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**SECTOR BRIEFING:
HEALTH AND NUTRITION**

Health and Nutrition--Central America

INTRODUCTION

The Latin America and Caribbean (LAC) region has experienced a considerable improvement in health in the past 10-15 years. Infant mortality declined from 85 infant deaths per thousand births in 1965-70 to 67 per thousand in 1975-80. Similarly, deaths among children aged 1-4 years fell from 8.5 to 6.3 per thousand in this time period (Table I).

These mortality rates, however, are only statistical averages that do not differentiate changes in mortality by economic or geographical subgroups. In other words, while the health status of LAC countries is significantly better than that of other regions of the developing world: (a) individual countries in the LAC region (Haiti, Bolivia, Honduras) and certain areas within LAC countries (Brazil, Guatemala, Peru) have mortality and morbidity rates equivalent to countries in Asia and Africa, and (b) malnutrition, parasitic, viral and other infectious diseases remain major causes of death and disability in Latin America and the Caribbean. Diarrheal and acute respiratory diseases continue to be the major killers of children. Parasitic diseases, especially those that are vector borne (i.e. malaria) remain endemic particularly in Central and South America. The incidence of certain viral diseases including dengue and yellow fever is actually increasing. The resurgence of malaria is a particularly significant health problem due to the appearance of insecticide resistant strains of the malaria-carrying mosquito and drug resistant strains of the malaria parasite.

While Central America is an ecologically, economically, culturally, and politically diverse area, many health problems--problems of health status and problems of delivering health services--are shared by most of the countries of Central America. The purpose of this presentation is to describe major health and nutrition problems in Latin America and the Caribbean, comparing and contrasting Central America with other regions in the hemisphere. In addition, a comparison will be made of the countries within Central America vis-a-vis health and nutrition status.

GENERAL TRENDS IN HEALTH AND NUTRITION STATUS: FOCUS CENTRAL AMERICA

Infant mortality rate (the number of deaths 0-1 year of age per 1,000 live births) is generally considered to be the most sensitive indicator of the health status of a population, particularly in the developing world. As can be seen in Table I and Figure I, dramatic improvements have been made in reducing infant mortality throughout the hemisphere. Important

Table I

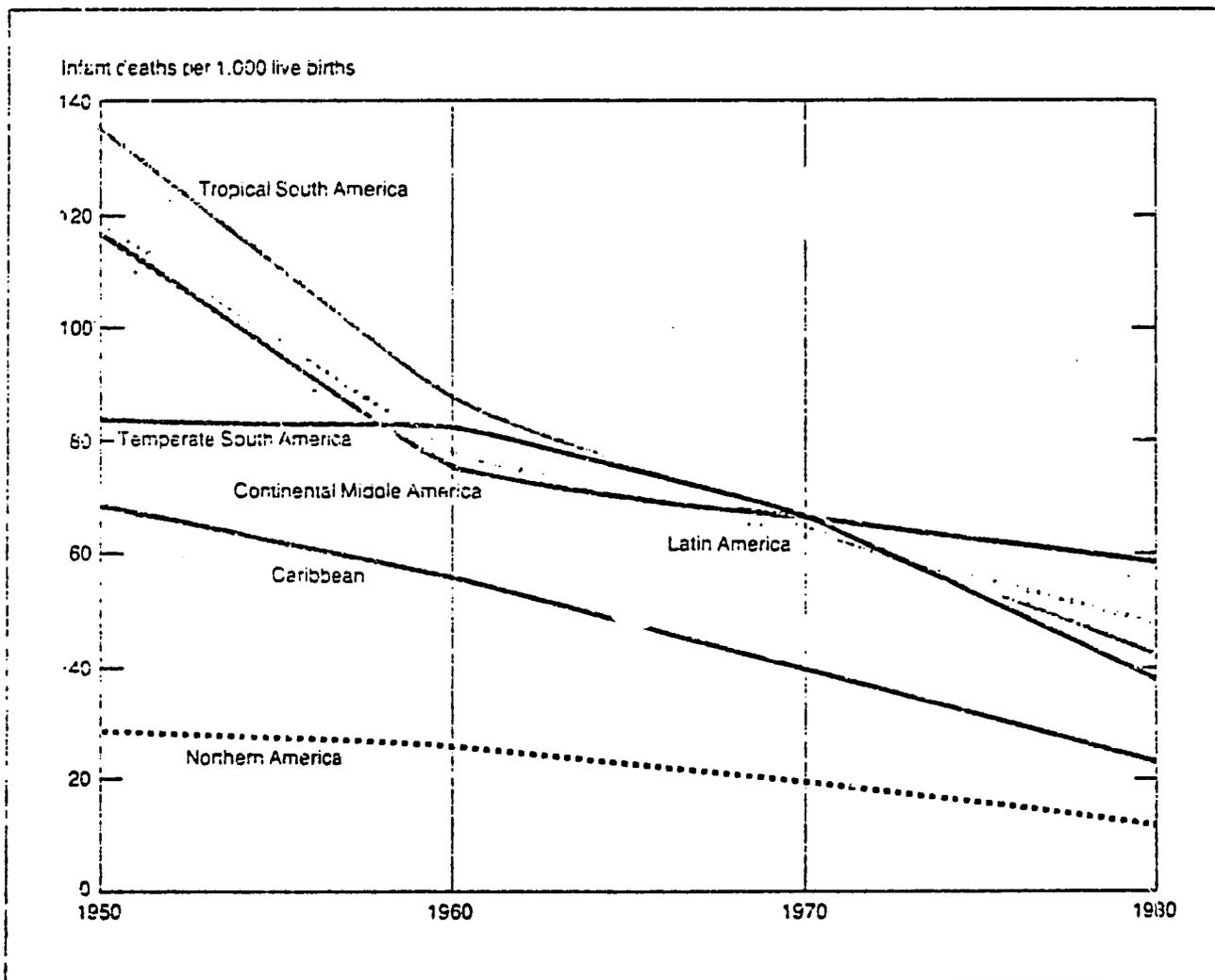
TRENDS IN HEALTH STATUS

	<u>Infant Mortality Rate</u>		<u>1-4 Mortality</u>	
	<u>1965-70</u>	<u>1975-80</u>	<u>1965-70</u>	<u>1965-80</u>
LAC Region	85.2	66.8	8.4	6.3
Andean Region	105.5	75.9	10.4	7.6
Southern Cone	49.6	36.8	5.1	3.6
Brazil	87.3	66.8	8.6	6.2
Central America	125.3	90.0	12.8	8.9
Mexico	78.5	49.8	7.8	5.1
Non-English Caribbean	73.9	57.7	7.4	5.9
Caribbean	43.0	28.4	4.3	2.4

