I. Introduction

I–A. The Exploratory Mission

In September 1991, Haiti's first democratically elected government was overthrown by a military coup d'état and the Organization of American States (OAS) imposed an economic embargo on the island republic. Two years of political crisis intensified until the UN in June 1993 tightened sanctions with a worldwide oil embargo. This pressed the *de facto* government and the exiled *de jure* government into a political settlement. The Governors Island accord calling for the restoration of President Aristide and constitutional governance by October 30, 1993 was not honored by the military. Thus, the UN re-imposed the embargo on October 18, 1993, backing it with a naval blockade. At the time of this writing, the Haitian crisis has intensified with an uncertain outcome.

Over these past two years, life has been extremely difficult for most Haitians. Widely reported have been the political repression, physical violence, and human rights abuses (Americas Watch, et al., December 1991). Unfortunately, the deterioration of the human condition of ordinary Haitians, already one of the worst in the Western Hemisphere, has been comparatively neglected (Table I-1). What has happened to the health and nutrition of Haiti's people? What has been the human impact of the international sanctions? What may happen as the crisis extends beyond the collapse of the Governors Island accord? What lessons can be learned from the Haiti experience which might inform and improve humanitarian action in future sanctions-related crises?

To start addressing these questions, a six-member Harvard exploratory mission visited Haiti from July 26 to August 7, 1993 [Appendix A], with the objective of assessing the health and nutritional status of women and children in Haiti. The exploration was intended to be the first step towards generating a case study of the Haitian experience that would include independent information on the human consequences and that would guide humanitarian action in future sanctions-exacerbated crises. The Harvard team consulted Haitians, non-governmental organizations (NGOs), and international agencies; visited selected field sites; and collected and analyzed available data. No new quantitative data were generated, but qualitative information from focus-group interviews and observations were collected.

This report is organized sequentially around three questions: (1) What effects did the sanctions have on health and nutrition? (2) What humanitarian activities were undertaken in response? (3) What lessons were learned that could advance humanitarian action in future crises? The appendices list the data sources, references, and organizations contacted.

The recommendations in this report are preliminary, subject to further revisions as findings from the exploratory visit are supplemented by further research. The authors recognize that data sufficiency, quality and availability, imperfect during normal times, suffered further during the political crisis. Thus, quantitative and qualitative data have been integrated in an effort to present a balanced picture of the changing human situation in Haiti. Given limitations of time and data, these preliminary findings should be interpreted with caution.

I–B. The Crisis

Political instability is a long-standing problem in Haiti. Exploitative authoritarianism and military rule have plagued Haitian politics at least over the 29 years of Duvalier family rule that ended in 1986. Over the ensuing four years, Haiti underwent a series of political upheavals, coup attempts, and aborted elections (Constable, 1992-93). During the turbulent period 1987-90, the US imposed economic sanctions in efforts to advance free elections in the country; yet the sanctions were only modestly effective (Hufbauer et al, 1990). The overwhelming electoral victory of Jean Bertrand Aristide in Haiti's first-ever democratic election in December 1990 ended with the coup d'état by the military in September 1991. Table I-2 presents a schematic time line of the major political and humanitarian events over the crisis period.

The immediate international response was the imposition of political sanctions and an economic embargo by the Organization of American States (OAS) until restoration of democracy and constitutional rule. Over the ensuing two years, many attempts at a negotiated settlement failed. In late 1992, the office of the UN Secretary-General joined the negotiations. In mid-1993 the US tightened sanctions by denying visas and freezing bank accounts of leaders of the *de facto* government, and the UN Security Council voted to impose a worldwide oil embargo on the country. Under intense international pressures, a political settlement was reached — the Governors Island accord. However, with the breakdown of the accord's implementation, the UN re-imposed the embargo on October 18th, backing it with a naval blockade.

Paralleling the political crisis has been a series of rather ineffectual international humanitarian actions. Most foreign aid to Haiti was temporarily suspended immediately after the September 1991 coup d'état. In early 1992, the OAS formed a committee to monitor the embargo and to assess humanitarian needs. The shift from development to humanitarian aid was largely unplanned. As a consequence, the volume and, perhaps, the effectiveness of foreign aid declined. Although food and medicine were technically exempt from the embargo, specific exemptions for food and medicine in most instances still needed to be obtained from the OAS or the US Government. In October 1992, the UN inter-agency group in Port-au-Prince proposed a humanitarian plan for a consolidated funding appeal to donors, yet the appeal was only launched in March 1993. The five-month delay was due, in part, to indecision regarding the definition of "humanitarian aid." After the Governors Island accord in July 1993, a multi-donor group proposed a massive "emergency economic recovery program" budgeted at $425 million. This plan, along with many other developments, has been suspended pending the resolution of the crisis.

Table I-1

Selected Demographic, Health and Socio-Economic Indicators: Haiti, 1993

Population:

Total:	6,764,000
Growth Rate:	2 percent
Density	827/km² cultivated land
<5 Years Old:	15 percent (1,026,455)
<15 Years Old:	40 percent
Rural:	70 percent
In Malaria-Infested Areas.	80 percent

Mortality:

Crude:	13/1000
Infant:	94/1000
Child.	133/1000
Maternal:	350/100,000
Causes:	Hemorrhage, 37 percent, Eclampsia, 21 percent; Septicemia, 14 percent.

Illiteracy Rate (UNESCO):

Men:	62.7 percent
Women:	67.5 percent

Potable Water Availability:

PAP:	53 percent
Rural Areas:	33 percent

Sanitary Excreta Disposal:

Rural:	16 percent

Coverages:

Doctors/10,000 pop.:		1.6
Nurses/10,000 pop.:		1.27
Traditional Medicine:		100 percent

Prenatal and Child Care:

Prenatal Attention:		61 percent in rural areas, 83 to 86 percent in urban, 38 percent rural w/3 or more visits
Deliveries:		11 percent rural in hospitals, 67 percent w/TBA's; 25 percent complicated.
Family Planning:		7 percent women, 9 percent men; 10 percent married women, 11 percent married men
Vaccination:	TT2	12 percent among adult women
<1s:	DPT3	41 percent
	Polio3	40 percent
	BCG	72 percent
	Measles	31 percent

