cites an estimate of 500 maternal deaths per 100,000 live births (WBK9402). The WHO's figure of 700 stands at the median point among sub-Saharan nations as well as low-income nations (see figure 2.8). According to the findings of the World Bank, the main causes of maternal mortality are hemorrhage, infections, pre-eclampsia and eclampsia, obstructed labor, and abortions. These risks are compounded by the effects of malaria, anemia, and pregnancies at either extreme of the reproductive age limits. Significant contributing factors to the high rate of maternal mortality include by poor child spacing, large family sizes, limited access to family planning services, low literacy rates among women, and poor access to health services (WBK9402).

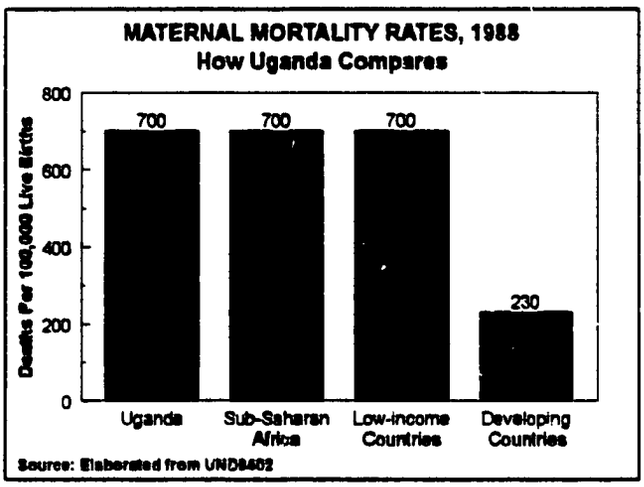

Figure 2.8

Specific Health Problems

Vector-Borne Diseases

Several of Uganda's greatest public health hazards are diseases carried by mosquitos and flies. Malaria tops the list and is a nationwide problem, but sleeping sickness and river blindness also pose a considerable threat in certain areas. All three are described below. Another vector-borne disease, schistosomiasis, is treated under diseases related to water and sanitation.

Malaria. As illustrated above, malaria was the number one reported cause of death and the number one contributor to outpatient morbidity in Uganda in 1990. According to the government of Uganda, about 25 percent of all illness among under-fives is attributable to malaria, and mortality is reportedly on the increase (MOF9201). Malaria among adults particularly impairs productivity in the poorest rural areas, where it is the most prevalent disease, by causing recurrent infections with attacks of fever in the warm and rainy seasons, when most workers are needed to collect crops. Malaria among pregnant women is a major contributing factor to anemia, premature deliveries and low birthweight (OUP9301).

Seeking data to illustrate the prevalence of malaria among Ugandan children, the 1988/89 UDHS found two-week prevalence of fever among under-fives to be 44 percent, one of the highest levels reported among nations surveyed (DHS9115). Prevalence was found to be considerably higher in rural than urban areas. Among the six regions surveyed, fever prevalence was highest by far in the East, where two-thirds of under-fives were reported to have suffered a fever in the previous four weeks (see figure 2.9). Nationwide, nearly half (48.3 percent) of children with fever were reportedly taken to a medical facility (DHS8915).

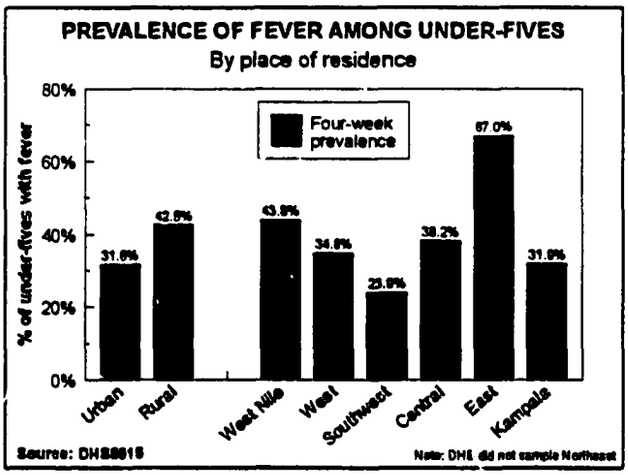

Figure 2.9

According to an analysis of the world malaria situation by the WHO, Uganda is an area in which endemic malaria remains basically unchanged. No national antimalarial program was ever implemented due to the enormous difficulties of achieving control, according to the WHO (OUP9301). Low levels of public awareness, poor service availability, and lack of resources at the household level are all partly responsible for the increasing impact of malaria in Uganda. Other important factors include the spreading resistance of parasites to the safer and cheaper drugs, poor vector control, and poor case management (MOF9201).

Sleeping Sickness (African Trypanosomiasis). Sleeping sickness is a disease borne by tsetse flies which prohibits the use of large areas of Africa for settlement or livestock grazing. Adults who farm or hunt are most likely to be infected; when children do become infected, the onset of the disease is extremely sudden and severe, with early central nervous system problems. Sleeping sickness is endemic throughout central and eastern Africa and continues to pose a major health problem in Uganda and Zaire in particular. In 1991, WHO estimated that over one-third (six million) of the Ugandan population was at risk. The disease is particularly difficult to diagnose due to the similarity of its clinical manifestations to those of several other diseases. Diagnostic methods that detect active infection (as opposed to mere exposure) are sorely needed.

In the beginning of this century, an epidemic along Lake Victoria killed approximately 250,000 people. Outbreaks of both forms of sleeping sickness – *Trypanosoma brucei rhodesiense* and *T.b. gambiense* – continue to occur. An outbreak of *T.b. rhodesiense* has been affecting the Busoga district of Uganda since 1976; more than 40,000

cases were recorded up to 1990 (see figure 2.10). In recent years, the epidemic has reached Tororo district as well. The vector is *Glossina fuscipes*. A vector control project using pyramidical optic traps impregnated with deltamethrin was launched in the Busoga area in 1988. Fly populations were reduced by 95 percent (with total elimination in some parishes) and the number of new human cases of trypanosomiasis was subsequently reduced in the same proportion. Since 1990, the trapping has been extended to epidemic areas of Tororo district (BTM9001,VBC9101). In 1993 Uganda became the first African country to register eflornithine, a new drug for the *gambiense* form of African trypanosomiasis.

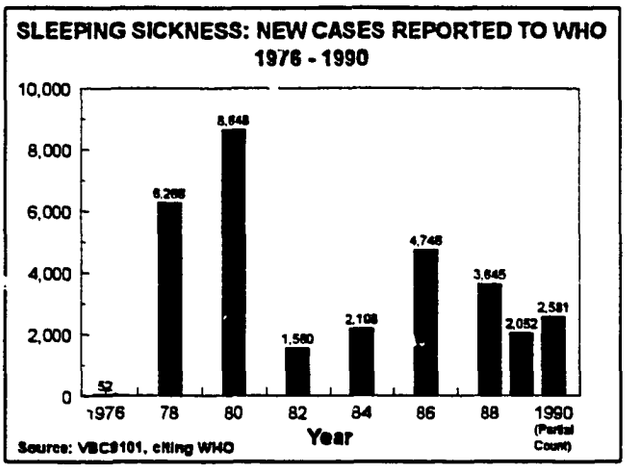

Figure 2.10

Onchocerciasis (River Blindness). Onchocerciasis is a chronic but non-fatal disease carried by blackflies which has posed particularly serious problems in vast areas of West Africa. Onchocerciasis is hyperendemic in parts of rural western Uganda, where prevalence of eye lesions, the most serious consequence of the disease, is comparable to that observed in West African forest areas. Preliminary surveys in previously known hyperendemic foci in western Uganda also show an unusually high number of patients with epilepsy and retarded growth (LAN9401).

Plague. Plague is a highly contagious disease transmitted through the bites of fleas infected from rats. Infected areas reported by WHO in March 1995 included Nebbi District in Uganda's Western Region (WHO9503).

Sexually-Transmitted Diseases

HIV/AIDS. Although recent test results indicate that the transmission rate of HIV among lower-risk groups may be on the decline (see section IV), the HIV/AIDS pandemic continues to worsen in Uganda both in terms of direct suffering and broader, devastating socioeconomic impact. In many parts of the country, AIDS is the leading cause of hospital admissions and deaths. Estimates by the Ministry of Health (MOH) that there were 80,000 AIDS-related deaths nationwide in 1993 would indicate that AIDS was responsible for about one-fifth of overall mortality that year.

In 1994, the U.S. Bureau of the Census estimated nearly 16 percent of Uganda's total population to be infected with HIV, second only to Zambia among the fourteen heavily-impacted nations included in the Bureau's estimates (BUC9403). Figure 2.11 compares this estimate with those for neighboring nations.

Considering the impact of HIV/AIDS, the Bureau calculates that life expectancy in Uganda has dropped to just 37 years, the lowest in the world. Much of this decrease is due to increased child mortality attributable to HIV/AIDS (BUC9403, CAB9412). Assuming the pandemic continues to hold its course in Uganda,

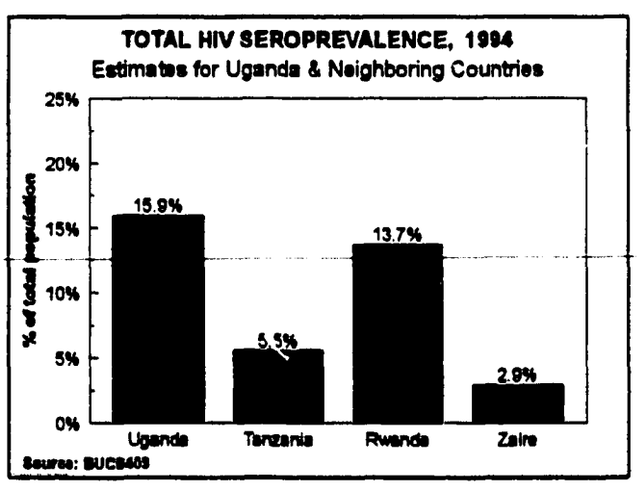

Figure 2.11

the Bureau projects that in the year 2010 the crude death rate will be three times higher, infant mortality fifty percent higher, and under-five mortality twice as high as projected without HIV/AIDS (see figure 2.4 above). Life expectancy at birth, originally projected to approach 60 years of age by the year 2010, will be only about 32 with the impact of HIV/AIDS, according to the Bureau's projections. More information on HIV/AIDS in Uganda and efforts to combat the epidemic appears in Section IV.

Other STDs. The prevalence of other untreated STDs is believed to be a major factor contributing to the growing HIV/AIDS pandemic. Up to 25 percent of women in antenatal clinics in urban areas of Uganda have serological evidence of past infection with syphilis; the prevalence of gonorrhea may be as high as 15 percent among adults. Chanchroid and genital herpes are also very common. Facilities for the correct diagnosis and treatment of STDs in Uganda are extremely limited and those few persons who do get treatment usually do not get treated adequately. Contact notification is also very limited, so even those who are treated frequently become reinfected. STDs commonly go unrecognized and many persons, especially women, accept the presence of symptoms as a fact of life (CAB9412).

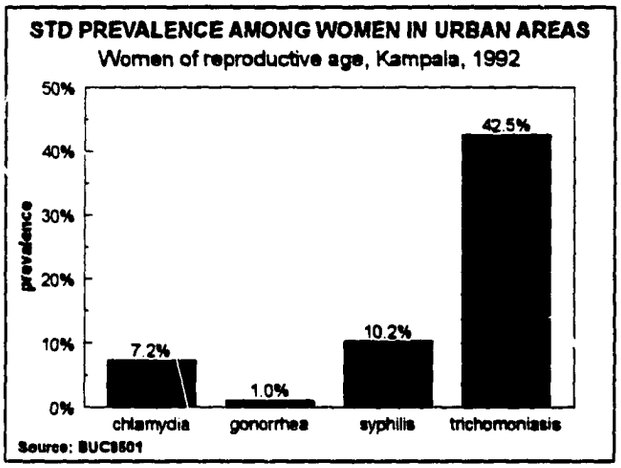

Figure 2.12

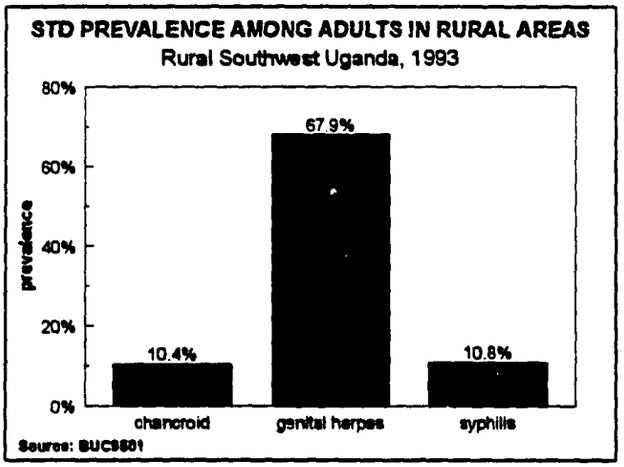

Figure 2.13

Figures 2.12 and 2.13 depict recent data gathered by the U.S. Census Bureau on the prevalence of various STDs among urban and rural adults in Uganda. Genital ulcer diseases, including chancroid and syphilis, are strongly associated with HIV infection in Africa, a relationship which has been observed in studies of STD clinic patients with genital ulcers in Musaka, Uganda, and among patients with chancroid in fifteen hospitals. Although both graphs here depict prevalence of syphilis at about ten percent, other studies in Uganda have found significantly higher levels in urban and rural areas alike. Studies among higher-risk groups – such as prostitutes and truck drivers – have found rates as high as 45-60 percent.