Source: Health For All By the Year 2000: Strategies
PAHO, 1980

FIGURE I

Trends in infant mortality in the Americas, by subregion, around 1950, 1960, 1970, and 1980

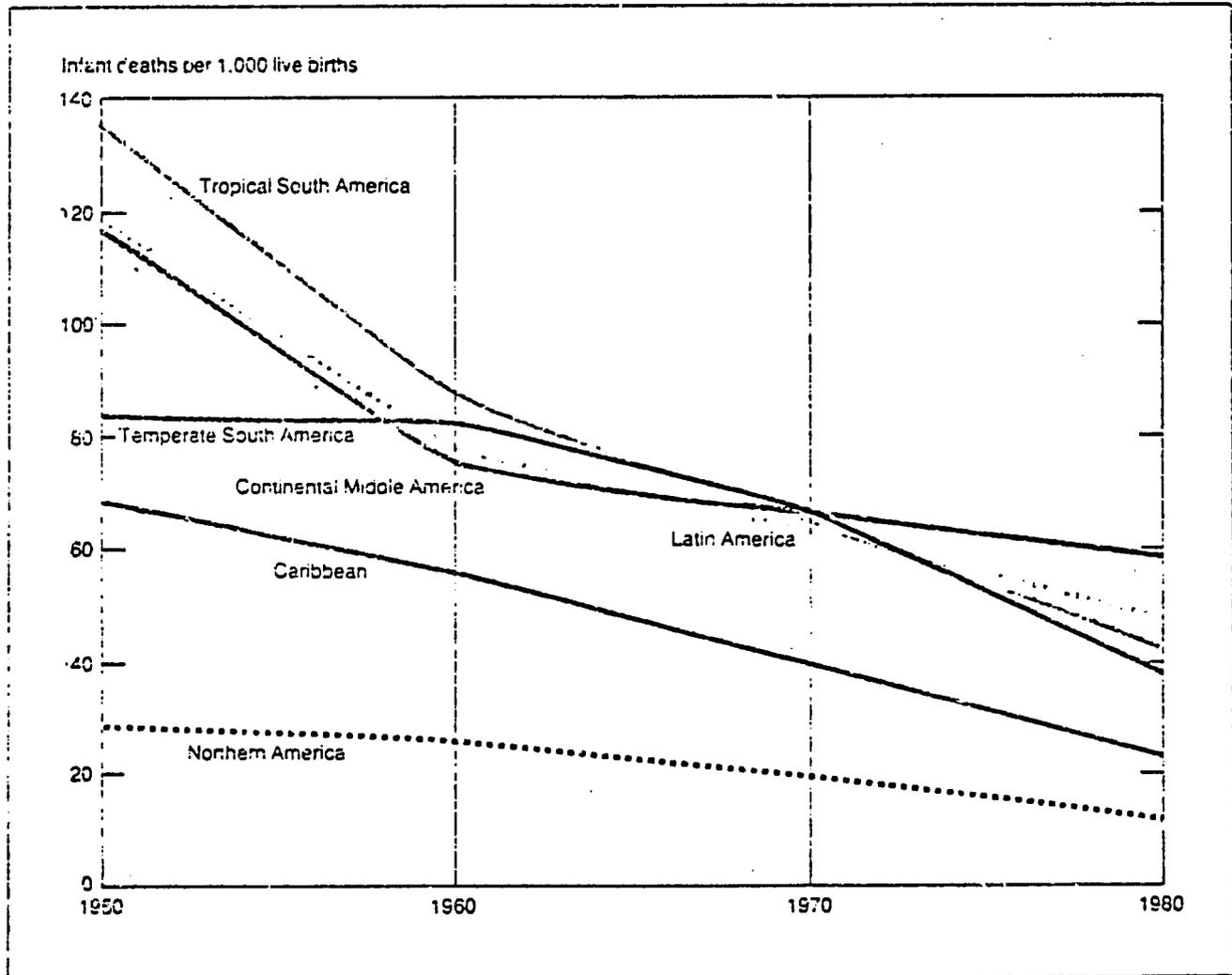


Source: Health Conditions in the Americas, 1980. PAHO

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FIGURE I

Trends in infant mortality in the Americas, by subregion, around 1950, 1960, 1970, and 1980



Source: Health Conditions in the Americas, 1980. PAHO

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to note, however, is that while Central America has experienced a decline in infant mortality, especially from 1950-1960, progress has been slow since 1960. On the other hand, other regions in the hemisphere have experienced considerable improvements during this time period (Figure II). As of 1980, Central America had the highest subregional infant mortality rate in Latin America.

The greatest proportion of infant mortality is due to communicable diseases. More than 75% of infant deaths are due to respiratory illness, diarrheal diseases, perinatal deaths (complications of delivery, prematurity, etc.) and infectious and parasitic diseases.

The decline in mortality rates for children 1-4 years of age has been even more significant than that for infants. Yet, with regard to Central America vis-a-vis the rest of the hemisphere, the same pattern exists for child mortality as for infant mortality. While Central America has experienced a reduction in child mortality from 27.5 deaths per 1,000 population in 1950 to 5.4 per 1,000 in 1980, more progress has been made in other parts of the hemisphere particularly the Caribbean and "Temperate South America" (Figure III). As with infant mortality, Central America, as of 1980 has the highest rate of child mortality in the hemisphere. Unlike infant mortality, however, the improvements in child mortality in Central America have been made since 1960-70 (Figure IV).

High rates of child mortality are--like infant mortality--closely linked to respiratory diseases, diarrheal diseases and other infectious and parasitic diseases. In this age group (1-4 years of age) mortality is related to the existence and coverage of immunization programs and nutritional status. Indeed, it may be these factors which account for the sustained high levels of child mortality in Central America.

Major causes of death for the hemisphere for 1970 and 1979 are cited in Table II. What should be noted in this table is differences between subregions and changes (or absence thereof) over time. The major causes of death in the Caribbean and Temperate South America, like for North America, are chronic diseases related largely to human behavioral patterns (diet, smoking, stress, etc.), while the major causes of death in Central America and Tropical South America are infectious diseases related to environment (access to water and sanitation), availability of health services, fertility patterns, nutritional status, etc. In Central America, the major causes of death have not changed since 1970 (respiratory disease, diarrheal diseases and heart diseases). In most other regions, chronic diseases have become the more important causes

of death, as people live longer and infant and child mortality have been reduced. As access to water and sanitation, health services, food, etc. improve in Central America, one may anticipate a similar pattern of mortality to evolve. This indeed is already the case in Panama and Costa Rica.