Source: PAHO, *Analysis of the Health Situation*, June 1993

Table I-2

Time Line of Political and Humanitarian Action

Political & Economic Events		Humanitarian Actions
	1990	
	Nov	
Arisitide wins Presidential Elections.	Dec	
	1991	
	Jan	
Aristide inaugurated	Feb	
	Mar	
	Apr	
	May	
	Jun	
	Jul	
	Aug	
Military coup.	Sep	Development assistance suspended; only humanitarian aid continued.
OAS embargo; US freezes regime assets; UN General Assembly Resolution of October 1991 supports OAS efforts.	Oct	
	Nov	OAS council calls for int'l. cooperation in aiding displaced Haitians.
	Dec	
	1992	
	Jan	OAS comm. formed to monitor embargo and assess humanitarian needs.
	Feb	US Government makes adjustment to embargo for the Haitian export assembly sector; licenses granted on a case-by-case basis
	Mar	
	Apr	
	May	Boats carrying Haitian refugees interdicted at sea by the US Coast Guard and prevented from landing at Guantanamo.
	Jun	
	Jul	
	Aug	
	Sep	OAS observer mission monitors human rights and assesses humanitarian needs.
	Oct	UN interagency appeal sent to OAS for review and finalization.
	Nov	
UN envoy Dante Caputo joins negotiations. "Operation Able Manner" launched to prevent massive migration of Haitian "boat people" after Clinton's inauguration.	Dec	
	1993	
Clinton continues Bush policy on Haitian asylum seekers.	Jan	Clinton commits US to its "fair portion" of 5-year, $1 billion plan
	Feb	OAS approves UN/OAS Humanitarian Assistance Plan, subject to criteria.
	Mar	UN/DHA and OAS jointly launch Humanitarian Appeal for $62 million.
	Apr	
	May	
US sanctions tightened against Haitian military and political leaders; UN imposes worldwide oil embargo.	Jun	
	Jul	UNDP Mission recommends $425 million for emergency economic recovery over next 6-8 months.
Prime Minister Robert Malval approved by Parliament. Sanctions suspended by UN.	Aug	
	Sep	
Military abrogate Governors Island accord; Minister of Justice assassinated Sanctions reimposed. UN Naval blockade.	Oct	
	Nov	
	Dec	

Table I-3

Trends in Major Economic Indicators (1980-1992)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Real per capita GDP Growth Rate (percent)	4 5	-2.7	-5.8	-1.5	-1.5	-1.6	-1 2	-1.2	-3.3	-3.2	-4 7	-5.2	-10.0
External Public Debt ($mil.)	306	417	494	569	665	717	716	844	818	802	874	747	788
Exports F.O.B. ($mil.)	212	158	195	195	240	216	216	208	200	200	165	146	78
Imports C.I F. ($mil.)	346	373	319	335	392	333	367	328	299	295	276	252	195
Trade Balance ($mil.)	-134	-215	-124	-140	-152	-117	-151	-120	-99	-94	-111	-106	-117
Real Exchange Rate (Gourdes per Dollar)	5.0	5.1	5.2	5.3	5 5	5.9	5.8	5.3	6.0	6 4	7.4	7.7	9.1
Consumer Prices (change in percent)	6.3	11.6	6.2	12.2	6.1	15.0	-0.5	-8.3	2.9	11 0	20 6	13 0	35.0
Real Wages (change in percent)	N/A	N/A	-7.6	-7.8	-7.4	-7.7	-7.8	6.2	-2 0	-9.9	-17.1	-15.6	-40.0

1 1992 figures are estimates.
2 Includes FY 1991 official debt write-off by the United States and France of $159 million

Source: USAID Briefing Book, July 1993

II. Health and Nutritional Impact of Crisis

II–A. Baseline Child Health and Nutrition

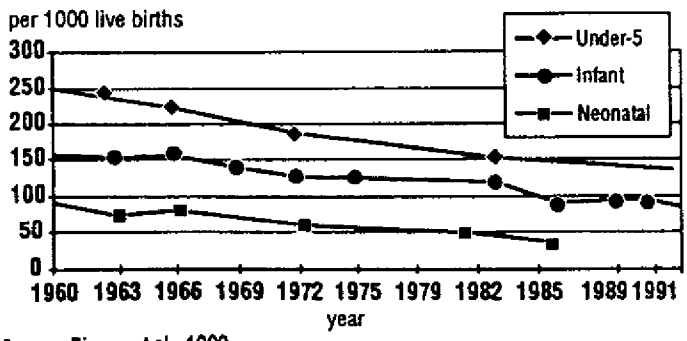
Child survival and nutrition indicators in Haiti are among the worst in the Western hemisphere, with an infant mortality rate of 94 per 1,000 live births and an under-5 mortality rate of 133 per 1,000 live births (PAHO, 1993). The prevalence of malnutrition among Haitian children is extremely high; 18.5 percent of under-5 children are moderately to severely malnourished even in "normal" times (National Survey, 1990).

Over the past three decades, the high child mortality rates have been steadily declining as documented by three national mortality surveys, the latest in 1990 (Figure II-1) (Bicego et al., 1991). Child mortality has also been declining in discrete populations such as in the Deschapelles region, covered by the Albert Schweitzer Hospital (Figure II-2) (Berggren and Garenne, 1993). Moreover, two national nutrition surveys in 1978 and 1990 suggest some improvement in child nutritional status, although less marked than in the case of mortality (Table II-3).

Cause of death data for children under 5 years are available in the 1987 national survey (EMMUS, 1989), and similar data exist in smaller populations such as the Maissade Project (Save the Children, 1993). Childhood infection and malnutrition are the major causes of mortality and morbidity in Haiti (Figure II-4). Diarrhea and acute respiratory infections account for about half of under-5 mortality. According to the Pan-American Health Organization, other important pediatric diseases include tuberculosis, malaria, and hepatitis (PAHO, 1993). It is estimated that 30 to 60 percent of pediatric consultations at health facilities are for acute respiratory infections and that 43 percent of children under 5 report at least one episode of diarrhea in the past 2 weeks (PAHO, 1993).