Evidence linking HIV with infection of other STDs, such as gonorrhea, chlamydia, trichomoniasis, and hepatitis B, is not as strong, though one study in Uganda did find a greater likelihood of HIV infection with increasing number of gonorrhea episodes. Another study in southwestern Uganda found hepatitis B to be strongly associated with the presence of other STDs but not HIV (BUC9501).

Diseases Related to Water and Sanitation

As indicated in figure 2.14, reported levels of access to safe water and adequate sanitation in Uganda lag behind the standards for sub-Saharan Africa and for low-income nations as a group. In each case, about two-thirds of Ugandans lack access and are thus at greater risk for diarrhea, helminth (worm) infections, and many other diseases which thrive where water and sanitation measures are inadequate. Figures 2.15 and 2.16 illustrate that the problem is severe in rural and urban areas alike.

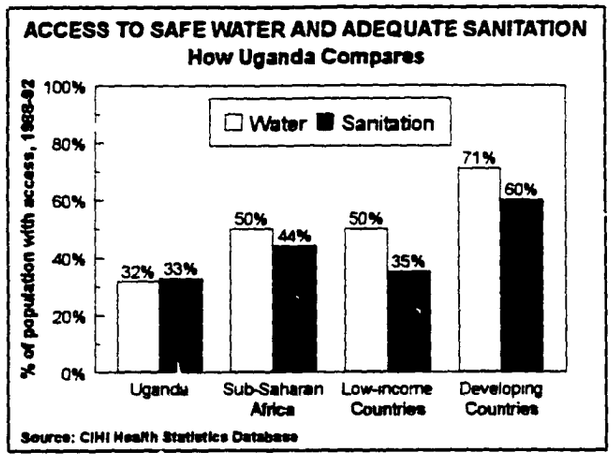

Figure 2.14

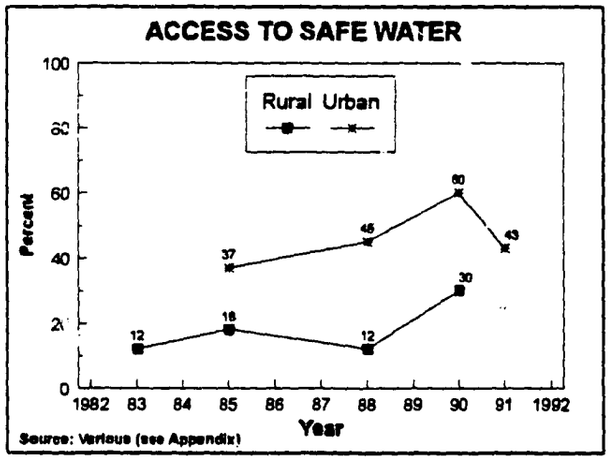

Figure 2.15

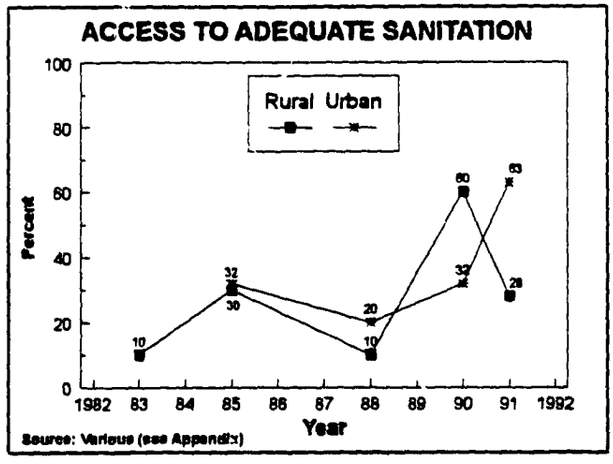

Figure 2.16

Diarrheal Diseases. Diarrheal diseases are commonly underreported but still ranked third among reported causes of death (8.7 percent of total) and fifth among causes of clinic visits (7 percent of total) in Uganda in 1990. The latter figure is particularly underrepresentative as less than 15 percent of cases of diarrhea are treated in a medical facility, according to mothers' reponses to the UDHS. Diarrheal diseases are most common among children at the time of weaning and as children start to become more mobile. According to WHO, a 1993 survey found that Ugandan children suffer an average of 5.2 episodes of diarrhea each year, just above the median of 4.5 episodes among sub-Saharan nations for which WHO has reported survey results (WHD9401).

The UDHS found an overall two-week prevalence for diarrhea among under-fives of 26.4 percent, about average for DHS reports in the region. This rate is more than twice as high as the 13 percent prevalence found by a national WHO survey, a difference which might be attributable to seasonal variations. Two-week prevalence among children aged six to 17 months was highest at 43-44 percent. Twenty-four hour prevalence among under-fives was reported at 15.4 percent, one of the highest levels among countries surveyed (DHS9115). Prevalence rates were found to be slightly higher in rural over urban areas in Uganda, but differences between regions were much more pronounced. Among the six regions surveyed, the highest rates by far were found in the East, where over one-third of under-fives suffered diarrhea in the previous two weeks and one-fifth in the previous twenty-four hours. Conditions were slightly better in the West and West Nile regions and much better in Kampala and the Central and Southwest regions (see figure 2.17 below).

Uganda's Control of Diarrhoeal Disease (CDD) program started off focussing on the promotion of oral rehydration therapy (ORT) to prevent deaths from diarrhea. The level of use of oral rehydration salts (ORS) or other rehydrating fluids to treat diarrhea has been steadily rising since the early 1980s and is currently estimated by WHO at about 45 percent of cases, just about on par with the rest of the region (see figures 2.18 and 2.19). More recently, the CDD program has been trying to address the root causes of the problem, particularly poor water supply, sanitation, and hygiene (MOF9201).

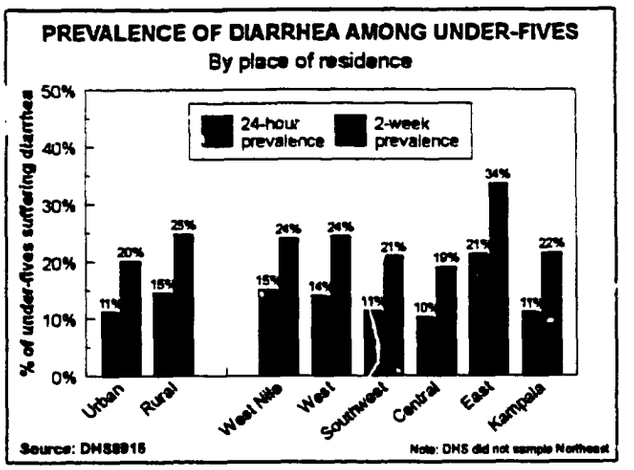

Figure 2.17

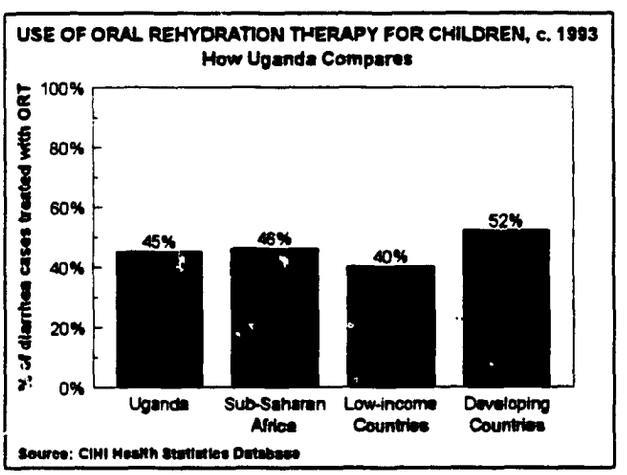

Figure 2.18

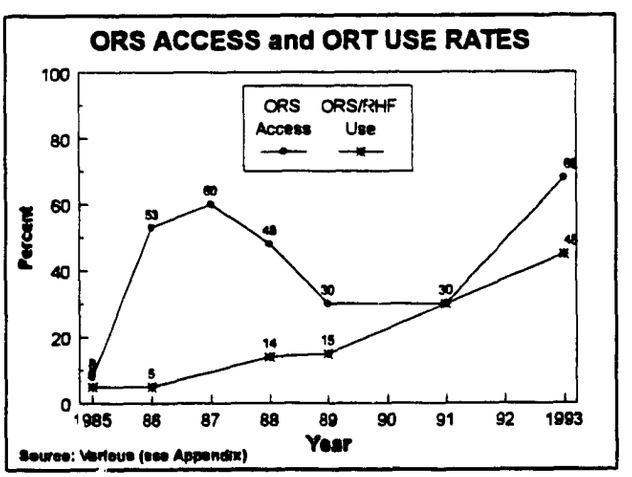

Figure 2.19

Cholera. In recent years, the presence of cholera in Uganda has been sporadic and limited to certain districts. Although cholera was endemic in 1992, nocases were reported to WHO in 1993 (WHO9405). In 1994, however, over 400 cases and 18 deaths were reported for July and August alone. In March 1995, WHO listed Uganda's Kasese district among areas infected with cholera (WHO9503).

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. Very little hard data exist on prevalence or incidence of most types of helminth infections. As previously indicated in figure 2.7, intestinal worms accounted for nearly 8 percent of outpatient visits in 1990, but this represents only a fraction of the actual incidence.

The most vulnerable population group is typically school-age children. Treatment with albendazole or praziquantel can cure the current infection and may prevent the appearance of concurrent diseases as well as ameliorate the long-term effects of chronic childhood infection. Large-scale treatment of individuals can also reduce the rate of infection to others, thus reducing overall parasite transmission in a community. However, reinfection is practically inevitable in endemic areas. Rates of reinfection can be best reduced through environmental improvements, particularly improved sanitation (OUP9301).

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, Uganda is considered a "high prevalence" country (AID9416). 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.

Guinea Worm (Dracunculiasis). Guinea Worm disease, which is transmitted through unsafe drinking water, is the most documented helminth infection in sub-Saharan Africa, thanks particularly to the eradication efforts of UNICEF, WHO, the U.S. Centers for Disease Control, and the Carter Center's Global 2000 program. In 1992 and 1993, Uganda reported more cases of Guinea Worm than any other country in the world except Nigeria. A 1991-92 case search for Guinea Worm confirmed that the disease was endemic in 16 districts in northern Uganda with a population of almost two million inhabitants. Of a total count for the year of 126,369 cases, nearly 95 percent were found in only three districts (Kitgum, Moroto and Kotido) (GLO9401). Based on this count, an incidence rate can be calculated of about 64 cases per thousand population, higher than that found in any other country except Benin (AID9416). More recently, in the first nine months of 1994, just under 8,800 cases were reported in the entire country, according to the Uganda Guinea Worm Eradication Program (UGWEP). This represents only a fraction of the number of cases found in 1991-92 and a decline of roughly 80 percent from the number reported in the same period of 1993.

More importantly, a recent district-by-district review of endemic villages revealed that, as of August 1994, only 971 villages in the country had had one or more cases of dracunculiasis in the past year, a substantial decline from the 2,677 villages found to be endemic in the 1991-92 case search. UGWEP is still reviewing the status of interventions in the 971 currently endemic villages, over 90 percent of which have a trained village-based health worker and are reporting monthly. In 1994, half of the endemic villages received some health education about dracunculiasis, about 39 percent of households received cloth filters to screen water supply, and 37 percent were scheduled to benefit from safer sources of drinking water (GLO9401).

Acute Respiratory Infections (ARIs)

ARIs rank second as a cause of morbidity for under-fives and second as a cause of mortality for infants, according to the government of Uganda (MOF9201). Generally, the incidence of respiratory infections is 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 (OUP9301). Pneumonia, a serious and potentially fatal lower respiratory infection, ranked fourth among major causes of death in Uganda in 1990 (WBK9402). The frequency of pneumonia and the case-fatality rate are generally highest among the very young and the very old (OUP9301).