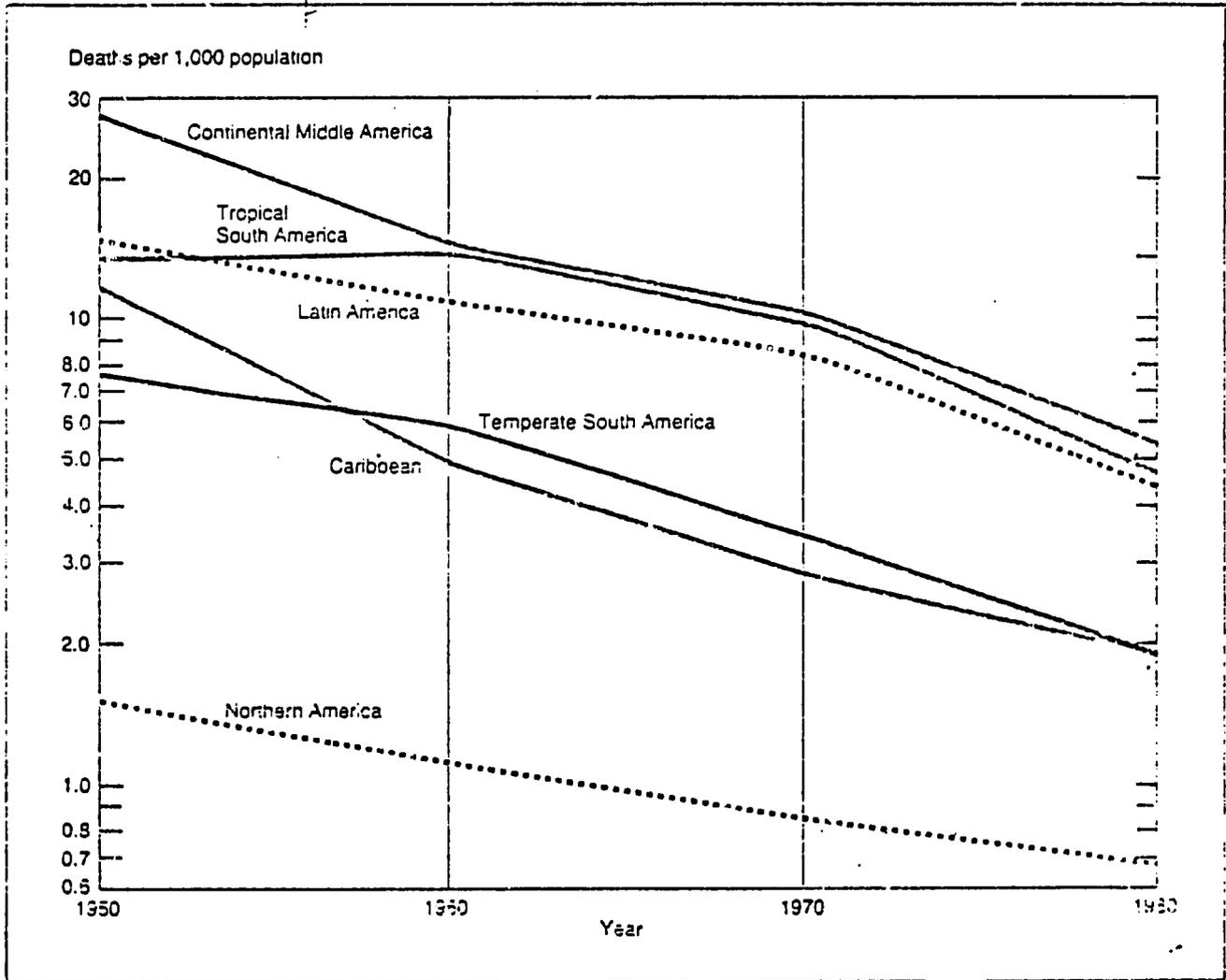
With regard to the incidence and prevalence of major diseases, it is more difficult to make generalizations comparing Central America to the rest of the hemisphere and to examine, over time, the patterns of these diseases. Figures V--VIII show trends over time and by region for the diseases which most affect children, and thereby most contribute to infant and child mortality and life expectancy. Figures V and VI reveal that measles is a cyclical disease in Latin America and no general decline in incidence is evident except in North America. While fewer cases of measles seem to be reported in Central America (a reporting phenomenon) the death rate from measles is higher in Central America than in any other region of the hemisphere (Figure VI). The same pattern exists for polio (Figure VII).

There is little available trend data on incidence and prevalence of acute respiratory illness and diarrheal diseases as these diseases are subject to considerable seasonal variation and under reporting. In measuring death rates from these two categories of disease, however, it is evident that, while death rates have in general declined in all areas of Latin America and the Caribbean since 1970, progress in Central America, particularly with regard to deaths from respiratory disease lag behind the rest of the hemisphere (Figure VIII and Table III). It should be noted that two countries in Central America have dramatically reduced deaths from diarrhea--Panama and Costa Rica.

Other major communicable diseases which affect the entire population, which therefore affect productivity and fertility outcome (low birth weight, prematurity, etc.) and which show regional variations important for the purposes of this presentation are: malaria, dengue fever and tuberculosis. Of these diseases, clearly the most important is malaria. Table IV shows the reported cases of malaria per 100,000 population in the hemisphere from 1977--1980. This table indicates the relative severity of the malaria problem in Central America as compared to other parts of the hemisphere. While the percentage increase in reported cases of malaria is higher in South America (Table V), the resurgence of malaria is a particularly significant problem in Central America due to the resistance of the malaria carrying mosquito in most of the malarious areas of Central America to most pesticides (Figure IX). Resistance to insecticides in Central America is due to the extreme and uncontrolled use of pesticides for agricultural