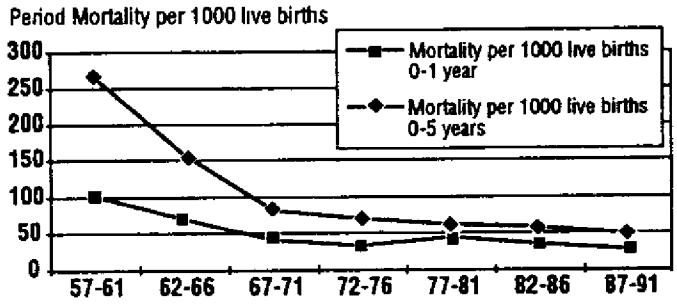
Despite the stagnant economy and persistent poverty, child mortality and nutritional status trends have shown steady improvement over the past several decades. The factors responsible for these secular trends are presumed to be related to improved access to basic needs of water, food and shelter and to specific health interventions such as the provision of immunizations, oral rehydration, and antibiotics. Given this momentum, child health and nutritional status should have continued to improve had the crisis not occurred.

Figure II-1
National Trends of Infant, Child, and Neonatal Mortality (1960–1991)



Source. Bicego et al., 1990

Figure II-2
Trends in Period Mortality in Deschapelles (1957–61 and 1987–91)



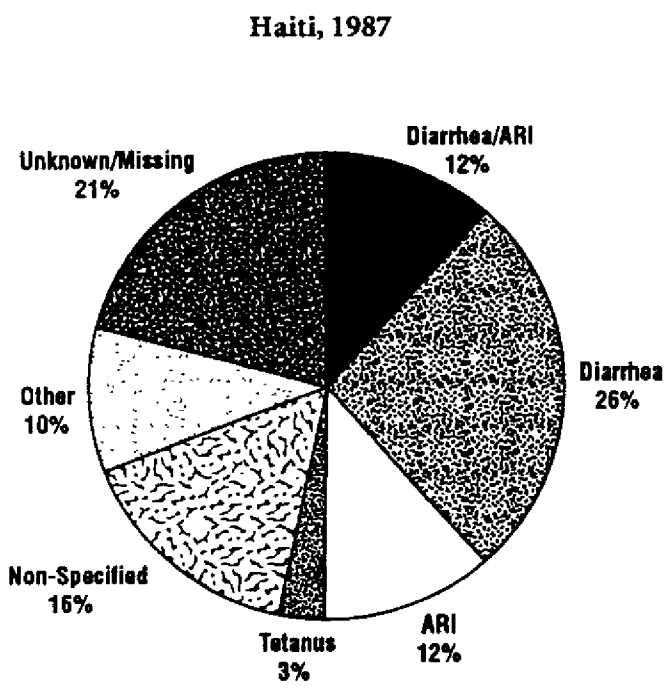
Source. Berggren and Garenne, 1993

Table II-3
National Anthropometry of Children Under Five: Prevalence of Moderate (M_2) and Severe (M_3) Malnutrition, 1978 and 1990, North and South

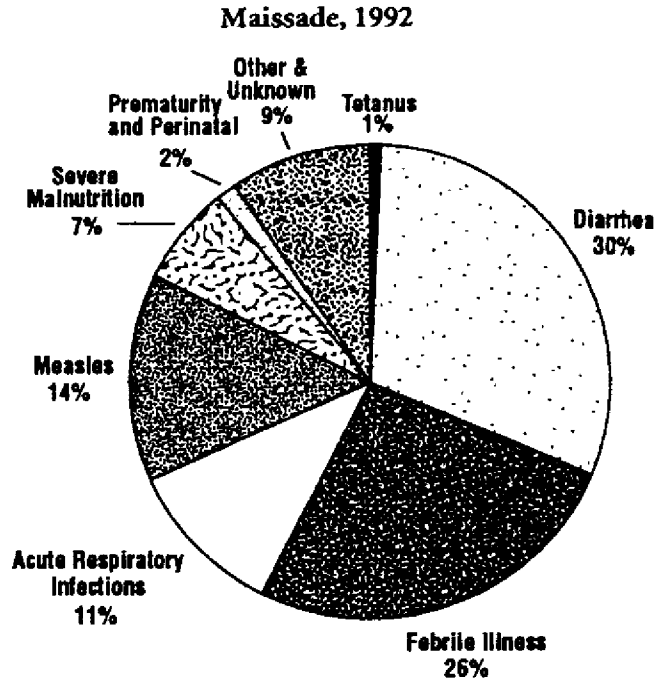
	1978	1990		
	National	National	North	South
Normal + M_1	73 0	81.5	79.7	83 4
M_2	24.0	16.3	18.0	15.5
M_3	3.0	2 2	2.3	1.1
$M_2 + M_3$	27.0	18.5	20.3	16.6

Source: National Nutrition Surveys, 1978 and 1990

Figure II-4
Specific Causes of Death among Children Under Five (National Survey, 1987 and Maissade, 1992)



Source: EMMUS, 1989



Source. Save the Children (USA), 1993

II–B. Maissade Experience

We were able to identify only one high quality population-based, longitudinal data set on child mortality and nutritional status over the crisis period. Since 1989, a Save the Children project in Maissade, located in the Central Plateau, has conducted regular censuses and maintained longitudinal registration of all births and deaths in a population of about 44,900 which received community-based health services (Save the Children, 1993).

Table II-5 summarizes the birth and death rates in the Maissade population in 1991 and 1992 and compares these to national estimates for 1985-1990. Maissade's birth rate of 35 to 36 per 1,000 approximates the national average and has remained stable throughout 1991-1992. The infant mortality rate in Maissade is substantially lower than the national average, most likely due to the health interventions of Save the Children. Although the infant mortality rate continued to decline between 1991 and 1992, a corresponding decline was not observed in the 1–4 year child death rate, which increased from 10 to 18 per 1,000 in 1991 and 1992. During the same period, a corresponding increase of 87 to 115 per 1,000 livebirths was observed for the under-5 mortality rate. Figure II-6 presents the proportion of children who were moderately and severely malnourished, indicating a steady increase in malnutrition over the three-year time period.