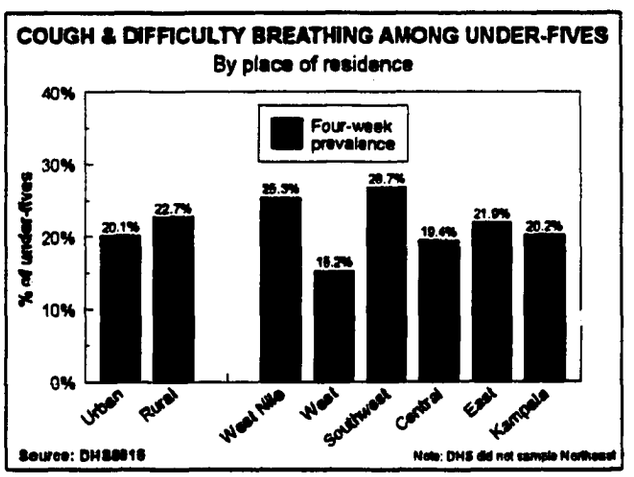

Figure 2.20

To obtain information on the prevalence of respiratory infections among children in Uganda, the UDHS asked mothers whether each of their children had experienced an episode of severe cough with difficult or rapid breathing in the four weeks preceding the survey. Prevalence was found to be 22.2 percent overall and over 30 percent for children aged 6-11 months. As illustrated in figure 2.20, differences between urban and rural areas were not found to be highly significant. Prevalence was slightly higher in the South West and West Nile regions and much lower than elsewhere in the West region (DHS8915).

Vaccine-Preventable Diseases

Vaccine-preventable diseases accounted for less than ten percent of total deaths reported in 1990, but their share as a contributor to mortality and illness among children is far greater. Case totals reported to the WHO's Global Programme for Vaccines (GPV) between 1989 and 1993 exhibit sharp rises in tuberculosis, measles and tetanus (see table 2.1 below). The significance of these rises is not entirely clear, however, as they may in some cases simply reflect improvements in reporting.

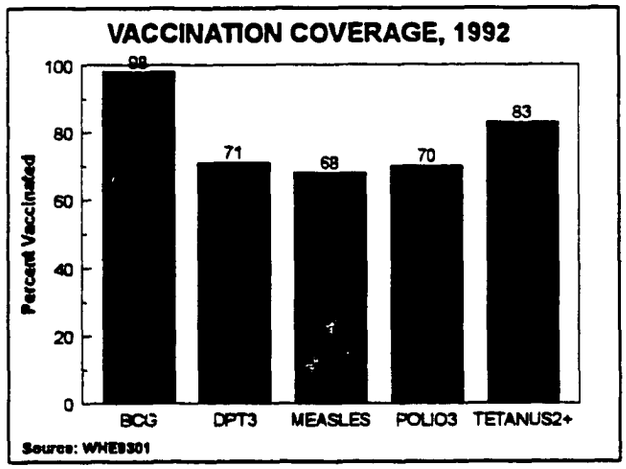

Figure 2.21

Since 1985, when coverage rates for most vaccines were under twenty percent, Uganda has recorded vast improvements in immunization coverage (as indicated in figures 2.23-2.26 and 2.28 below). In 1992, among the major vaccines, only measles coverage was reported below 70 percent (see figure 2.21). The levels of coverage attained by Uganda in the last ten years compare quite favorably to median levels among sub-Saharan nations and lower-income nations in general, as illustrated in figure 2.22 for the case of vaccination against diphtheria, pertussis and tetanus (DPT3). Of course, there is ample room for improvement: for three of the major vaccines, reported coverage decreased slightly in 1992, leaving roughly thirty percent of children at higher risk of contracting measles, diphtheria, pertussis, tetanus, and polio.

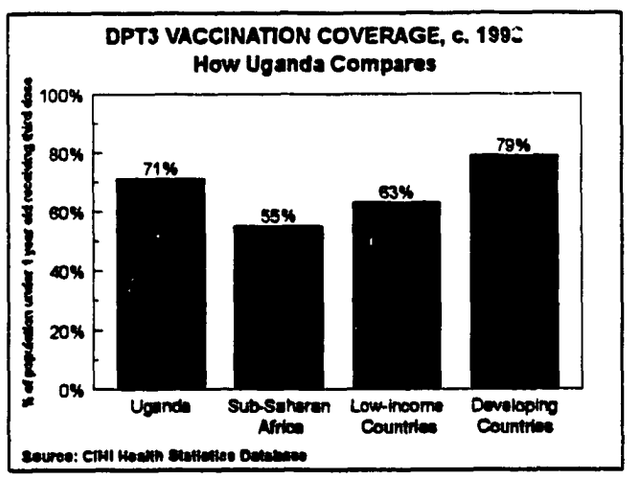

Figure 2.22

Measles. After substantial improvements in immunization coverage in the late 1980s, measles lost its distinction as the single largest cause of infant and child mortality. By 1990, measles was no longer listed even among the top ten reported causes of mortality or morbidity in Uganda. However, measles may have been responsible for a significant proportion of deaths and outpatient visits attributed to acute respiratory infections, for post-measles pneumonia is the main cause of measles-associated mortality in developing countries. As indicated in table 2.1, in 1992, when measles coverage declined slightly, reported cases rose astronomically to over 36,000. The WHO estimates that about four percent of measles cases in Uganda are fatal (WHO9103). While the long-term costs of non-fatal measles infection are not very well understood, long-term disabilities known to follow measles infection include blindness and malnutrition (OUP9301).

UGANDA: REPORTED ANNUAL INCIDENCE OF VACCINE-PREVENTABLE DISEASES

Disease	1989	1990	1991	1992	1993
Tuberculosis	2,841	14,740	19,016	20,662	21,579
Measles	660	2,637	-	36,511	-
Pertussis	9,740	913	-	-	-
Tetanus (total)	381	288	-	-	-
Neonatal Tetanus	110	129	-	605	-
Diphtheria	78	95	-	-	-
Poliomyelitis	9	28	22	15	-

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

Table 2.1

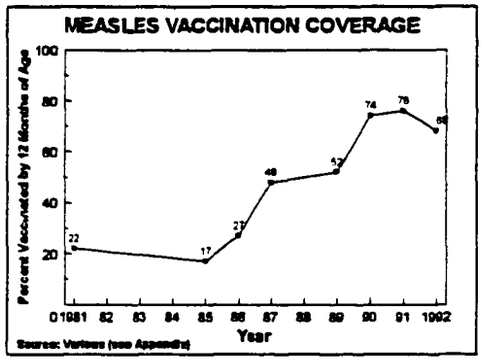

Figure 2.23

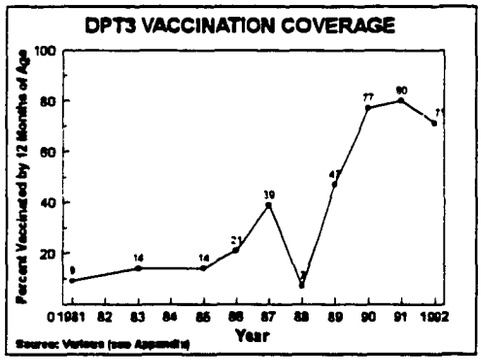

Figure 2.24

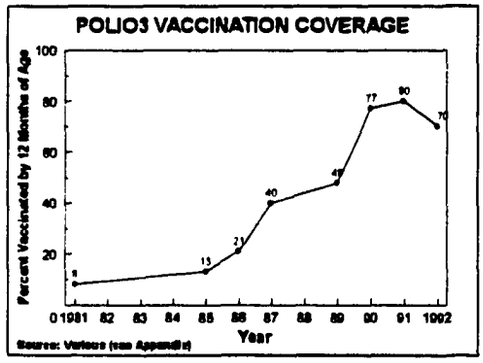

Figure 2.25

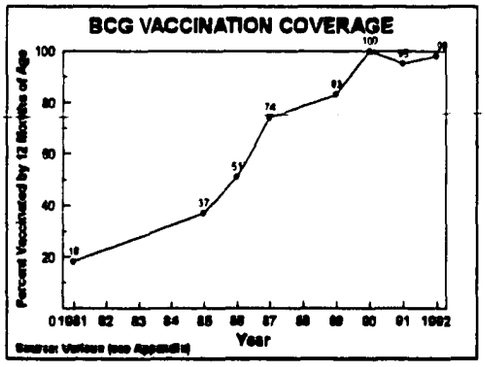

Figure 2.26

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 vaccine-preventable 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 DPT3 coverage rates in Uganda were reported at below 50 percent through 1989 (see figure 2.24), less than one hundred acases of diphtheria were reported nationwide in 1989-90 (see table 2.1).

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. Normally, the case-fatality rate for pertussis is about one percent, but studies in Uganda indicate a rate of up to 15 percent. The highest mortality is observed among children under two (OUP9301).

Polio. While other developing nations have made considerable progress toward the complete eradication of polio, small but significant numbers of polio cases are reported each year in Uganda (see table 2.1).

Tuberculosis (TB). TB ranked eighth among the major causes of death in Uganda in 1990. There are by now probably more new cases than ever due to the close relationship between HIV infection and clinical TB widely observed in regions with high levels of HIV seropositivity. This may help explain why the TB case rate reported for Uganda for 1990 is nearly fifty percent higher than the median among sub-Saharan nations (see figure 2.27). Coverage rates among children for the BCG vaccine to prevent tuberculosis have been at or near 100 percent since 1990 (see figure 2.26). To put TB in the

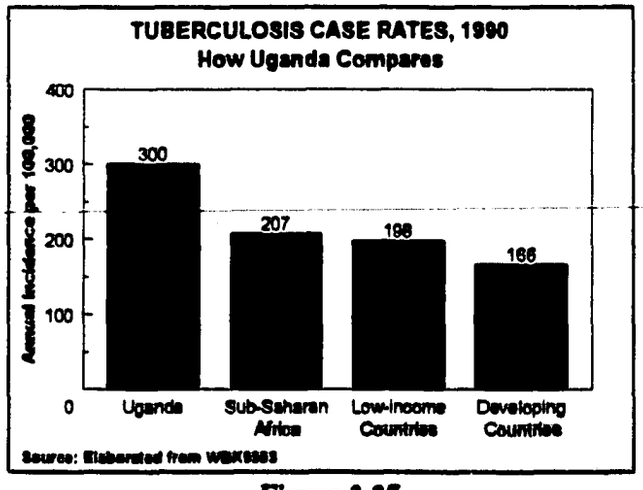

Figure 2.27

proper perspective, annual information is required about the number and age distribution of new cases of TB and of case fatalities. In the developing world, TB is generally concentrated in the adult age groups. Health information systems in Uganda, as in many developing countries, are too incomplete to provide more meaningful information on the incidence or mortality of TB (OUP9301).

Leprosy. In 1991, WHO estimated that Uganda had 15,000 cases of leprosy, or 8.1 cases per 10,000 inhabitants, a prevalence rate which had not declined over the past 5 years. Multi-drug therapy (MDT) was introduced in 1983 but by 1991 only covered 17.3 percent of cases, one of the lowest levels in the region. Based on Uganda's endemicity level and MDT coverage, WHO classified the country as "Level IIB," signifying that prevalence of leprosy is medium (between 1 and 10 cases per 10,000) and nationwide MDT coverage is low (less than 75 percent of registered cases). Leprosy control activities are partly integrated into the general health structure. Since BCG, the vaccine used to prevent tuberculosis, has been shown to be partially effective in preventing leprosy, efforts began in 1988 to establish a combined leprosy-tuberculosis program (WHO9105).

Tetanus. Tetanus is a completely preventable disease caused by contamination of wounds with an anaerobic bacillus. It ranked ninth among the major causes of death in Uganda in 1990, accounting for 3.3 percent of total reported deaths (WBK9402). Tetanus in newborns, known as neonatal tetanus (NT), may be the most underreported lethal infection in the world, particularly because its young victims are rarely registered or seen within the formal health care system. NT is caused by infection resulting from unsterile methods of cutting the umbilical cord or dressing the stump. After measles, NT kills more children 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 (OUP9301).

Until 1992, vaccination coverage among pregnant women in Uganda was extremely low (see figure 2.28), allowing NT to remain a serious health problem. The WHO estimates that NT caused about 10,000 deaths in Uganda in 1991, the ninth highest total in the world and fourth-highest in Africa, or approximately 9.4 deaths per 1,000 live births, also among the world's highest. Considering current estimates of the IMR, this implies that NT accounts for nearly ten percent of infant mortality (EPI9301). Tetanus is also a significant cause of preventable maternal mortality, but is sometimes only mentioned in passing in reference to safe motherhood (OUP9301).