FIGURE III

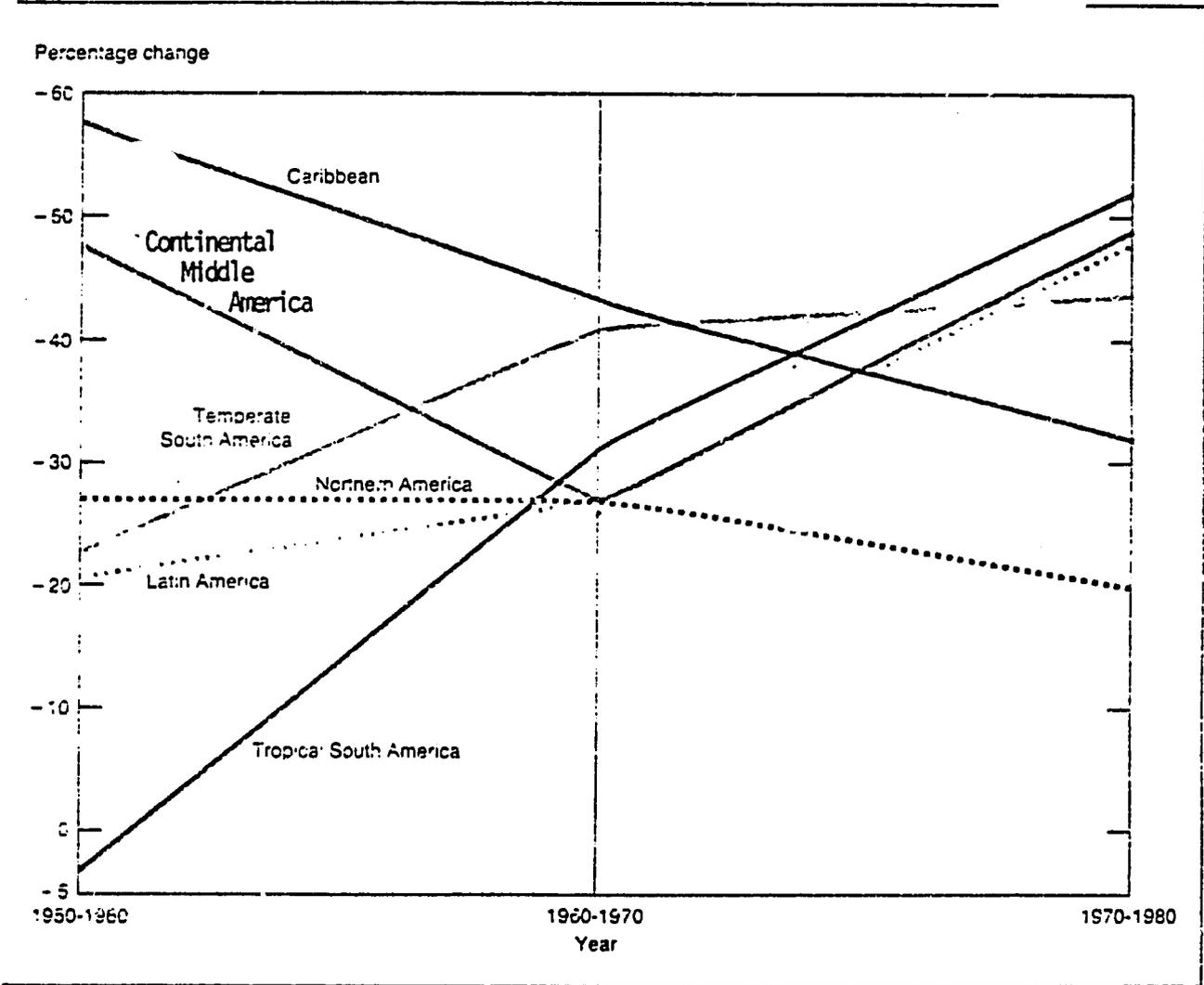
Mortality trends in children 1-4 years of age in the Americas, by subregion, around 1950, 1960, 1970, and 1980



Source: Health Conditions in the Americas, 1980. PAHO

FIGURE IV

Percentage change in mortality in children 1-4 years of age in the Americas, by subregion, 1950-1960



Source: Health Conditions in the Americas, 1980. PAHO

TABLE 11

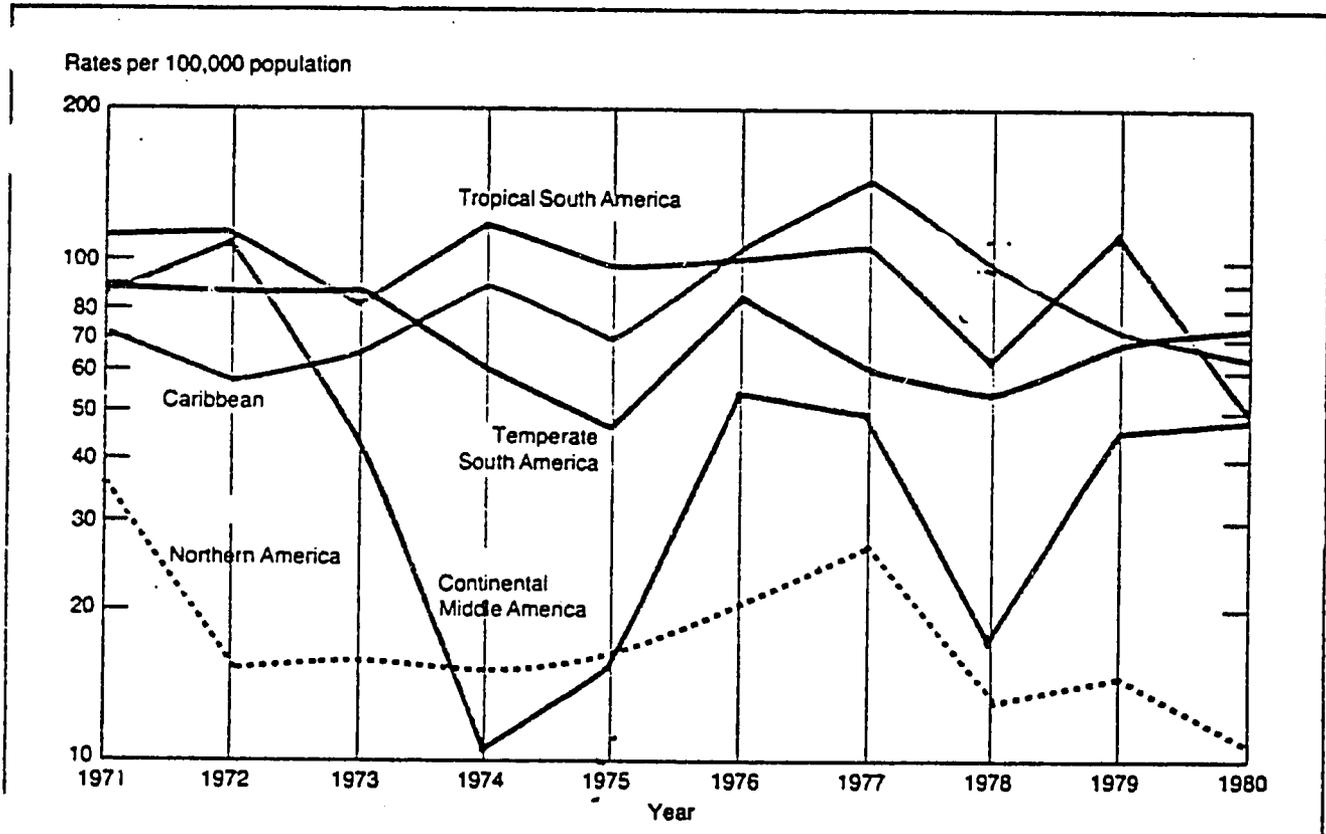
RANK ORDER OF LEADING CAUSES ATH BY SUBREGION, 1970 and 1979