Evidence suggests that the 1992 increase of child deaths in Maissade was due to a deadly measles outbreak associated with malnutrition and other infections (Berggren, 1993). Whereas in 1991 measles accounted for only 1 percent of deaths among children under 5 years, it was responsible for 14 percent of child deaths in 1992 (Save the Children, 1993). The Albert Schweitzer Hospital in Deschapelles recorded a measles case-fatality rate of 5 percent among children presenting to the facility (Menager and Berggren, 1993). Figure II-7 presents the number of cases seen monthly at the out-

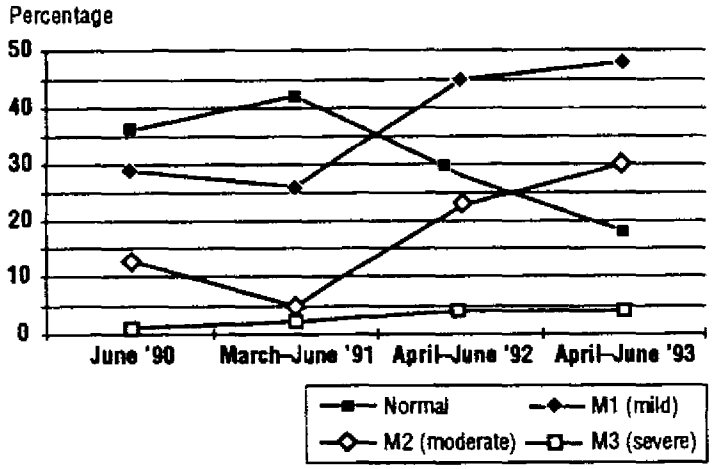
Table II-5
Infant and Child Mortality in Maissade, Central Plateau (1989-1992) (44,900 Population)

	National Estimates	Maissade	
	1985-90	1991	1992
Number:			
Births	—	1,568	1,600
Deaths			
0-1	—	76	62
1-4	—	63	122
0-4	—	139	184
Rates:			
Crude Birth Rate	36	35	36
Infant Mortality	94	48	39
1-4 Child Mortality	27	10	18
Under-5 Mortality	133	87	115

Source: Save the Children (USA), 1993

Fgure II-6

Trends in Classification of Children Weighed in Growth Monitoring in Maissade, June 1990–June 1993



Source: Save the Children (USA), 1993

patient department of the Hospital between 1991 and 1993. In addition to measles mortality, the proportion of deaths due to diarrhea, fevers of unknown origin, and malnutrition increased in Maissade between 1991 and 1992. In 1992, 22 percent of the child deaths in Maissade were associated with kwashiorkor or third-degree malnutrition, a higher association than in previous years.

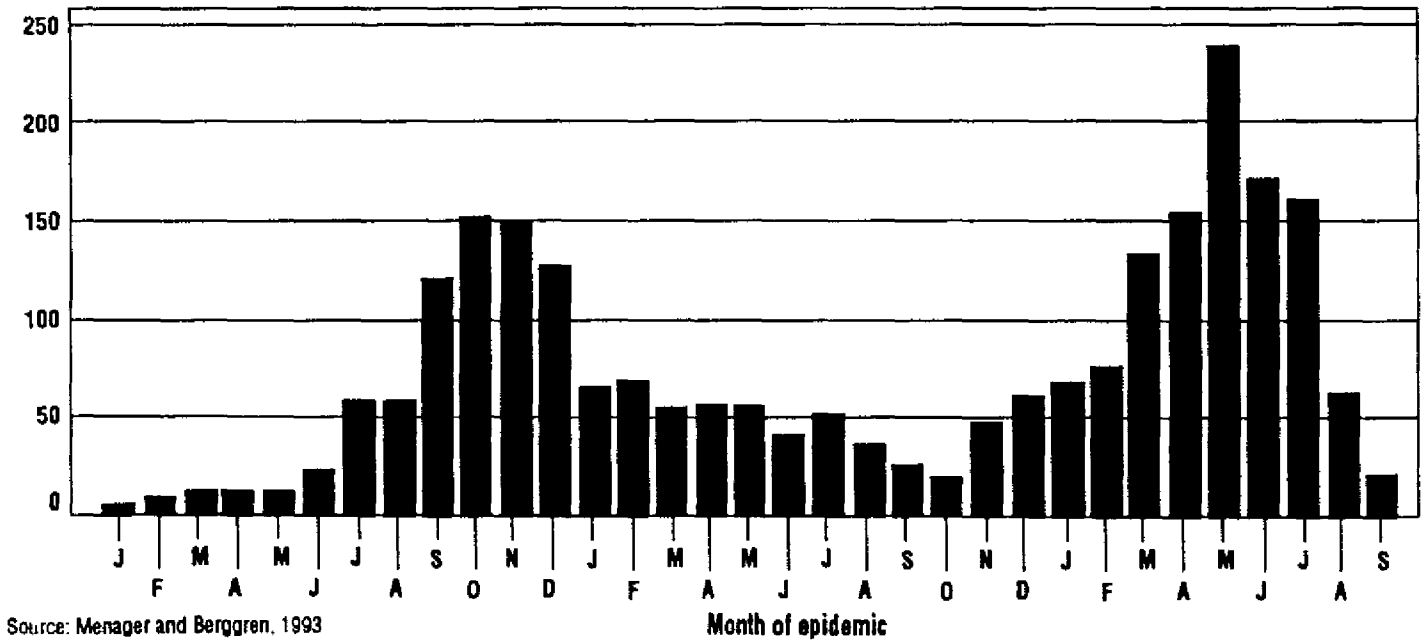
II–C. Women's Health

Haiti has a moderately high level of fertility reflected by its crude birth rate of 35 per 1,000, and a total fertility rate of 4.7 children per woman (World Bank, 1993). The crude rate of natural increase is 1.9 percent, with the population doubling in 35 years. In addition to their maternal role, women in Haiti play critical domestic and productive roles. Haitian women assume the bulk of responsibility for the livelihood of themselves, their children, and their families. Thus women's health is important not only of its own right, but also as an asset for family management. While women bear many of the risks associated with sexuality and reproduction, reproductive health has been comparatively neglected in Haiti (UNICEF, 1993).

Reproductive health encompasses a cluster of problems associated with sexuality and reproduction. In addition to access to safe and effective contraceptive and abortion services, reproductive health includes control of HIV and sexually-transmitted diseases (STDs), sexual health, maternal nutrition, safety from domestic violence, and access to prenatal, obstetrical, and postpartum health services. Available data demonstrate the poor health conditions experienced by most Haitian women. Haiti's maternal mortality rate is moderately high, estimated at 350 per 100,000 livebirths (PAHO, 1993). The major causes of maternal mortality can be prevented or treated (hemorrhage, 37 percent; eclampsia, 21 percent; septicemia, 14 percent; abortion, 12 percent; and others, 16 percent) (Theodore, 1992). Moreover, contraceptive use is low, and contraceptive method mix reflects high female method use in comparison to male participation (UNICEF, 1993). Figure II-8 shows that most methods used are by women, with oral pills (45.6 percent) and female sterilization (11.8 percent) accounting for over half of all use.