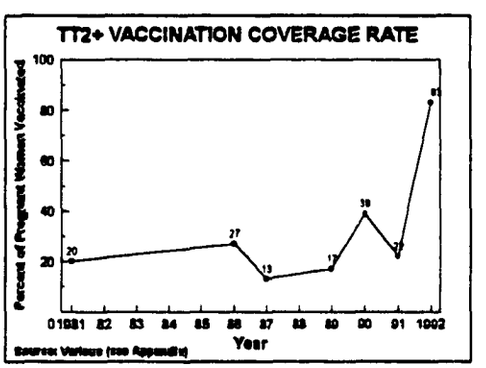

Figure 2.28

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. For this reason, the total of 12.7 percent of reported deaths specifically attributed to nutritional deficiencies (malnutrition and anemia) in 1990 may 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. Control of parasitic worms, for example, can help vastly improve nutrition for older children and adults. Hookworm and other intestinal worm infections can cause anemia while roundworms - the most prevalent of all - directly compete with the host for food. All of these infections may suppress appetite and reduce food intake. In order to reduce micronutrient deficiencies, supplementation - the administration of pills, capsules, or injections containing one or more of the micronutrients - is underway in Uganda (OUP9301).

The 1988/89 UDHS found fairly low prevalence of short-term malnutrition (wasting) among Ugandan children but much higher rates of chronic malnutrition (stunting). Wasting (low weight-for-height) was found to be chronic or severe (more than two standard deviations below the international standard) among just 1.9 percent of Ugandan children. Prevalence was highest in West Nile (3.9 percent) and Central (2.8 percent) regions.

The overall prevalence rate found for stunting (low height-for-age), a reflection of longer-term malnutrition, was one of Africa's highest at 44.5 percent. Stunting was found to be twice as frequent among rural children than urban children and most prevalent in the West Nile and South West regions (see figure 2.29). Factors leading to childhood stunting include short intervals between births, low birthweights, inadequate food consumption, and poor weaning practices and care when infants are between six and eighteen months old (DHS8915). "Reproductive wastage" – malnutrition among mothers – is thought to bring about 19 percent of abortions, stillbirths, and neonatal deaths – as well as low birthweights in 20 percent of newborn babies (MOF9201).

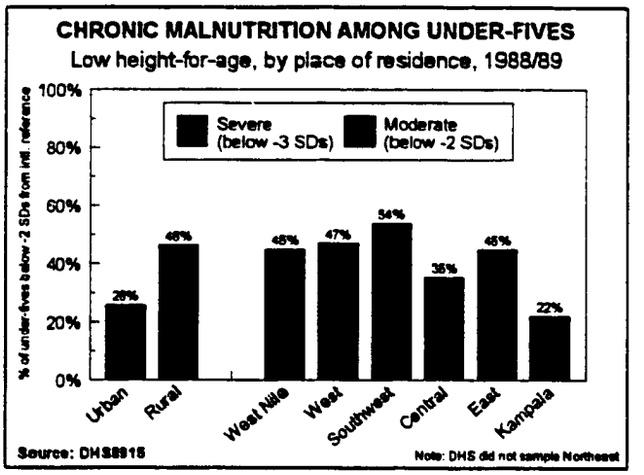

Figure 2.29

Protein-Energy Malnutrition (PEM). PEM results from two mutually-reinforcing causes: infectious diseases and insufficient intake of energy and protein. As documented above, prevalence of various infectious diseases is high. Meanwhile, an estimated 55 percent of Ugandan households consume less than 80 percent of the daily recommended energy intake (MOF9201). Low protein-energy intake among at-risk individuals in particular can result both from insufficient household resources and inadequate knowledge concerning the nutrition-disease cycle. Children are generally at highest risk of PEM 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.

Iron Deficiency (Anemia). Iron deficiency is the most common micronutrient disorder. When severe, it 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. Women are particularly susceptible because menstruation and childbearing raise their need for iron; anemia among pregnant women increases the risk of death from hemorrhage in childbirth . Anemia was the fifth most-common reported cause of death in twenty reporting hospitals in Uganda in 1990 (WBK9402). A major contributor to anemia is malaria.

Iodine Deficiency. In Uganda, prevalence of iodine deficiency is regional and there are no prevention programs in place or planned. Prevalence is higher in mountainous and flood-prone areas where iodine-deficient soils prevail. Although no age group or sex is immune to iodine deficiency, the fetus, women, and children seem to be the most vulnerable to serious and irreversible consequences of deficiency (OUP9301).

Vitamin A Deficiency. In Uganda, prevalence of Vitamin A deficiency is regional. The age groups at highest risk for vitamin A deficiency are young children beyond weaning age (six months to six years), although older children and pregnant and lactating women are also affected. Prevalence peaks among two-to-four-year-old children. Prevalence is also greatest in low-income groups and during those seasons when food sources of the vitamin are scarce (OUP9301).

III. HEALTH SECTOR ASSESSMENT

Health Care Services

At independence in 1962 and into the early 1970s, Uganda had one of the most highly-developed health care delivery systems in Africa. Its network of hospitals, health centers and dispensary and maternity units was well staffed by trained health workers at all levels. Services provided in smaller units in outlying villages and towns were integrated with those in large regional hospitals. Referral systems were well organized and follow-up care was routinely encouraged. In 1970, few patients had to travel more than ten kilometers to the nearest health post. However, after Idi Amin seized power in January 1971, the economy and security situation began to deteriorate, the health care system weakened and many professionals, including doctors, fled the country (UGA8501).

Uganda's health care system has improved since 1980 but has yet to regain the prestige it enjoyed before. According to a recent study by the London School of Hygiene and Tropical Medicine (LSHTM), international efforts since 1986 to rehabilitate and develop the health sector in Uganda have done little to help decentralize vertical programs or to correct the over-emphasis of urban-based curative services. The study concluded that policy makers failed to anticipate the contraction of local and international resources and that their efforts in effect backfired by initiating unsustainable expansion of a system which was inappropriate to begin with (LSH9401).

Uganda's current national health policy is based on the principles of primary health care (PHC) emphasizing community-based interventions for health promotion, disease control, sanitation, and simple curative and rehabilitative care. According to a 1992 planning document produced by the Ministry of Finance and Economic Planning, the government will continue efforts to decentralize health sector decision-making to the district level and to achieve a greater degree of coordination, supervision, and accountability at all levels (MOF9201).

Access and Utilization of Services

According to the Human Development Report 1994, about 70 percent of the Ugandan population lives within one hour's travelling time to modern health services, well above the median level of access among sub-Saharan nations (see figure 3.1). UNICEF reports much lower levels – 42 percent of rural inhabitants and 49 percent of the total population – but does not specify what definition of access is used (UNI9501). Immunization services appear to reach a very high percentage of children, as indicated by coverage levels reported in section II.

Indicators of health service utilization also vary: the UDHS found that an impressive 87 percent of pregnant women received prenatal care, but only 38 percent of deliveries were reported to have been assisted by trained

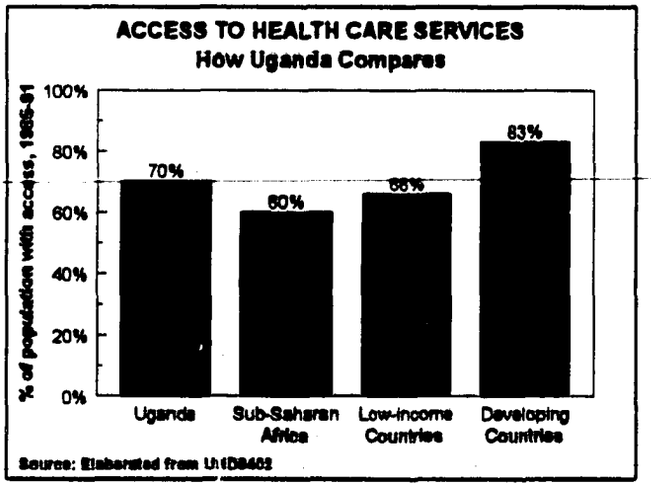

Figure 3.1

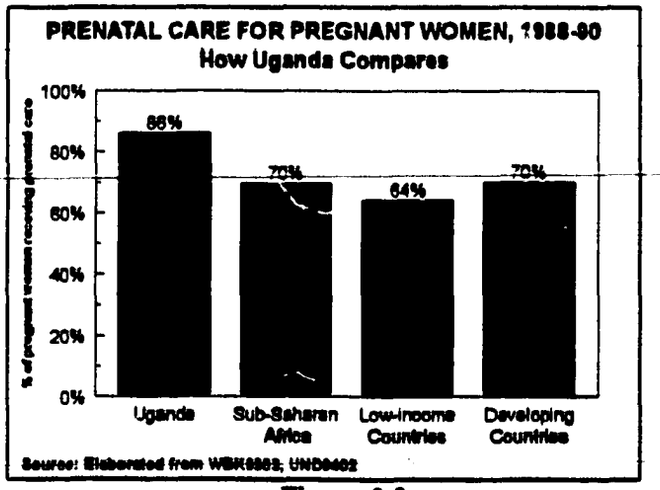

Figure 3.2

health personnel, a figure which measures much less favorably against those reported for other nations (see figures 3.2 and 3.3). The social sector review by the World Bank reported that only about 26 percent of women deliver in health institutions with the assistance of trained personnel, 23 percent use traditional birth attendants (TBAs), and the remaining 51 percent give birth at home, commonly without any specialized assistance and in conditions that are often unhygienic. The Bank cites poor access to ante-natal, delivery and post-natal care as primary causes behind Uganda's shortcomings in this area (WBK9402).

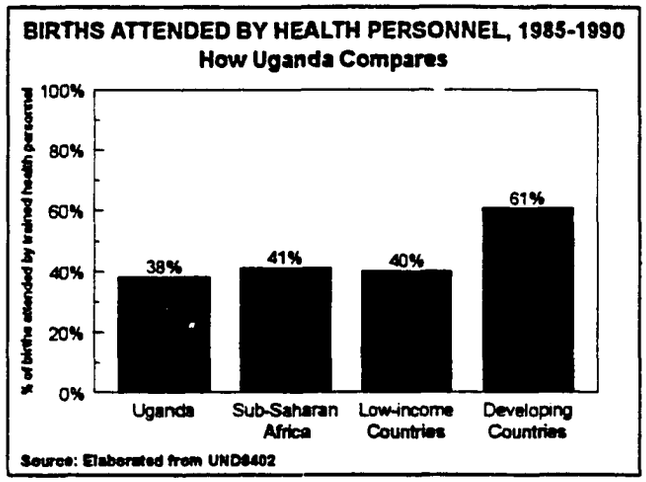

Figure 3.3

The UDHS found that just under 15 percent of under-fives with recent cases of diarrhea were taken to a medical facility, the second-lowest total among the nine sub-Saharan nations surveyed by 1990. Figures found for treatment of fever (48 percent) and difficulty breathing (22 percent) were somewhat higher but still below the average among the nine nations (DHS9115).

Health Care Personnel and Facilities

The World Bank review concluded that the distribution of health personnel in Uganda disproportionately favors urban centers and hospital-based care over rural areas and preventive services. Although Uganda is a predominantly rural nation with great needs for improved preventive and primary health care, the review found that less than one-quarter of Ministry of Health (MOH) health professionals are engaged in providing outpatient services in rural areas. Two-thirds of the MOH staff are located in hospitals in main towns, including one-fifth of the entire ministry staff located in a single facility, Mulago Hospital (WBK9402).

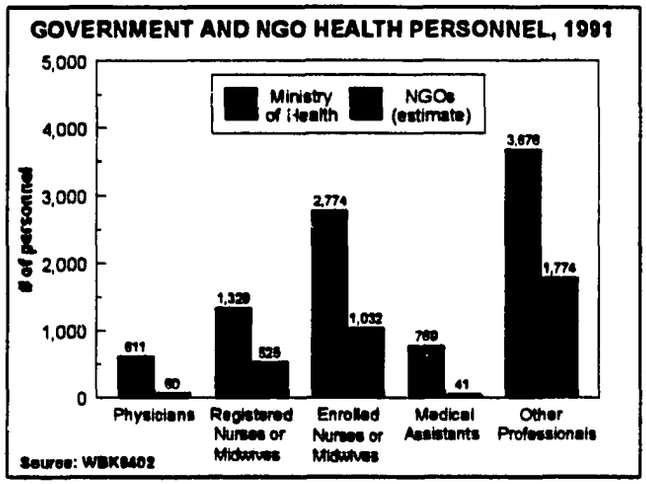

Figure 3.4

Figure 3.4 details the current numbers of health personnel working at various levels for the MOH or private NGOs in Uganda (WBK9402). Doctors are particularly scarce in Uganda, even by sub-Saharan African standards (see figure 3.5). The current ratio of about 25,000 inhabitants per doctor is roughly double Uganda's level in 1960, according to the Bank. In the public sector, medical assistants are relied upon to substitute for the waning supply of physicians. Nurses are somewhat more abundant but their coverage is still lacking. The World Bank has reported that there are nearly 9,000 Ugandans for each registered nurse or midwife (WBK9303). If the definition is expanded to include "enrolled" nurses and midwives, the ration is reduced to about 2,900:1, a slight improvement over the level of 3,130 in 1965 (WBK9402).