	North America		Caribbean		Central America		Temperate SA		1970	1979
	1970	1979	1970	1979	1970	1979	1970	1979		
Diseases of the Heart (390-429) ¹	1	1	1	1	3	3	1	1	3	1
Malignant Neoplasms (140-209)	2	2	2	2	6	6	2	2	5	5
Cerebrovascular Disease (430-438)	3	3	3	3	8	7	3	3	10	7
Accidents (E800-E949, E980-E989)	4	4	6	4	4	4	5	4	4	4
Influenza & Pneumonia (470,474,480-486)	5	5	5	5	1	1	4	6	1	2
Diabetes Mellitus (250)	7	6	8	7	-	-	9	8	-	-
Cirrhosis of the Liver (571)	9	7	-	9	10	10	8	7	-	-
Suicide (E950-959)	10	8	-	-	-	-	-	-	-	-
Bronchitis, Emphysema & Asthma (490-493)	8	9	9	10	9	8	-	-	6	8
Causes of Perinatal Mortality (760-779)	6	10	4	6	5	5	6	5	8	6
Enteritis, Diarrhoea (008-009)	-	-	7	8	2	2	7	9	2	3
Homicide, War, Legal Intervention	-	-	-	-	9	-	-	-	-	10
Tuberculosis (010-019)	-	-	-	-	-	-	10	-	9	9
Birth Defects (740-759)	-	-	10	-	-	-	-	10	-	-
Measles (055)	-	-	-	-	7	-	-	-	7	-

¹ Eighth Revision of the ICD

FIGURE V

Reported cases of measles per 100,000 population in the Americas,
by subregion, 1971-1980



Source: Health Conditions in the Americas, 1980. PAHO

FIGURE VI

Death rates from measles in the Americas, by subregion, 1971-1979

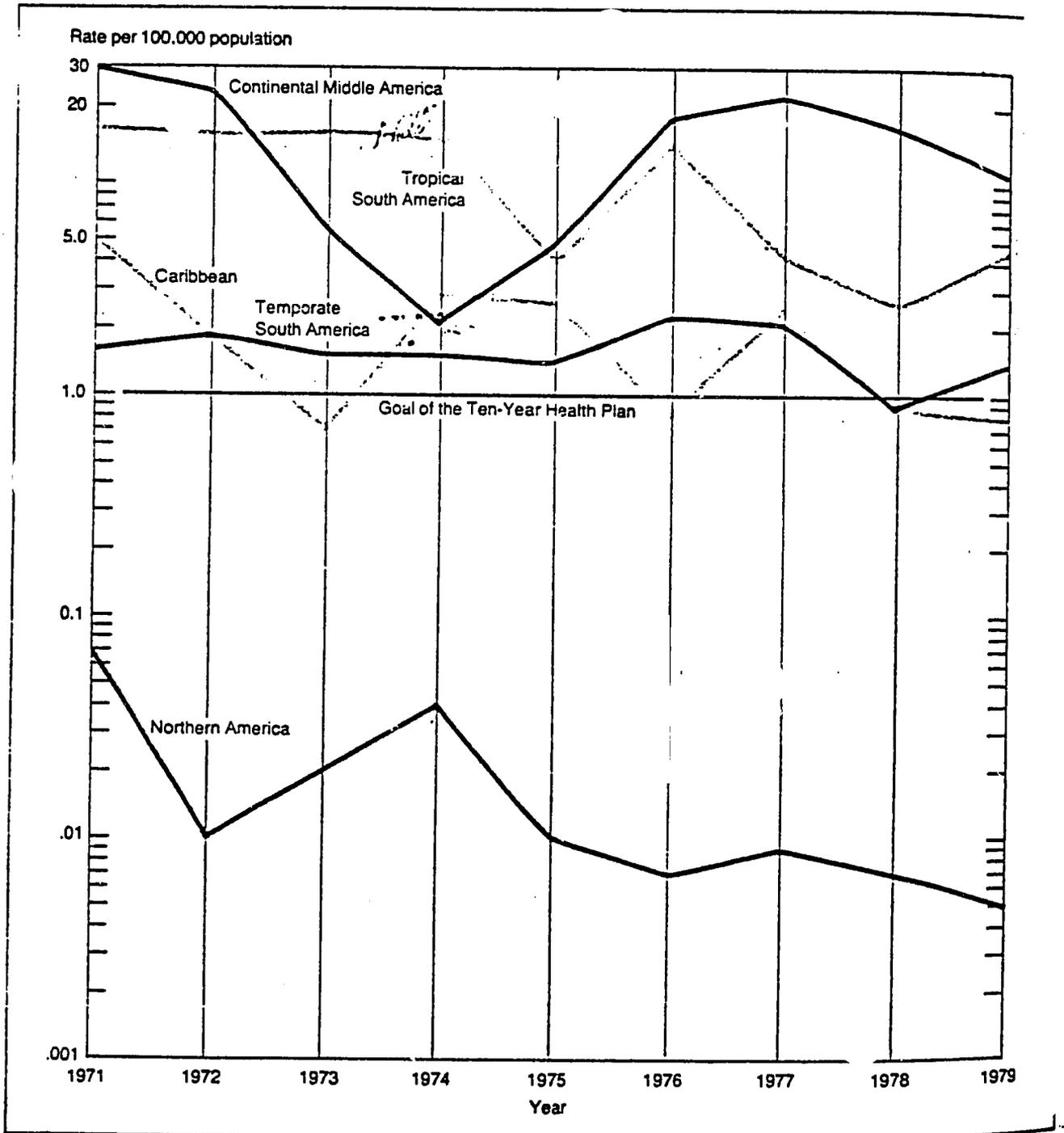
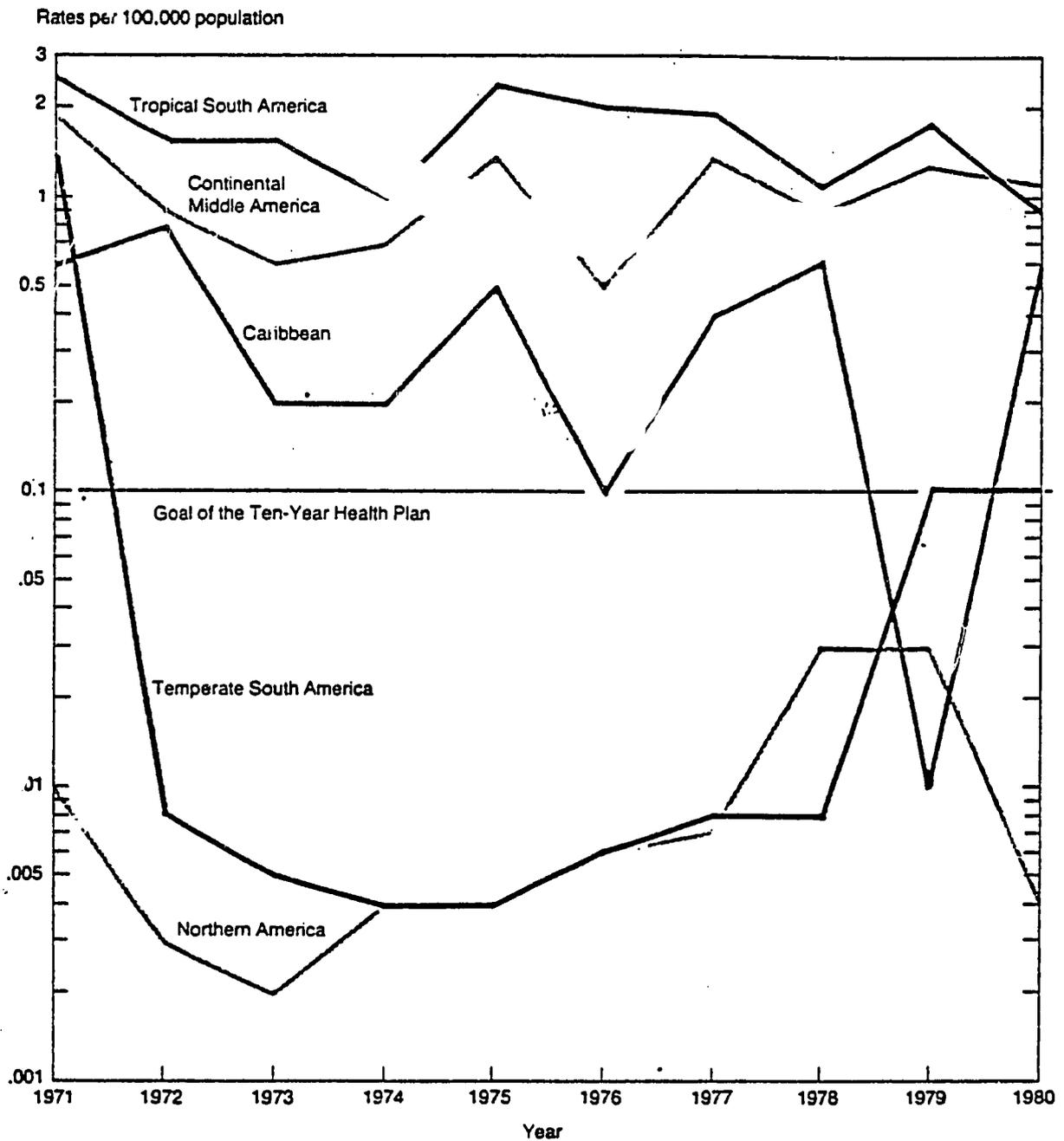