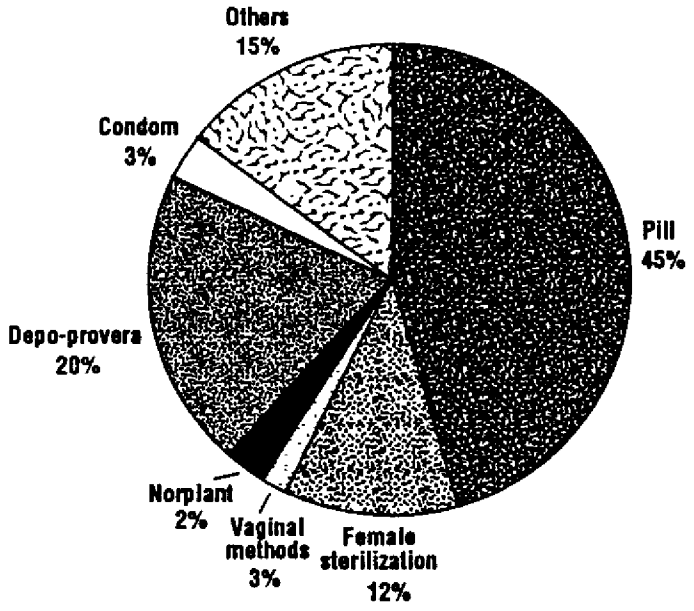
Figure II-7

Measles Cases, Jan. 1991 – Sept. 1993, Outpatient Department, Albert Schweitzer Hospital



Source: Menager and Berggren, 1993

Figure II-8
Contraceptive Method Mix in Haiti



Source: VACS, Health Activities Survey, April 1993

The male-method, condom, the only method that protects against HIV and STDs, account for only 2.9 percent of contraceptive use.

According to the Pan-American Health Organization, Haiti is in the midst of a major HIV/AIDS epidemic. In 1991, 3,086 new cases of AIDS were reported, 40 percent among women (PAHO, 1993). HIV seropositivity is estimated to be 5 to 8 percent among pregnant women, 72 percent among female prostitutes, 6 percent among blood donors, and 2 to 4 percent in rural populations. Other STDs are also prevalent in Haiti — 6 to 8 percent of the urban population is seropositive for syphilis, 4 to 12 percent among pregnant women and 30 to 40 percent among female prostitutes. Haitian women also suffer from iron deficiency anemia — 35 to 40 percent among pregnant, nursing, and all women. One project reported tuberculosis as the primary cause of death among women in the reproductive age groups (Berggren, PISP Project Report, 1984).

We found no evidence of changes in reproductive health associated with the current crisis. Access to and utilization of prenatal, obstetrical, and postpartum health services were already extremely modest in normal times. The effect of the weakened formal health system on reproductive health is uncertain, since most deliveries are attended by traditional birth attendants (67 percent) and only 11 percent of rural mothers deliver in hospital settings (PAHO, 1993). More than half of the reproductive health services are provided by non-governmental agencies, such as Profamil, which is the national affiliate of the International Planned Parenthood Federation. The access to, quality of, and utilization of reproductive health services probably were compromised during the crisis, a phenomenon common to all health services (PAHO, 1993). It has been hypothesized that the population migration from urban centers into rural areas and the increased tendency to initiate sexual relationships as an economic strategy (see Section IV–C) during this crisis may have fueled the transmission of HIV, STDs, and other infectious diseases.

Qualitative information collected from focus group interviews suggests that the recent crisis did impact upon breastfeeding, child supplementation, and care of children. Breastfeeding is nearly universal in rural Haiti, although abbreviated in duration; in urban Haiti, breastfeeding has increasingly been abandoned. Due to economic pressures to search for income-generating work, some mothers reported a decrease in frequency and duration of breastfeeding. Such pressures may have also compromised the amount of time available for child care and illness management. Given perceived and objective nutritional stresses, some mothers reported a more frequent occurrence of insufficient milk syndrome or spoiled milk (*let gat*). The price of supplemental foods in the marketplace had also risen markedly (Table IV-2). The avoidance of fertility by Haitian women was also reported, but confirmation is not possible without demographic data.

II–D. National and Other Data

Reliable data were not available to decipher national trends clearly. The Institut Haitien de l'Enfance reported a progressive increase in the proportion of infant and child deaths in comparison to deaths at all ages (Augustin, 1993). Deaths for children under age 5 during the period January-September in 1991 were 38 percent in comparison to 47 percent and 58 percent for the same months in 1992 and 1993, respectively. Similar progressive increases were noted in the proportion of infant deaths (24 percent, 26 percent, and 37 percent) and the proportion of 1- to 4-year deaths (14 percent, 21 percent, and 21 percent). Given that the denominator (population at risk) was unknown because the data were facility-based, the suggestion that child death rates increased may only be inferred rather than considered definitive.

In contrast to mortality data, national anthropometric data are comparatively more abundant in Haiti. Table II-9 summarizes the anthropometric data sources examined in our analysis, and the geographic locations of these data sets are shown in Figure II-10. Haiti has two national anthropometric surveys, in 1978 and 1990, and two national facility-based nutritional surveillance systems were in operation during the crisis period (USAID, 1991-1993; and AOPS, 1993). There were, moreover, several smaller but useful nutritional data sets. Temporally and geographically focused data

Table II-9

Anthropometry – Summary of Data Sources

Location	Organization	Date	Sample Size	Type of Study *	Indicators **
National	IHE-National Surveys	78	5,353	Pop.	W/A-H/A-W/H-MUAC
		90	1,843	Pop.	W/A-H/A-W/H-MUAC
	USAID Monitoring Reports	Jan.90- Jun 93	442,242	Fac	W/A
	AOPS Annual Report	Jan.92- Dec.92	92,640	Fac.	W/A
Regional					
North					
Calvaire	Albert Schweitzer Hospital	Jan.92-Jun.93	1,274	Com.	W/A
Chandelle	"	Jan 92-Jun 93	1,097	Com.	W/A
Garapin	"	Jan.92-Jun.93	1,418	Com.	W/A
Plassac	"	Jan.92-Jun.93	1,907	Com.	W/A
Maissade	Save the Children	Apr.-Jun.90/91/92/93	16,310	Com.	W/A
Leger	CARE	Jun 89/Jun.93	300	Pop	W/A
Northwest	CARE	July 1993	Unpublished	Pop	MUAC
Northwest	CDC	August 1993	Unpublished	Pop.	W/A
South					
Grande Anse	CARE	Jun.89- Jun.93	311	Pop.	W/A
Jeremie	Haitian Health Foundation	Jun.- Aug. 89-93	3.038	Fac.	W/A