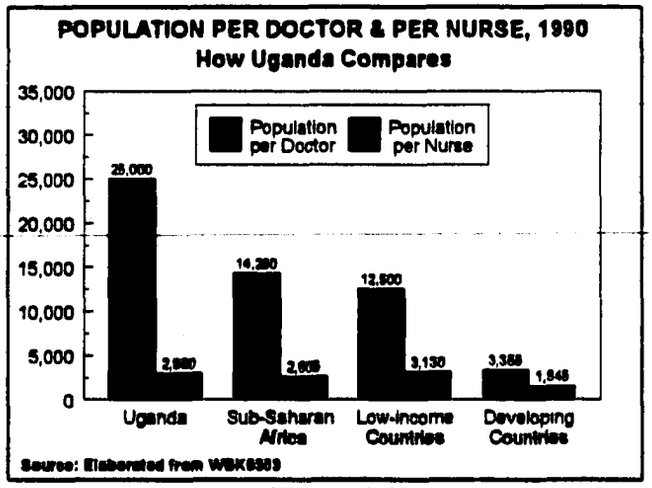

Figure 3.5

The problem of limited health units available within the country as a whole is compounded by their uneven geographical distribution, leading to great scarcity in some areas, particularly the North and East, and duplication of services in others. The Ministry of Finance and Economic Planning found that poor and unsystematic planning of health services has resulted in lack of definition of what services each level of the health service should provide and where new health units should be located. In many places, poor management has contributed to inefficiency in the operation of the infrastructure that does exist (MOF9201). Problems of service availability are exacerbated by the additional burden placed on the health care system by HIV/AIDS: despite Uganda's considerable success with home-based care, nearly half of the country's hospital beds are currently thought to be occupied by AIDS patients (CAB9412).

Public Sector Services

Figures 3.6 and 3.7 suggest that public sector services dominate the formal provision of health care, providing a sharp contrast to estimates in the late 1980s that mission-based services provided about fifty percent of health care (LSH9401). In 1991, the government owned 58 percent of secondary and tertiary hospitals (all hospitals district-level and above), 64 percent of primary hospitals (health centers with inpatient facilities or dispensary/maternities), and 58 percent of registered outpatient clinics. However, because many public facilities lack supplies and equipment and suffer physical dilapidation, the numerical superiority of government services is somewhat illusory.

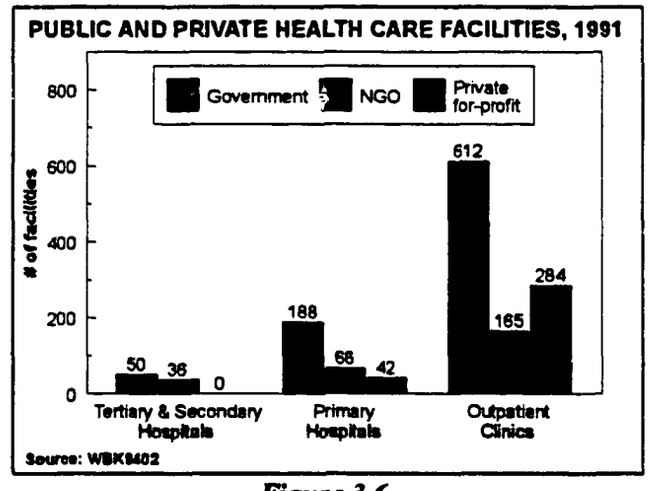

Figure 3.6

In 1991, the MOH employed over ninety percent of physicians and seventy percent of nurses and midwives. It has responded to a steady loss of physicians by substituting medical assistants, who numbered nearly 800 in 1991, to provide basic care (WBK9402).

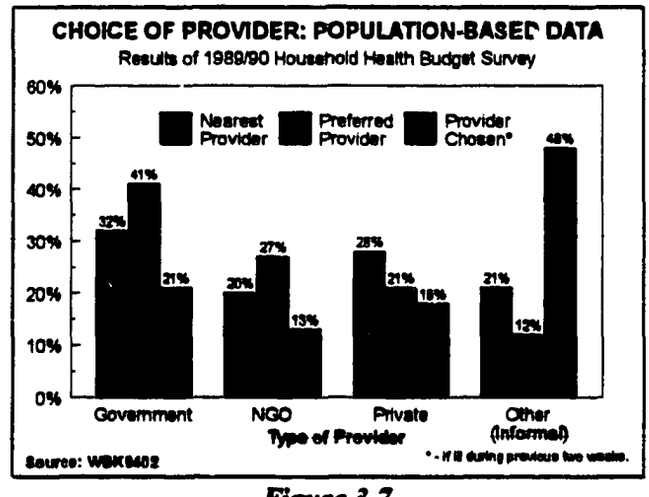

Figure 3.7

The public health care system is organized into three levels, topped by the national referral hospital in Kampala, Mugaba Hospital. The MOH operates district hospitals in nearly every district under the District Medical Officer (DMO). Below the district level, local authorities under the Ministry of Local Government are responsible for operating health centers, dispensaries, and aid posts. Although the intention is to make community health care a district-level responsibility, most employees are in fact seconded from the MOH. Changing roles and responsibilities of various authorities within the public health care system are currently being addressed within the government's overall decentralization efforts (WBK9402).

Private Sector Services

The private health sector includes services under religious and other non-governmental organizations (NGOs), for-profit clinics and drug shops, and practitioners of traditional medicine. As indicated in figure 3.7, informal health services, which typically involve traditional medicine, are by far the most viable option for many

Ugandans, even though formal services may be closer or preferable. Based on results of a household health budget survey conducted by Makerere University in 1989/90, the figure appears to underplay the relative importance of NGO health services, which, as discussed below, also receive a sizable proportion of care-seekers.

In general, NGO services run at higher capacity than public health facilities, a difference attributed to better equipment and supplies as well as higher staff morale in NGO facilities. The World Bank notes that NGOs owned only 38 percent of hospital beds in 1990 but provided an estimated 54 percent of inpatient bed-days (WBK9402). About twenty percent of total hospital beds are in church-run facilities (HPP9401). Bed occupancy rates at NGO facilities, estimated at around ninety percent in 1990, are about fifty percent higher than in the public sector. A small sample of NGO hospitals was found to treat about three times more outpatients per professional employee than public facilities. Only part of this difference is explained by the fact that NGOs rely much more heavily on nurses than the government does (WBK9402). Most NGO services are provided by local churches under the Catholic or Protestant Boards. International NGOs with particularly deep involvement in the health sector in Uganda include Save the Children Federation-UK, AMREF, and Medicins Sans Frontieres (MSF)/Holland. UNICEF has played a large role in facilitating the development of NGO services by supporting the Community-Based Health Care Association (CBHCA), which serves as a coordinating vehicle for NGOs at the district level (LSH9401).

Private clinics and drug shops, once confined to larger towns and cities, have begun to thrive in rural settings since the mid-1980s. In the countryside, they are typically licensed and registered in the name of an absentee doctor and commonly operated by moonlighting government health workers (WBK9402). Traditional healers are estimated to number 63,000 nationwide, according to USAID's 1991 Ugandan Traditional Healers Study. They are organized in diverse ways, including an HMO-like practice, a regulatory body, and a factory mass-producing and marketing herbal medicines. A 1990 study found that 40 percent of healers' caseloads were diarrheal diseases in adults and children (AID9215).

Health Care Financing

Since the breakdown of public health services in the 1970s, health care in Uganda has been financed primarily through private, out-of-pocket expenditures. In the 1980s, foreign aid began to play an increasingly significant role as well. According to a background paper for the World Bank's World Development Report 1993 (WDR), domestic government funding accounted for only about 13 percent of overall spending for health in 1990 (see figure 3.8), one of the lowest levels in the region (WBK9304). In its review of Uganda's social sectors, the Bank calculated that the domestic public sector funded only 17 percent of recurrent costs while private expenditure amounted to 61 percent and foreign aid accounted for the remaining 22 percent (see figure 3.9)(WBK9402).

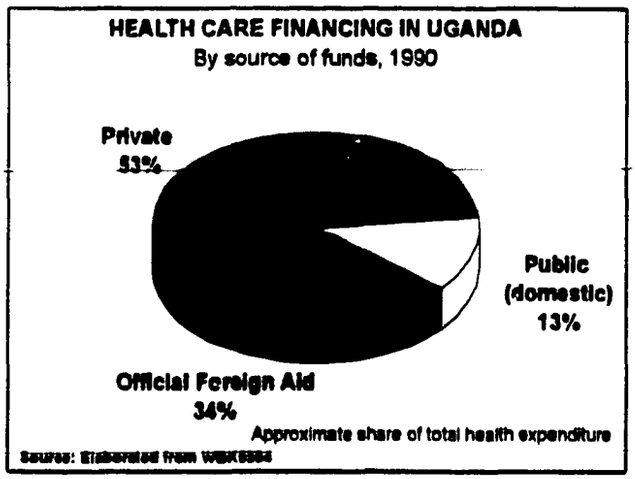

Figure 3.8

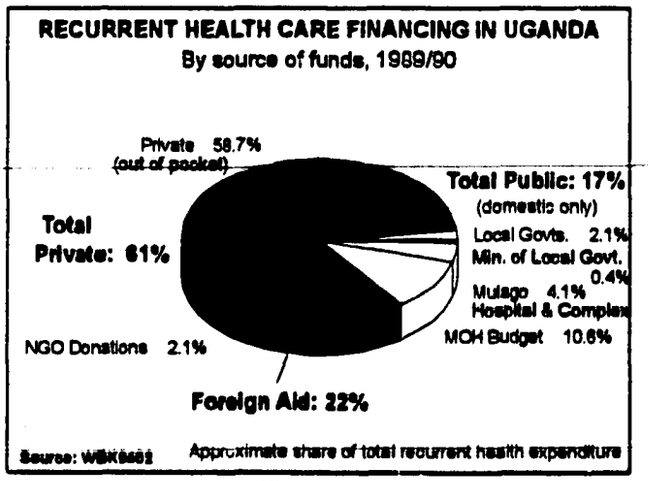

Figure 3.9

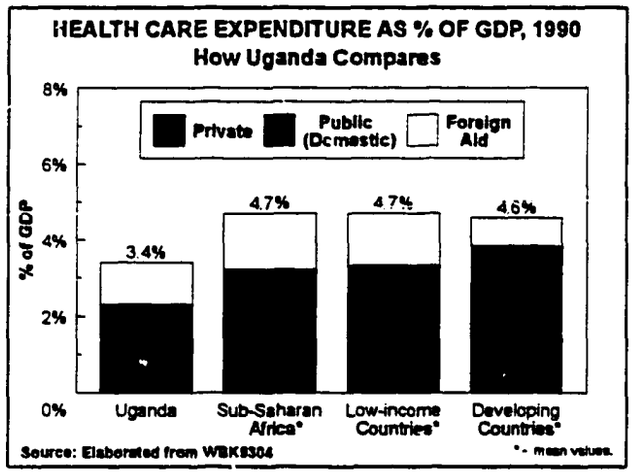

Figure 3.10

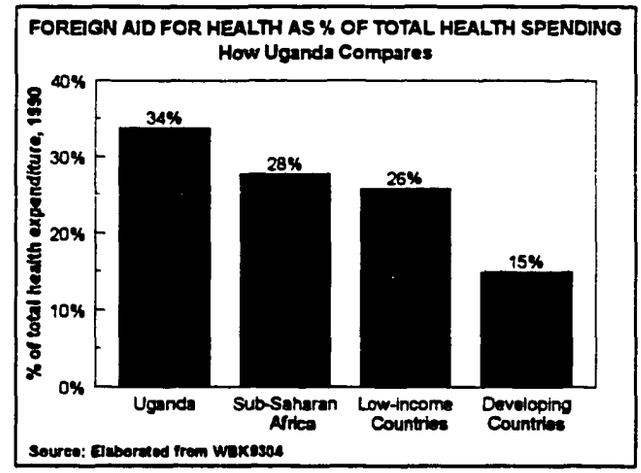

Figure 3.11

The World Bank calculated that total health expenditure in Uganda amounted to about $136 million in 1990, or 3.4 percent of gross domestic product (GDP), well below the average level among sub-Saharan nations (see figure 3.10). The level of just over eight dollars spent on health per person was one of the lowest found by the Bank. While private spending on health exceeded average levels around the region at 1.8 percent of GDP, domestic government spending for health was only about 0.45 percent of GDP. Within the region, only Somalia, Sudan, and Zaire commited lower levels of public funding for health, according to the Bank (WBK9304).