FIGURE VII

Reported cases of poliomyelitis per 100,000 population in the Americas, by subregion, 1971-1980



Source: Health Conditions in the Americas, 1980. PAHO

FIGURE VIII

Death rates from acute respiratory infections in children under 1 year and 1-4 years of age in the Americas, by subregion, around 1970 and 1980

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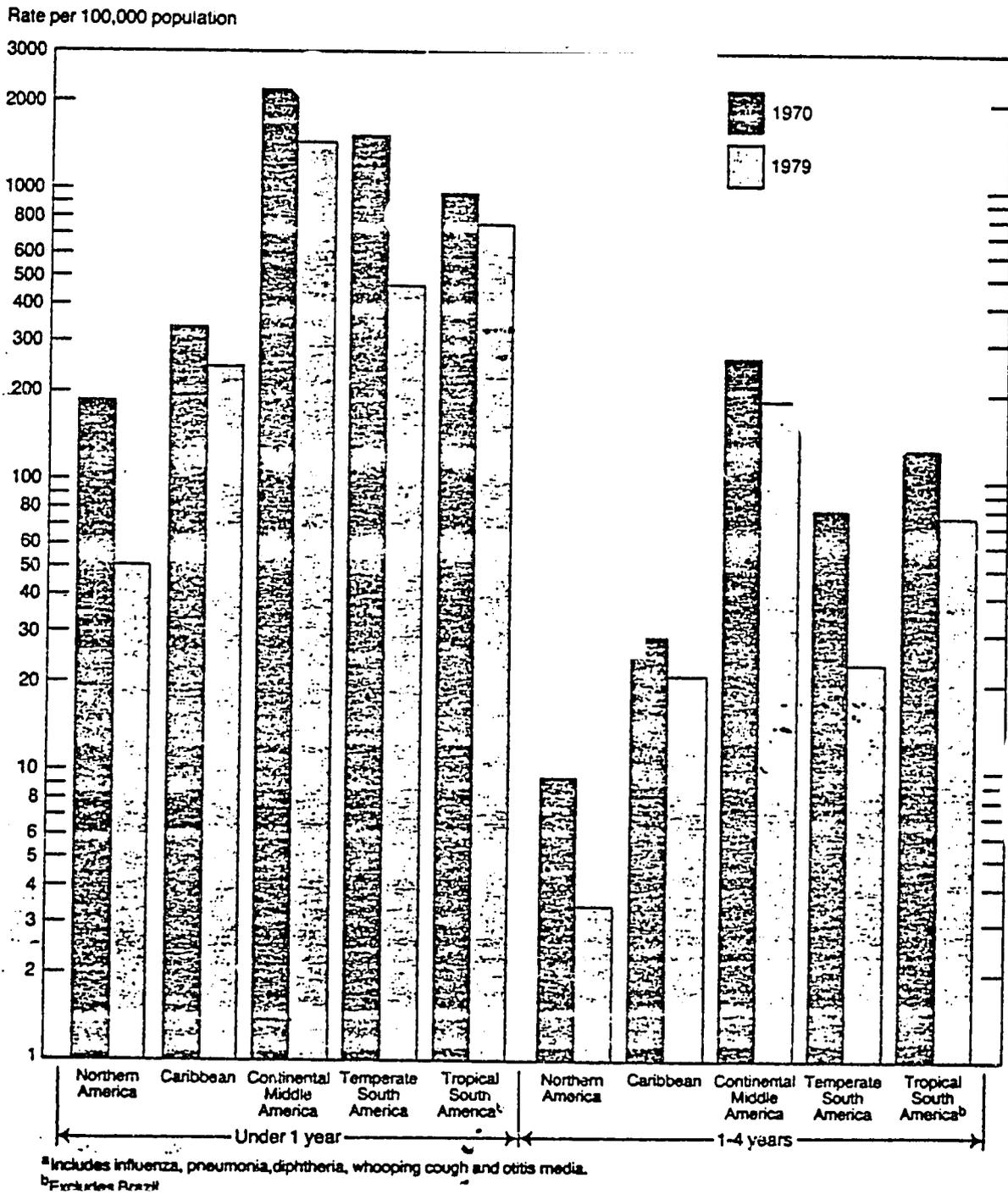