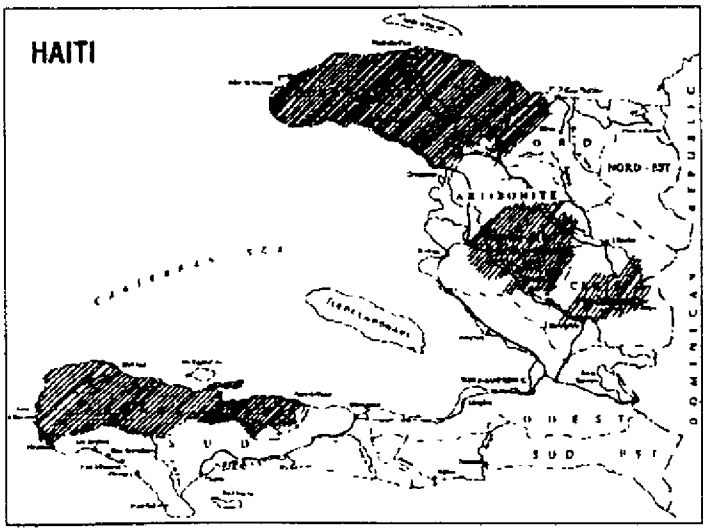
* Pop. - Population based surveys
Fac - Facility based records of children weighed
Com - Community based growth monitoring

** W/A - weight-for-age
H/A - height-for-age
W/H - weight-for-height
MUAC - mid-upper-arm-circumference

sets were found in the North (Deschapelles and Leger) and in the South (Grande Anse and Jeremie). Two additional data sets by the Institut Haitien de l'Enfance and surveys in Gonaives and LaGonave Island were excluded from our analysis because of their limitations — population size, sampling, type of data, etc. Data from the Northwest had been recently collected by CARE (arm circumference among program and matched recipients) and the US Centers for Disease Control (body weight among a population-based sample).

Figure II-10

Location of Health and Nutrition Data Sets



Source Map: United Nations, May 1981

■ *National Data Sets*

Table II-11 summarizes the prevalence of moderate (M_2) and severe (M_3) malnutrition among children 0 to 59 months by region. These data were based on child weighings at 38 fixed health facilities by the USAID nutritional monitoring system (USAID, 1991-1993). Other than the persistently inferior nutritional status of children in the Northwest, no time trends are discernible. Only two fragmentary portions of the USAID monitoring systems showed some nutritional deterioration. The distribution of nutritional status among Port-au-Prince children during the second trimester in three consecutive years showed that the proportion of normally nourished children declined while the proportion of moderately and severely malnourished children increased over the three consecutive years. Also, the proportion of low birth weight newborns in the Northwest in the first half of 1993 was el-

Table II-11

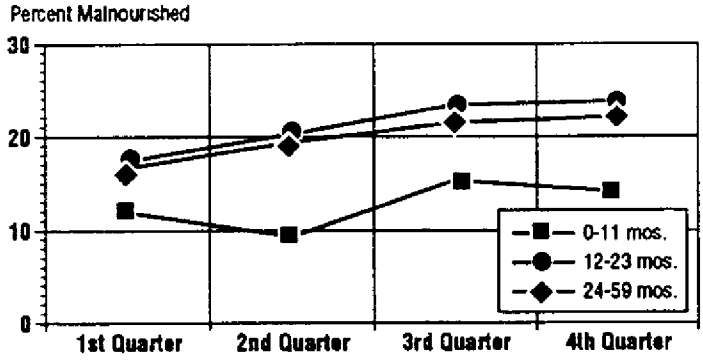
Prevalence of Moderate (M_2) and Severe (M_3) Malnutrition Among Children 0 to 59 Months Weighed at Facilities by Region (1991-1993)

	1991	1992	1993
National	16.5	16.7	15.2
Northwest	NA	23.3	21.4
North	19.0	15.7	13.6
Metropolitan	16.5	19 4	17.3
North and South	16.3	15.5	14.8

Source USAID Monitoring Reports, 1991-93

Figure II-12

Percent Children Under 5 Malnourished (Moderate, Severe and Kwashiorkor) Weighed at AOPS Facilities by Quarters in 1992



Source: Association des Organizations Privées de Santé, Annual Report, 1992

evated in comparison to the same months in 1992. Like the USAID data, the national anthropometric data for 1992 obtained from fixed facilities operated by AOPS (private voluntary agencies) provide mixed results.

Two factors severely limit the validity of these USAID and AOPS data. First is the facility-based system of data collection which biases the sample such that it is not necessarily representative of the population. In fact, considerable changes in a population's nutritional status could have taken place without detection by facility-based monitoring. A second handicap is the analytical procedure of lumping together all children under age 5. Infants under age 1 usually demonstrate good growth despite nutritional stress if they are breast-fed. Children at highest risk of malnutrition are concentrated at ages 12 to 23 months when weaning and supplementation take place. In Figure II-12, with the AOPS data disaggregated by age, a suggestive trend of malnutrition emerges: for infants, change of nutritional status is equivocal, whereas for 12- to 23-month and 24- to 59-month children the prevalence of moderate and severe malnutrition steadily increases over the four quarters.

■ ***Geographically-Focused Data Sets***

Several geographically focused nutritional data sets were collected either during community-based child growth monitoring or statistically based population sampling and not the fixed-facility sampling employed by USAID and AOPS. These data sets from Northern sites (Deschapelles and Leger) and Southern sites (Grande Anse and Jeremie) suggested marked variability in nutritional change across population subgroups in Haiti, with some clusters showing deteriorations (e.g., Deschapelles) and others not. Overall, no consistent picture emerges.

The recently completed mid-upper arm circumference survey in the Northwest by CARE reportedly demonstrated high variability in nutritional status among program and matched control children. The population-based nutritional sample survey by the US Centers for Disease Control in the Northwest reportedly showed no deterioration over the baseline situation. However, both of these data sets were collected at a time when over 600,000 people, mostly in the Northwest, were receiving emergency feeding daily by CARE.