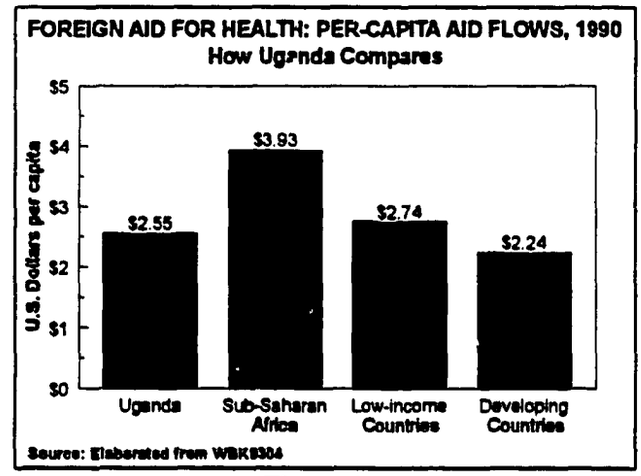

Figure 3.12

Foreign aid comprised over one-third of total funds for health, according to the background paper, well above typical levels for the region and for developing countries in general (see figure 3.11). The final WDR reported somewhat different figures, including a calculation that foreign aid flows amounted to a whopping 48.4 percent of total health spending, second-highest in the world (WBK9303). To some extent, the high share of foreign aid reflects the overall low level of other soucres of funding for health, for aid to Uganda for health falls well below the regional median when measured on a per-capita basis (see figure 3.12). But total foreign aid for health in 1990 – estimated at $45 million – represents an increase from annual totals estimated for 1986-88 ($40 million) and dwarfs an estimate for 1982/3 ($5 million), when aid was thought to comprise just four percent of total health expenditure (WBK9304,LSH9401). Major multilateral agencies providing assistance in the health sector in Uganda include the World Bank, WHO, UNICEF, the European Community, and the African Development Bank. Other important contributors include the governments of Canada, Denmark, France, Germany, Italy, the United Kingdom, and the United States (WBK9402).

Public Sector

Sources of Funding. Over seventy percent of public funding for health was derived from foreign aid in 1990, according to the World Bank. Funding by the Government of Uganda is primarily directed to the budget of the Ministry of Health, which comprised over sixty percent of domestic public funding for health in 1989/90 (see figure 3.9). Mulago Hospital and Complex has its own budget, which amounted to about one-third of domestic public health financing in 1989/90. The Ministry of Local Government, which funds non-salary expenses of local health services, recorded health expenditures amounting to less than three percent of this total (WBK9402).

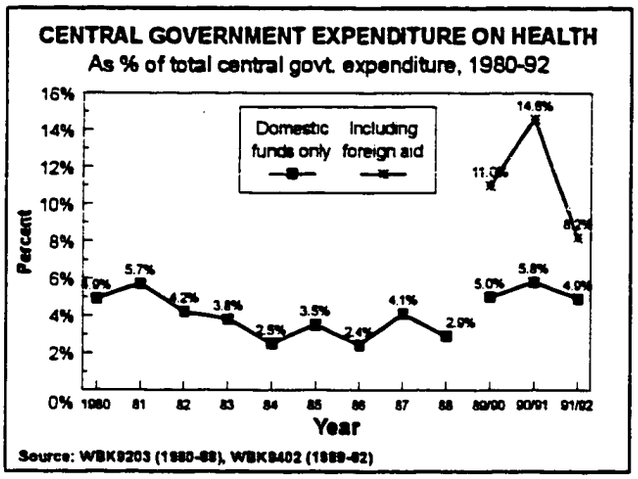

Figure 3.13

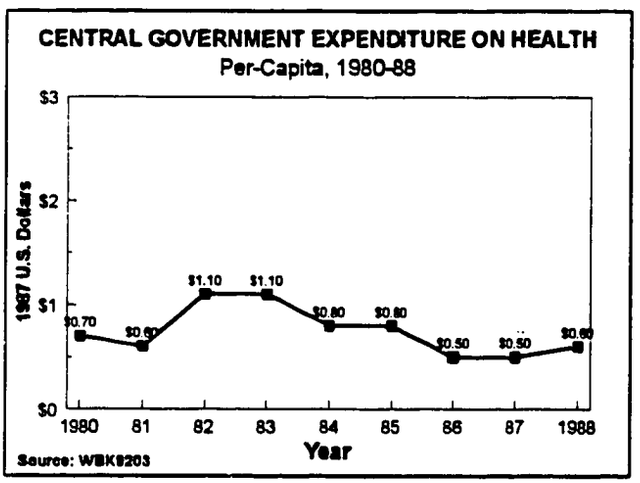

Figure 3.14

The low level of domestic government resources dedicated to the health sector is partly reflected in budgetary allocations of less than four percent in the mid-1980s (see figure 3.13). These allocations represent shrinking slices of an already diminished pie, for overall public sector finances had already plummeted massively since the early 1970s. The net effect was that real MOH expenditures in 1986/87 amounted to just 6.4 percent of their level in 1970/71, despite the fact that the population base to be served had expanded considerably (LSH9401). Per-capita domestic funding for health amounted to little over one dollar for most of the 1980s (see figure 3.14). Reflecting a slight improvement, the World Bank's social sector review found that spending on health represented about five percent of the domestically-funded budget from 1989 through 1992. When external aid to the Government of Uganda is included, this proportion is doubled (WBK9402).

Local governments are also significant sources of health care financing, accounting for about two percent of total spending on health and over ten percent of domestic government spending on health in 1989/90 (WBK9402). District Administrations and even sub-counties have the right to levy taxes to raise revenues for health services. Districts supplement local revenues with small allocations from the central government (LSH9001).

Allocation of Public Expenditure. Due to the weakness of domestic government financing, overall public health spending patterns are dominated by externally-funded programs. Without foreign aid, public spending on primary, preventive, and community health interventions would be minimal. Utilizing expenditure categories developed by the World Bank to analyze public health spending in developing countries, figure 3.15 illustrates the overwhelming amount of local resources dedicated to curative care – particularly secondary and tertiary care – relative to preventive and community health interventions. The single largest domestic funding category was found to be administration (WBK9402). In 1986/87, Mulago Hospital alone reportedly consumed 30 percent of the government's recurrent health budget and 70 percent of the development budget. Geographical discrepancies in per-capita funding are considerable, with the relatively impoverished residents of the North, where local governments are unable to raise significant tax revenues, benefitting least from national government outlays for health (LSH9401).

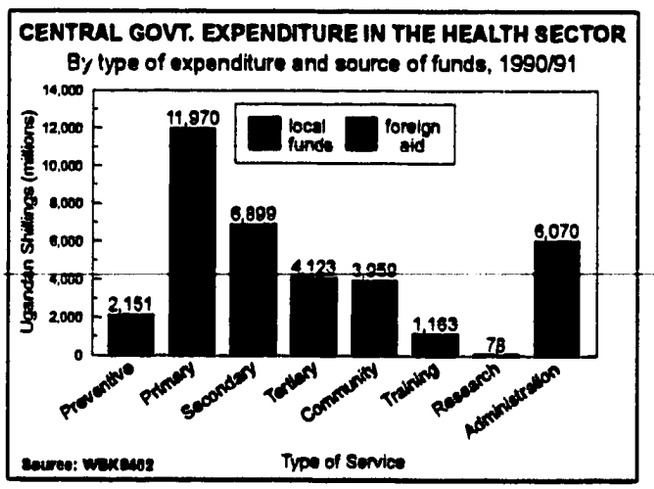

Figure 3.15

An earlier World Bank study found that the Ugandan government directed roughly 77 percent of health expenditures to recurrent costs in 1988, 42 percent of which was applied to salaries and 36 percent to drugs and materials (WBK9304). The LSHTM study, however, notes that a contracting budget forced the government to cut back support for supplies and other operating expenses in order to continue paying wages and salaries, which reportedly consumed 80 percent of recurrent public funding for health in the early 1990s (LSH9401).

Cost Recovery / Community Financing. Health services have traditionally been provided free of charge in most public facilities, though informal and illegal fees have commonly been charged by meagerly paid health workers (LSH9401). The government announced in 1992 that public hospitals would eventually be allowed to open private wings which would charge full cost for services (WBK9402). While national-level facilities continue to provide most services free of charge, district-level services do collect and retain some funds from patients. A 1990 study found that these fees amounted to only about ten percent of those charged in for-profit clinics and 30-50 percent of those charged by NGO facilities, and that their collection was quite relaxed (LSH9001). As a method of financing public health services, user fees thus remain fairly insignificant (WBK9402).

Initial efforts in the late 1980s to implement Bamako Initiative activities – facilitiating improvement of local PHC systems through community participation in financing and management – were impeded by the perception that a "pilot district" approach was necessary. This was deemed to be politically and socially impossible (HPP9301). While Uganda lags behind many other African nations in positively fostering decentralized, community control of local health systems, the practical effects of limited national government finances and the arduous process of rehabilitation of local services have contributed to an incipient movement favoring local control (LSH9401).

Private Sector

The findings of the World Bank presented in figures 3.8 and 3.9 echo earlier assessments of the overwhelmingly large role of private financing. A 1988 study encompassing both modern and traditional care estimated that out-of-pocket expenditures amounted to 80 percent of total expenditure on health in Uganda (LSH9401). Some employers directly provide health care for their employees or contract services of NGO or for-profit providers, but the World Bank found no evidence of any form of private or public health insurance in Uganda (WBK9402).

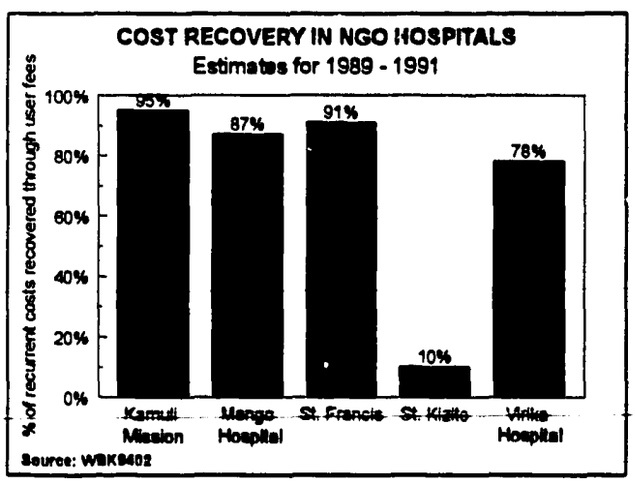

Figure 3.16

Although low incomes limit the capacity and inclination of many Ugandans to purchase medical services, Ugandan NGOs have generally shown that they can generate substantial revenues through user fees (see figure 3.16). A study by LSHTM estimated that Ugandan NGOs cover 70-80 percent of costs through fee-for-service charges. This level of cost recovery is very impressive even when compared with estimates found for NGOs in other countries with fairly successful rates of recovery, e.g. Ghana (50 percent), Malawi (30-40 percent) and Tanzania (33 percent). Researchers for LSHTM estimated that about ten percent of NGO health funding is derived from the Government of Uganda and that the remaining 10-20 percent comes from donations (HPP9401).

Ugandan NGOs have learned to limit costs through cooperative arrangements among themselves and with the public sector. On behalf of their member organizations, the Catholic and Protestant Boards operate Joint Medical Stores, which purchase drugs either from the parastatal Uganda Pharmaceuticals, Ltd., or through external sources (HPP9401).

IV. HIV INFECTION AND AIDS

The struggle against HIV/AIDS in Uganda is one of the oldest and most developed in the world. The disease was first recognized in 1982 in Rakai District, a crossroads for traders and soldiers in southwestern Uganda, and was known as "slim" before being dubbed AIDS by the international medical community. Despite early recognition of and commitment to the need to combat HIV/AIDS, Uganda's Ministry of Health (MOH) now estimates a total of 1.5 million citizens living with HIV, higher than the number of Americans or Kenyans estimated with HIV despite Uganda's relatively smaller size. In many parts of the country, AIDS is now the number one cause of hospital admissions and deaths (CAB9412).

As indicated in figure 4.1, at the end of 1993 Uganda had reported nearly 44,000 AIDS cases to WHO, the highest cumulative total in Africa, including over 9,200 for 1993 alone (WHO9501). Estimates of the actual number of cases are considerably higher: the MOH estimated that there had been a cumulative total of 315,000 cases of AIDS by the end of 1993, including an estimated 90,000 new cases in 1993 alone. The MOH also estimated that 80,000 Ugandans suffered AIDS-related deaths in 1993, about one-fifth of the total number of annual deaths in Uganda projected by the UN.