TABLE III

Number of deaths from diarrheal diseases in children under 5 years of age, with rates per 100,000 population, by subregion, around 1970 and 1979

Subregion	Year	Under 1 year		1-4 years	
		Number	Rate (a)	Number	Rate
Northern America	1979	795	21.9	73	0.5
	1970	972	25.1	237	1.5
Latin America	1979	52 422	914.6	23 307	125.7
	1970	66 362	1 344.6	36 665	238.9
Caribbean	1979	1 412	594.7	418	35.1
	1970	3 259	787.9	771	93.9
Continental Middle America	1979	36 005	1 208.1	16 072	148.1
	1970	42 879	1 727.0	27 874	309.0
Temperate South America	1979	3 630	403.5	520	37.2
	1970	8 668	1 028.6	1 139	38.0
Tropical South America	1979	11 375	789.7	6 297	123.3
	1970	11 556	802.2	6 862	273.1

(a) Per 1,000 live births.

Source: Health Conditions in the Americas, 1980. PAHO

production; and, more recently, population movements and the primitive living conditions of large numbers of displaced persons and refugees have become factors adversely affecting the transmission of malaria in Central America.

Epidemics of dengue fever (a virus) have occurred frequently in the hemisphere since 1977, particularly in Northern South America, the Caribbean and Central America. The increasing importance of dengue fever is due to: 1) the appearance of a hemorrhagic, deadly form of the disease in 1981-82 (in Cuba), 2) the high transmissibility of this disease and the presence of the disease vector in the United States, and 3) the high cost of this disease including losses in tourism and productivity. The dengue fever epidemic of 1978 was first reported in Honduras in February, 1978. By the end of 1978 it had spread to coastal areas of El Salvador, Honduras and Guatemala. In September 1980 the first cases of dengue fever since 1945 were reported in the United States.

Tuberculosis (TB) is still an important problem in the hemisphere, once again particularly in Central and Tropical South America (Table VI). Reductions in mortality from TB are related to the coverage and quality of health services. Reductions in the incidence of TB are more related to levels of socioeconomic development and environmental considerations (water and sanitation). As at least four countries in Central America fall behind most other countries in the hemisphere with regard to these factors, it may be assumed that reductions in both mortality and incidence of TB in Central America will be fewer and slower than in the rest of the hemisphere (except perhaps Bolivia and Haiti).

Other diseases which are particularly prevalent in the hemisphere and for which anecdotal data suggest a greater problem in Central America include: leishmaniasis, typhoid fever, and sexually transmitted diseases.

With regard to nutrition, in the mid-1970's, FAO estimated that malnutrition affected one-fourth of the population of the Latin American region. At least 57 million individuals were estimated to suffer food intakes inadequate in quantity and/or quality. Diets which are inadequate in calories and protein prohibit health and active lives and lead to physical and mental impairment. Pre-school age children figure most prominently among the affected population. In 1975 PAHO estimated that protein calorie malnutrition affected 28 million children under the age of five or about 60% of all children in the region in this age category. Specific nutrient deficiencies of iron, iodine and Vitamin A also are prevalent in the region and result in high rates of nutritional diseases such as anemia (iron deficiency), goiter (iodine deficiency), and xerophthalmia (Vitamin A blindness) among adults and children.

Table IV
 CASES MALARIA
 per 100,000 population
 By Region LAC 1977-1980

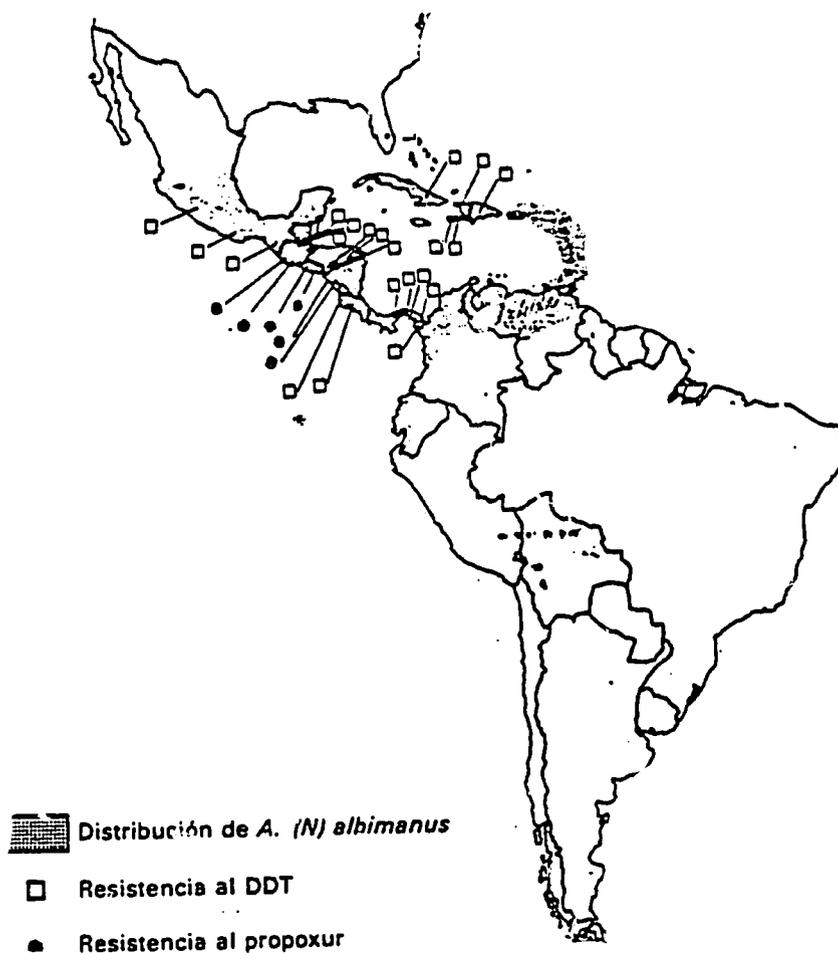
	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
N. America	.3	.4	.5	1.1
CAR	105	221.6	156.8	45.2
Cen. America	163.2	202.6	233.6	265.6
Tropical S. America	122.4	118.6	126.6	135.2
Temperate S. America	1.2	.8	2.3	.8