II–E. Implications

Although Maissade may not be typical of Haiti (as no single area is typical of any country), it may nevertheless be useful to estimate the magnitude of impact if the Maissade experience were extrapolated to the national level. If we project the Maissade experience to the national level for 1992 and 1993, we fear that the crisis may have brought about 20,000 excess child deaths and 100,000 excess cases of moderate and severe malnutrition among children throughout the island republic. There is reason to believe that this level of human suffering and damage has been continuing during the protracted extension of the crisis in late 1993.

The projection of excess deaths among children under 5 years of age is based upon the observed increase in the under-5 mortality rate between 1991 and 1992 (32 percent). Assuming a population of 6.76 million, a crude birth rate of 36 per 1,000 population, and a baseline under-5 mortality rate of 133 per 1,000 livebirths, Haiti would average about 32,000 under-5 deaths annually. A 32 percent increase of this death rate for two years would result in 10,000 excess deaths per year or 20,000 excess deaths over 24 months of crisis.

According to the national nutrition survey of 1990, 18.5 percent of under-5 children were moderately or severely malnourished. With an under-5 population of 1,026,455 (Table I-1), the number of malnourished children in Haiti would approximate 190,000. In Maissade, the prevalence of moderate and severe malnutrition averaged between 8 to 16 percent in 1990 and 1991 (Figure II-6) which is much lower than the national average, and the rates increased to 28-34 percent in 1992 and 1993. The low baseline levels are presumably related to the Save the Children interventions. As a conservative estimate of increase, we took the most modest differences between the various numbers (national baseline 18.5 percent to lowest increase 28 percent in 1992). A net increase of 9.5 percent translates into an excess number of about 100,000 cases of moderate and severe malnutrition.

These projections of national burdens of child mortality and malnutrition based upon extrapolation from a single sample site are obviously fraught with scientific hazards. The estimations should be considered illustrative, providing "or-

der of magnitude" figures rather than precise estimates. As any single location within a country is likely to be distinctively different from other sites and as national data collection systems were scientifically flawed, the true mortality impact of the crisis on Haiti will never be known with certainty. What happened in Maissade — the qualitative evidence suggests — happened in many communities in Haiti over the two crisis years. Thus, a fairly consistent picture of excess human hardship and loss of life emerges from a combined assessment of the quantitative and qualitative data. A brief technical note on extrapolation methodology is included in Appendix D.

III. Health Services

III–A. Primary Health Care Systems

There is consensus that the two-year crisis has had a negative effect on access to health services and the quality of health care.

The formal Haitian health system consists of a mixture of facilities operated by multiple actors (government, NGOs, church groups, private practitioners and private hospitals) and financed from diverse sources (fees, charitable contributions, bilateral and multilateral agencies and development banks). Table III-1 presents data of Haitian health facilities according to region and population covered (MSPP, 1993). Although some imbalances exist, the distribution of facilities appear roughly proportional to population.

Access to health care, both public and private, was compromised on the basis of economic, physical, and political factors. Even prior to the coup d'état, the Ministry of Health (MSPP) had been racked by four reorganizations which took place in the past decade. These headquarters disruptions weakened the performance of peripheral workers; the instability exacerbated the chronic difficulties of low staff morale, lack of drugs and supplies, and a consequent under-utilization of public facilities, a number of which simply closed down. These difficulties were made worse by the withdrawal of international assistance to the public sector.

Economic mismanagement by the *de facto* authorities and sanctions raised the costs of drugs and lowered the purchasing power of the population. Moreover, physical access had been worsened by the general insecurity, decay of physical infrastructure, the high cost or breakdown of transportation. Especially problematic, as reported to us, was transportation to reach facilities in emergency situations, such as complicated deliveries at night. Health workers themselves often found it difficult to reach their place of work because of insecurities and transport difficulties. Quality of services were also likely to have deteriorated — with low staff morale, lack of supplies and drugs, and breakdown in communications and supervision. Virtually all health facilities reported compromised functions due to electricity shut-downs and transportation gaps. Fluctuating electrical supply often disrupted laboratory tests, x-rays, anesthesia, and surgical procedures.

Haitian and international NGOs, through private and mixed facilities, reportedly provide 50 to 60 percent of the health services in the country (Berggren, personal communication, 1993). In addition to numerous Haitian NGOs, there is a growing presence of private commercial practitioners and international NGOs, such as CARE, World Vision, Save the Children, Catholic Relief Services, Christian Children Fund, the Adventist Development and Relief Agency (ADRA), SOS, and others. In Haiti, NGOs have often been the source of innovation — for example, by promoting the notion of community health workers such as "collaboratrices," "animatrices," and "groupement des femmes." The proportion of aid channeled through the NGOs increased during the embargo, as official aid was shunted away from the *de facto* government.

Table III-1

Distribution of Health Facilities by Region in Haiti

Region	% of Total Population	Health Facilities: Number of Hospitals	Health Facilities: Number of Centers w/ Beds	Health Facilities: Number of All Types of Facilities	Health Facilities: Public Facilities as % of Total
Artibonite	15	4	10	69	52
Northwest	6	1	7	51	33
West	32	24	8	169	32
Center	4	2	1	45	42
North	11	2	8	49	37
North-East	4	1	4	21	48
South	10	4	6	55	53
South-East	7	1	2	30	67
Grande Anse	9	2	6	58	55
Total	100	41	52	547	43

Source: Ministère de la Santé Publique et Population, 1993

Several knowledgeable observers noted that the impact of the crisis on health care in Haiti could have been much worse had not the existing system been decentralized and extremely heterogenous involving government, NGOs, and churches. Diversity provided some resilience against total collapse.

III–B. Essential Drugs

An important aspect of the health care crisis was the essential drug program in Haiti. Although "food and medicine" were exempted from the embargo, donor agencies (especially PAHO, UNICEF, UNFPA, and USAID) recognized a need to ensure the steady availability of essential drugs. After the crisis onset, an interagency group agreed that PAHO should assume a lead role in establishing an essential drugs procurement, warehousing, and distribution program: "PROMESS," was rapidly established, and according to PAHO sources, PROMESS claimed to be delivering 60 percent of the essential drugs and vaccines in Haiti by August 1992. Inexplicably, contraceptives were not considered an "essential drug" by PROMESS until September 1993. PROMESS delivered essential drugs at "cost plus 10 percent," the nominal fee intended to cover administrative and logistical costs. PROMESS' monthly turnover reportedly increased from $70,000 to $120,000 by summer 1993.