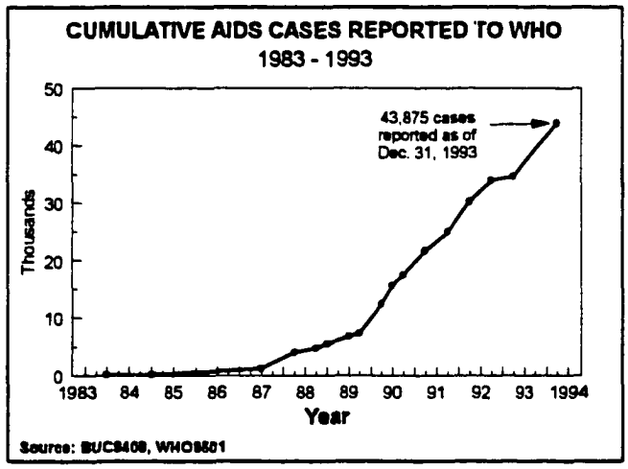

Figure 4.1

The U.S. Bureau of the Census calculates that Uganda now has the lowest life expectancy in the world - just 37 years of age - due to AIDS-related mortality and projects that figure to drop to about 32 by the year 2010, only slightly over half of the life expectancy projected in the absence of AIDS. Much of the decline will be due to increased under-five mortality, which is expected to double the rate of 90 deaths per thousand live births projected without AIDS (BUC9403)(see figure 2.4 in Section II).

In 1994, the Census Bureau estimated nearly 16 percent of Uganda's total population to be infected with HIV, second only to Zambia among the fourteen heavily-impacted nations included in the Bureau's estimates. This figure nearly doubles worst-case scenario estimates from 1992. Figure 4.2 compares test results for Uganda gathered by the Bureau with those for neighboring countries; figure 4.3 charts test results for various risk groups within Uganda.

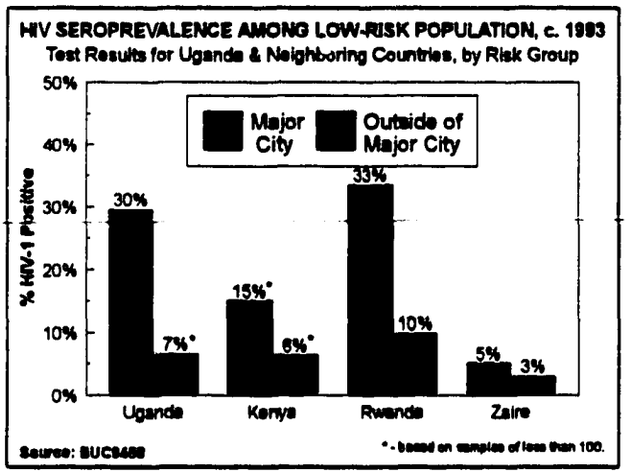

Figure 4.2

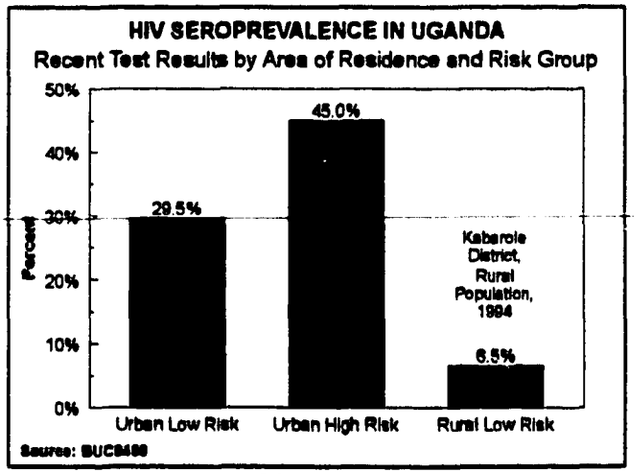

Figure 4.3

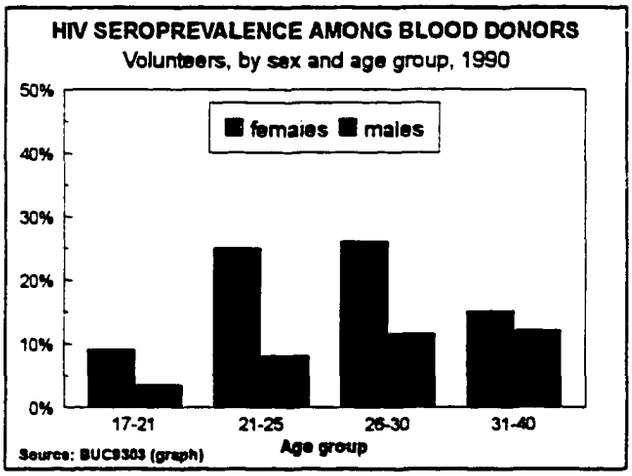

Figure 4.4

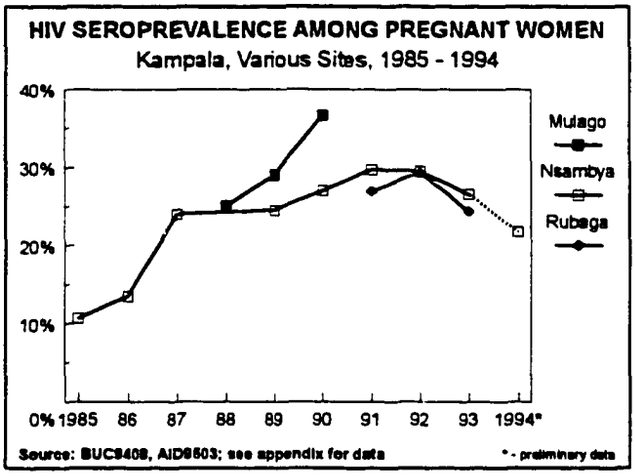

Figure 4.5

Groups known to be at greater risk to contract HIV include young women and soldiers. Figure 4.4, drawing from test results of volunteer blood donors in 1990, illustrates the relatively higher proportions of young women of child-bearing age testing positive for HIV. Regional variations in HIV seroprevalence within Uganda are also considerable: in rural areas, the share of the adult population with HIV is thought to be well under ten percent, with many areas as low as four to five percent. Infection rates are significantly higher among adults in towns and larger urban areas, with reported seroprevalence levels varying from about nine percent in the north to 17 percent in the east and over twenty percent in southwestern urban areas.

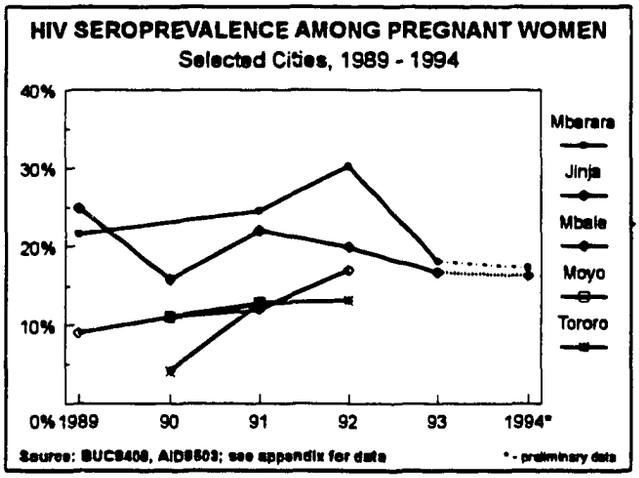

Figure 4.6

In Kampala and Mbarara, seropositivity levels among pregnant women have reached as high as one-third in recent years. Figures 4.4 and 4.5 plot out trends in HIV seroprevalence among pregnant women in Kampala and various other cities since 1985. On a positive note, Uganda's sentinel surveillance system found that between 1992 and 1993 seroprevalence actually began to decline slightly among pregnant women in two hospitals in Kampala as well as in Jinja and Mbarara (CAB9412). Figure 4.6 summarizes these encouraging developments. Preliminary data indicates that this downward trend has continued for at least three of the sites (AID9503).

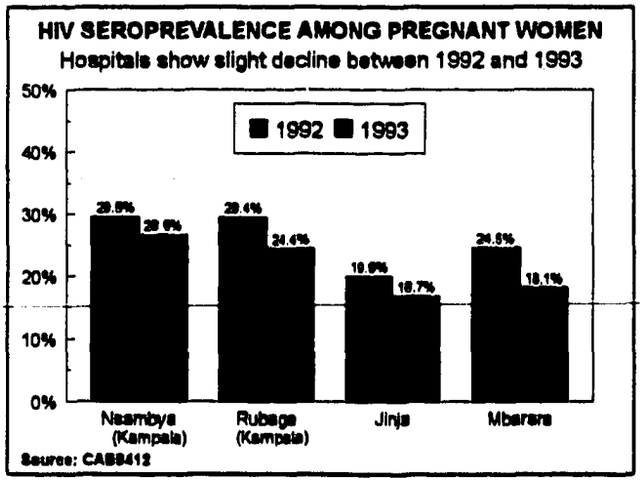

Figure 4.7

The social and economic impact of AIDS mortality in Uganda is far-reaching. The MOH projects that by the year 1998 Uganda will have about one million children orphaned (defined as the loss of one or both parents) due to AIDS (CAB9412). About a quarter of all Ugandans infected with HIV are women of child bearing age (15-49 years); mother-to-child transmission is estimated by the government to be 25-50 percent, with 25-40 percent of the infected children dying in their first year of life. The number of orphans due to AIDS in the worst affected areas of Masaka, Rakai, and Kalangala Districts is about 6 percent of each district's total population (MOF9201).

The major players in the struggle against HIV/AIDS are identified below and on the following two pages. Among international donors, USAID has played a major role by encouraging and assisting local prevention efforts – particularly those of the AIDS Information Center, The AIDS Support Organization, and various religious organizations – and promoting and supplying condoms for HIV prevention. Despite initially encountering significant political and religious opposition, USAID has increased annual condom supplies from three million in 1991 to twenty million in 1993 (CAB9412).

National AIDS Control Program

AIDS Control Programme, Ministry of Health (ACP/MOH), Entebbe. Since the mid-1980s, the response of the Ugandan government to the problem of HIV/AIDS has been one of candor and openness (CAB9412). In line with the government's multi-sectoral approach, known as MACA, the ACP is guided by a broad-based Uganda AIDS Commission, which is responsible for developing overall policies related to HIV/AIDS. Because so many Ugandans already suffer AIDS, care of infected individuals and management of the social consequences of the epidemic are perceived to be equally as important as HIV prevention efforts (WBK9303). The ACP has had great success in both areas, facilitating the participation of local, non-governmental groups in HIV prevention as well as home care programs for those already affected, which release some of the burden from the hospital-based health care system. The MOH has tapped into the benefits of traditional community-based support systems by teaching counselling skills to village representatives who then go on to mobilize their community in support of people with AIDS and their families (WHO9301). Preventive measures include a drama program organized with UNICEF to promote AIDS awareness in schools at all levels (AAF9301).

Local Non-Governmental Organizations with AIDS Activities

Many private hospitals and clinics provide blood testing and counselling services and hospital care for AIDS patients. These include medical facilities under the **Uganda Catholic Medical Bureau** (25 hospitals and many smaller units), the **Uganda Protestant Medical Bureau** (Ngora, Mengo, Kuluva, Kagando, Kisizi and Kabalore Hospitals) and the **Seventh-Day Adventist Church** (Ishaka Adventist Hospital)(WHO9102). The **Church of Uganda** has reportedly provided counselling services to over 750,000 Ugandans and is deeply involved in providing care for AIDS orphans with the help of orphans projects committees in all 40 of its parishes (CAB9501,AID9406). Other private organizations and their activities to combat HIV/AIDS are described below:

AIDS Information Center (AIC) offers anonymous HIV testing and counseling in full-time facilities in Kampala, Jinja, Mbabara, and Mbale as well as seventeen satellite centers offering services at least one day each week. The centers promote AIDS awareness among clients, particularly the importance of condom use, and sponsor support groups known as "Post-Test Clubs" (AID9310). Having tested and counselled over 170,000 Ugandans by mid-1994, AIC reportedly serves as a model for similar services now offered in Cote d'Ivoire, Kenya and Zambia (CAB9412,CAB9501).

Anti-AIDS Youth Club is a volunteer organization committed to promoting awareness about HIV/AIDS and other STDs among youth (WHO9102).

Federation of Uganda Employers (FUE) has participated in a peer education program that had reached an estimated 500,000 employees by 1993 (AID9310).

Francois-Xavier Bagnoud Program for AIDS Orphans and Vulnerable Children helps AIDS orphans attend school and provides material assitance to guardian families in Luwero District (WHO9301).

Islamic Medical Association of Uganda (IMAU) provides HIV/AIDS education to religious leaders and counselling to families in the districts of Mpigi and Iganga (AID9406). IMAU also trains local counsellors and has promoted community mobilization and condom distribution among more than half a million Ugandan Muslims (CAB9501).

Jinja Women's Group, working with the Minister of State for Agriculture and the women's group **Mesese**, works to help women avoid HIV and AIDS by establishing their own economic independence (WHO9301).