PROMESS appeared to be a successful case of international humanitarian assistance during the crisis, yet several questions remain unresolved. Although medicines were exempted from the embargo and although PROMESS reportedly accelerated the delivery of essential drugs, market surveys and reports from diverse health facilities suggested very marked price increases and inaccessibility of some essential drugs. Over the two crisis years, intravenous fluids reportedly increased from $3 to $8-9 per bottle; acetaminophene from G 0.50 to G 2.50; Dristan from G 1.00 to G 5.00; and paracetomol from G 1.00 to G 2.00. The price of penicillin tripled. Drug prices apparently spiked at least twice, during October 1991 and in June 1993. Essential drugs were often unavailable at public facilities because the government had no budget available beyond salaries. Even for private facilities with sufficient purchasing power, the breakdown of transport restricted access. Finally, some health facilities simply could not afford even the low prices offered by PROMESS.

The behavior of Haiti's 18 drug importers and 3 drug manufacturers is poorly understood. Hoarding and price manipulation could have resulted in the inflationary prices of drugs, despite the embargo exemption and PROMESS. The crisis psychology and breakdown of transportation could have resulted in the paradox of presumed availability yet marked price increases.

III–C. Immunizations

Haiti has had a longstanding problem with immunization coverage that was exacerbated during the two-year crisis. Table III-2 shows immunization coverage according to antigen and region for 1991-1993 (PAHO, 1993). Coverage by antigen and region is highly variable — DPT3, 8 to 82 percent; polio3, 8 to 81 percent; BCG, 11 to 68 percent; and measles, 5 to 75 percent. The Pan-American Health Organization reported national coverage as: TT2, 12 percent among adult women; DPT3, 41 percent; polio3, 40 percent; BCG, 72 percent; and measles, 31 percent (PAHO, 1993).

Four factors may be cited for the worsening of the immunization program: organizational disarray, population mobility, vaccine supply and cold chain. In 1988, Haiti was able to immunize about two-thirds of its eligible children due to intensive campaigns that required the mobilization of grassroots and NGO groups. This was not possible during the political crisis. Indeed, it was reported that people were afraid of violence and attacks during peaceful assembly for health activities, such as immunizations. The weak government programs and spotty coverage by NGOs resulted in low overall and variable coverage. A second factor was the mobility of the population during the crisis — shifting residence would be expected to impede the identification of and outreach to eligible women and children. The final factors were the disruption of the vaccine supply and the cold chain, both in central stores and in the field. Political sanctions that prohibited official contact between the UNICEF, PAHO/WHO and the *de facto* government disrupted the effective handling of vaccines, which increasingly was assumed by PROMESS rather than MSPP. Due to electricity shutdowns and the lack of kerosene and propane gas canisters for refrigerators, the cold chain was also extremely hard to maintain in field sites around the country. There were reports that the cold chain broke down in the central warehousing of vaccines early in the crisis. Moreover, misunderstandings and confusion between PROMESS, PAHO, UNICEF, and the *de facto* government on management, cost-sharing, and distribution policies also generated problems.

The deadly measles epidemic in the past two years can be directly attributed to the breakdown of immunization coverage. Before the crisis, overall measles coverage plateaued at about 40 percent; by 1992 coverage had fallen to 24 percent (Garcia-Jimenez, undated). Measles vaccine coverage varied markedly by region: in Grande Anse coverage was 5 percent, and in the Northwest 52 percent. The sharpest drop in measles coverage took place in the Northeast, plunging from 75 percent to 17 percent. In Port-au-Prince, coverage of 7 percent in 1991 dropped further to 4 percent by 1992. A largely unsuccessful attempt was made to improve immunization coverage by inter-agency support for a 1993 mayors vaccination campaign (UNICEF, 1993).

Table III-2

Immunization Coverage in Haiti (1990-1992)

	Total Population	% Total	Children <1	DTP 3 doses % coverage	Polio 3 Doses % coverage	BCG % coverage	Measels % coverage	Measles # of doses
Artibonite								
1990	851,992	15%	29,822	—	—	—	22%	6,662
1991	925,943	15%	32,408	33%	33%	52%	18%	—
1992	943,543	15%	33,024	33%	33%	52%	18%	5,923
Center								
1990	419,841	7%	14,707	—	—	—	58%	8,511
1991	451,629	7%	15,807	32%	32%	53%	31%	—
1992	460,200	7%	16,107	32%	32%	52%	30%	4,859
Grande Anse								
1990	507,366	9%	17,757	—	—	—	25%	4,462
1991	598,514	9%	20,948	28%	29%	39%	20%	—
1992	609,886	9%	21,346	8%	8%	11%	5%	1,160
Nord								
1990	655,712	11%	22,949	—	—	—	31%	7,121
1991	699,857	11%	24,495	28%	24%	68%	33%	—
1992	713,257	11%	24,964	26%	23%	67%	28%	7,040
Nord-Est								
1990	220,408	4%	7,705	—	—	—	75%	5,770
1991	233,343	4%	8,167	15%	17%	27%	18%	—
1992	237,771	4%	8,322	15%	16%	26%	17%	1,448
Nord Oeust								
1990	341,230	6%	11,942	—	—	—	47%	5,596
1991	377,543	6%	13,214	82%	81%	110%	53%	—
1992	384,714	6%	13,465	81%	80%	108%	52%	7,040
Sud								
1990	510,520	9%	17,867	29%	—	—	5,101	—
1991	613,457	10%	21,471	35%	33%	45%	26%	—
1992	625,114	10%	21,879	35%	32%	44%	27%	5,986
Ouest								
1990	1,803,961	31%	63,138	0%	—	—	—	—
1991	2,021,200	32%	70,742	29%	31%	48%	—	—
1992	2,059,600	32%	72,086	29%	31%	47%	—	17,914
Sud-Est								
1990	427,700	7%	14,967	—	—	—	—	—
1991	435,000	7%	15,225	16%	15%	27%	—	—
1992	443,257	7%	15,514	16%	14%	26%	—	2,286
Total								
1990	5,738,730	—	200,854	—	—	—	—	—
1991	6,356,486	11%	222,477	—	—	—	—	—
1992	6,477,343	—	226,707	—	—	—	—	—

Source: PAHO, June 1993