The AIDS Support Organization (TASO) provides home care and material assistance for people with AIDS, trains counsellors, and works with HIV-seropositives and their families to prevent further HIV transmission. TASO has offices in Kampala, Masaka, Mbarara and Torro and runs a rural outreach project integrating HIV prevention, condom distribution and community-based support for people with AIDS (AID9310,WHO9102). Like AIC, TASO serves as a model program for efforts against HIV/AIDS in other African nations (CAB9501).

Uganda Red Cross Society provides HIV/AIDS education for at-risk groups and the general population and material assistance for health workers and people with AIDS and their families. A member of the National AIDS Control Program, URCS is seated in Kampala and operates 44 branch offices, one in each district (WHO9102).

Uganda Women's Efforts to Save the Orphans (UWESO), with 32 branches throughout the nation, provides shelter, care and counselling for orphans with AIDS (CAB9412).

International NGOs with AIDS activities in Uganda
(WHO9102,NCI9201,AID9310, WHO9301)

Actionaid, London
Adventist Development and Relief Agency (ADRA)
African Enterprises
African Food and Peace Foundation
African Medical and Research Foundation (AMREF)
AIDS and Reproductive Health Network
American Foundation for AIDS Research
Ananda Marga Universal Relief Team (AMURT), Zambia
Assoc. of Volunteers for Intl. Service (AVSI), Cesena, Italy
CARE International
CARE Britain
Canadian Red Cross Society
Caritas Internationalis
Case Western Reserve University
Catholic Fund for Overseas Dvlpmnt. (CAFOD), London
CEBEMO, Netherlands
Catholic Relief Services
Center for Natural and Traditional Medicine
Christian Aid, London and Dublin
Christian Children's Fund
Christian Medical Fellowship, London
CUAMM, Padua, Italy
Concern (Ireland)
Danchurchaid, Copenhagen
Danish Red Cross Society
Deutscher Caritasverband, Freiburg, Germany
Development through Self Reliance
Experiment in International Living
Family Health International
Feed the Children
Food for the Hungry International
Franciscan Missionary Sisters for Africa, Ireland
The Futures Group
Helpage International, London
Help the Aged, London
Institute for Development Training
Interaid International
ICCO, Netherlands
International Council of Nurses, Geneva
Intl. Centre for Scientific Culture (ICSC), Lausanne
International Federation of Social Workers, Geneva
Irish Missionary Union, Dublin
Johns Hopkins U., Center for Communication Programs
Johns Hopkins University, HIV/AIDS Prevention in Africa
Lutheran World Federation (LWF), Geneva
Margaret Sanger Center of Planned Parenthood of NYC
Marie Stopes International, London
Medical Mission Institute of Würzburg, Germany
Medical Missionaries of Mary, Ireland
Medical Women's Intl. Association, Cologne, Germany
Medicins Sans Frontieres (MSF-France & -Switzerland)
Medicus Mundi Ireland
Memisa Medicus Mundi, Rotterdam
Misereor, Aachen, Germany
The Names Project
Network of AIDS Researchers of Eastern and Southern Africa (NARESA), Nairobi
Norwegian Church Aid
OXFAM
Plan International
Redd Barna (Save the Children), Oslo
Scottish Catholic International Aid Fund (SCIAF)
St. Clare's Hospital and Health Center
Supply of Equipment to Charity Hospitals Overseas (ECHO)
Swedish Red Cross
Uganda AIDS Action Fund, London
Volunteer Missionary Movement, London
Women Against AIDS Network
World Learning, Inc.
World Concern
World Neighbors
World Organization of the Scout Movement, Geneva
World Vision International
Worthington Associates Worldwide

International Donors supporting AIDS activities in Uganda
(GAP9200,UNF9200,WHO9301,AAF9301)

Canadian International Development Agency (CIDA)
Danish International Development Agency (DANIDA)
~~German Agency for Technical Cooperation (GTZ)~~
Norwegian Agency for Development Aid (NORAD)
Overseas Development Administration (ODA), United Kingdom
Swedish International Development Agency (SIDA)
United Nations Children's Fund (UNICEF)
United Nations Population Fund (UNFPA)
United States Agency for International Development (USAID)
The World Bank
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)	4,762	5,556	6,562	8,047	9,806	11,183	13,120	15,033	17,560	20,405	23,401	UNP9200
Infant Mortality	170	150	133	122	118	130	130	124	112	112	107	JEE9512
Under Five Mortality	296	260	229	209	202	223	223	213	191	191	182	JEE9504
Crude Birth Rate	52	51	50	49	50	50	49	50	51	50	47	UNP9200
Crude Death Rate	26	23	21	19	19	18	18	19	20	21	20	UNP9200
Avg. Annual Growth Rate	3.0	3.2	3.7	4.0	3.3	2.9	3.0	2.9	3.1	2.9	2.7	UNP9200
Total Fertility Rate	6.9	6.9	6.9	6.9	6.9	6.9	7.0	7.2	7.3	7.0	6.4	UNP9200

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

YEAR	ORS Access	ORS/RHF Use	SOURCE
1985	8	5	WHD8700
1986	53	5	WHD8800
1987	60	NA	WHD8900
1988	48	14	WHD9000
1989	30	15	WHD9100
1990	NA	NA	
1991	30	30	WHD9201
1992	NA	NA	
1993	68	45	WHD9401

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

YEAR	ACCESS TO SAFE WATER		ADEQUATE SANITATION		SOURCE
	Rural	Urban	Rural	Urban	
1981	NA	NA	NA	NA	
1982	NA	NA	NA	NA	
1983	12	NA	10	NA	WHO9101
1984	NA	NA	NA	NA	
1985	18	37	30	32	WHO9101
1986	NA	NA	NA	NA	
1987	NA	NA	NA	NA	
1988	12	45	10	20	AID9012
1989	NA	NA	NA	NA	
1990	30	60	60	32	WHO9200
1991	NA	43	28	63	JMP9301
1992	NA	NA	NA	NA	
1993	NA	NA	NA	NA	

Table A3. Access to Safe Water and Adequate Sanitation, 1983-1991

YEAR	VACCINATION COVERAGE					SOURCE
	BCG	DPT3	Measles	Polio 3	Tet. 2	
1981	18	9	22	8	20	WHE8700
1982	NA	NA	NA	NA	NA	
1983	NA	14	NA	NA	NA	WHE8700
1984	NA	NA	NA	NA	NA	
1985	37	14	17	13	NA	WHE8700
1986	51	21	27	21	27	WHE8800
1987	74	39	48	40	13	WHE8900
1988	NA	7	NA	NA	NA	MRF8904
1989	83	47	52	48	17	MRF8904
1990	100	77	74	77	39	WHE9200,WHE9202
1991	95	80	76	80	22	MRF9222
1992	98	71	68	70	83	WHE9301
1993	NA	NA	NA	NA	NA	

Table A4. Vaccination Coverage, 1981-1992

Health Care Financing

PUBLIC EXPENDITURE ON HEALTH CARE IN UGANDA				
Year	as % of total govt. expenditure:			$US (1987) per-capita
	Domestic funds only		Including foreign aid	
1980	4.9%	-	-	$0.70
1981	5.7%	-	-	$0.60
1982	4.2%	-	-	$1.10
1983	3.8%	-	-	$1.10
1984	2.5%	-	-	$0.80
1985	3.5%	-	-	$0.80
1986	2.4%	-	-	$0.50
1987	4.1%	-	-	$0.50
1988	2.9%	-	-	$0.60
1989/90	-	5.0%	11.0%	-
1990/91	-	5.8%	14.6%	-
1991/92	-	4.9%	8.2%	-
Source:	WBK9203	WBK9402		WBK9203

Table A5. Public Expenditure on Health Care in Uganda, 1980-1992

HIV/AIDS

HIV SEROPREVALENCE AMONG PREGNANT WOMEN, Various Sites, 1985 - 1992								
Year	Kampala:			Other Cities:				
	Mulago	Nsambya	Rubaga	Jinja	Mbale	Mbarara	Moyo	Tororo
1985	-	10.7%	-	-	-	-	-	-
1986	-	13.5%	-	-	-	-	-	-
1987	-	24.0%	-	-	-	-	-	-
1988	25.0%	-	-	-	-	-	-	-
1989	29.0%	24.5%	-	24.9%	9.0%	21.6%	-	-
1990	36.6%	27.0%	-	15.8%	11.0%	-	11.0%	4.1%
1991	-	29.7%	26.9%	22.0%	12.0%	24.5%	12.8%	12.8%
1992	-	29.5%	29.4%	19.9%	17.0%	30.2%	-	13.1%
1993	-	26.6%	24.4%	16.7%	-	18.1%	-	-
1994*	-	21.8%	-	16.3%	-	17.3%	-	-
* - preliminary data			Source: BUC9408, AID9503					

Table A6. HIV Seroprevalence among Pregnant Women, Various Sites, 1985-1992

APPENDIX B: DATA NOTES

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 twoweek 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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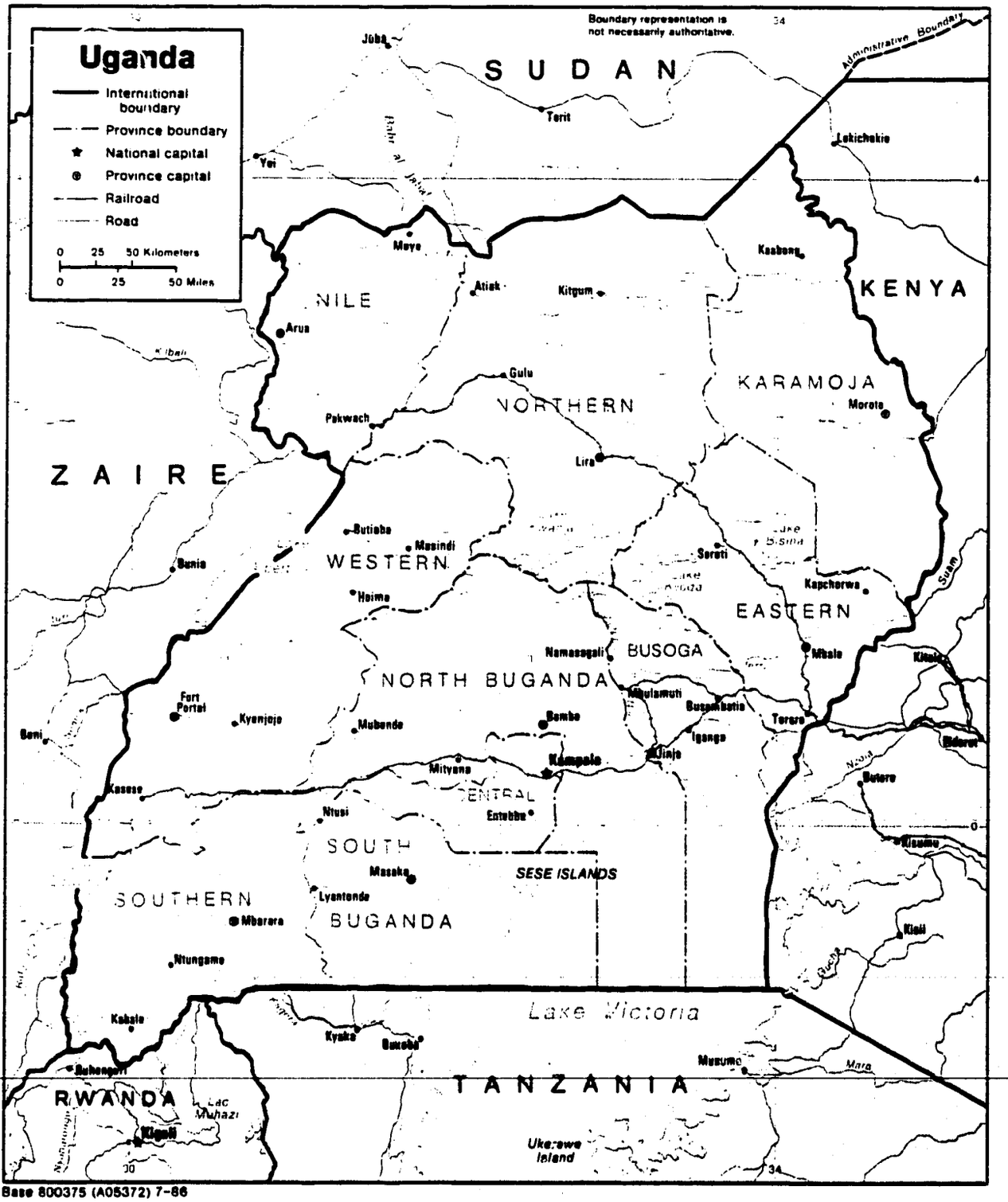

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