Table V
 REPORTED CASES OF MALARIA WITH % CHANGE
 BY SUBREGION 1970-1980

	<u>1970</u>	<u>1980</u>	<u>% Change</u>
N. America	3,056	2,675	13
CAR	10,862	13,061	20
Cen. America	186,059	251,292	35
Temperate S. America	84	341	306
Tropical S. America	144,724	270,579	57

FIGURE IX

Map of Insecticide resistance areas for Malaria in LAC



Source: Health Conditions in the Americas, 1980. PAHO

Table VI
MORTALITY FROM TUBERCULOSIS
Per 100,000 Population

	<u>1969</u>	<u>1979</u>
LAC	9.2	6.0
N.America	2.7	1.3
CAR	7.0	4.4
Cen. America	18.1	12.1
Temperate S. America	18.3	9.4
Tropical S. America	21.7	13.4

The Central American region suffers from higher levels of malnutrition than South America. Table VII illustrates the variation in the levels of childhood malnutrition between the countries of the two regional areas. The geographical distribution of malnutrition with the Central American countries varies widely and is illustrated in Annex I. The severity of the problem is greatest in Guatemala and El Salvador followed by Honduras and Panama. There is little recent information available on Nicaragua but earlier evidence places it between Honduras and Panama.

Latin America produces enough food to satisfy, on average, the calorie requirements of its population. During the 1970's average calorie availability for the region was estimated by FAO at approximately 12 % above minimum daily requirements. Average per capita calorie availability for the region increased by 6.6% between 1961 and 1971, and again by 7.3% between 1971 and 1978. However, overall regional averages cover up wide variations in calorie availability among individual countries.

Table VIII provides individual country estimates of average daily per capita availability as well as the prevalence of calorie deficient diets as measured by minimum per capita requirements. Countries are grouped according to rates of growth in average calorie availability over the last two decades. All but 3 countries achieved growth in calorie availability. However, in 1978, eight countries remained in a position of absolute calorie inadequacy. Using a generally accepted criteria that calorie deficient populations will be at very low levels when availability exceeds requirements by at least 20 %, 16 countries in the region still have a malnutrition problem.

Actual calorie consumption, of course, differs substantially from average calorie availability. Decreases in malnutrition do not linearly proceed from growth in average per capita availability. This is because nutritional status within a country is intimately linked to patterns of income distribution and employment, to food prices and food purchasing power of low income groups, as well as to the quality of health and environmental conditions. Nutritional status, therefore, can vary dramatically by income group and geographic location.

Consumption surveys conducted by the Institute of Nutrition of Central America and Panama (INCAP) in six of the Central American countries between 1965 and 1967, demonstrated that the type and magnitude of nutritional problems varied from country to country but tended to be more serious in Guatemala, El Salvador and Honduras and of less magnitude in Nicaragua, Costa Rica and Panama. More recent information for the Central

Table VII

PERCENTAGE OF CHILDREN 0 TO 59 MONTHS WITH WEIGHT FOR AGE RETARDATION IN LATIN AMERICA

Mexico and South America

	Total Children Examined	Percentage Children below 75% of weight for Age
* Brazil (1975)	10,447,000	21.1
Chile (1975)	881,517	4.1
Ecuador (1965-69)	9,000	10.8
Mexico (1963-79)	-	18.6
Paraguay (1973)	41,750	2.9
Peru (1965-71)	83,165	11.7
Venezuela (1974)	23,271	13.6

Central America

** Belize (1978)	-	13.0
Costa Rica (1978)	3,063	8.6
El Salvador (1977)	786	22.6
Guatemala (1977)	578	30.5
Honduras (1966)	-	31.0
Nicaragua (1966)	-	15.0
Panama (1980)	3,314	15.8

* Data refers to children under the age of 18 years.

** Survey on children under the age of 5.

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Table VIII

AVERAGE DAILY CALORIE AVAILABILITY 1961-1977
IN LATIN AMERICA

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	<u>1961*</u>	<u>% of</u>	<u>1971*</u>	<u>% of</u>	<u>1978**</u>	<u>% of</u>
	<u>Calorie</u>	<u>Requirement</u>	<u>Calorie</u>	<u>Requirement</u>	<u>Calorie</u>	<u>Requirement</u>
<u>Sustained Improvement</u>						
Argentina	3086	116	3222	122	3386	124
Cuba	2500	108	2515	108	2720	118
Paraguay	2593	112	2752*	---	2902	119
Venezuela	2263	92	2468	100	2649	102
Dominican Repub.	1939***	94	--	--	2133	102
Colombia	2191	94	2191	94	2460***	98
Ecuador	1888	82	1948	84	2092	90
El Salvador	1880	81	1916	83	2163	94
Bolivia	1642	69	2032	85	2086	87
<u>Moderate Improvement</u>						
Nicaragua	2140	95	2467	110	2284	110
Costa Rica	2217	100	2576	114	2630	114
Mexico	2515	108	2657	115	2803	115
Brazil	2469	103	2415**	111	2517	111
Chile	2386	98	2781	114	2732	114
Honduras	1889	83	2102	93	2175	93
Guatemala	1929	83	2155	93	2064	92
Haiti	1895	84	1793	79	1882	84
<u>Deterioration</u>						
Uruguay	3105	116	3077	115	2868	105
Panama	2560	110	2580	111	2289	104
Peru	2306	98	2380	101	2166	98

* Source: ECLA; Latin American Development and the International Economic Situation, Part One, Vol. 1, 1975.

** Source: FAO, Production Yearbook, 1981

*** Source: World Development Report, 1982 (1977 figures)

American countries estimated that 30 to 65 % of all households consumed fewer than the minimum daily requirements for calories. Costa Rica and Panama had the smallest proportions of households with inadequate diets while Honduras and Guatemala had the largest.

In summary, the major health problems of Latin America and the Caribbean which contribute to high infant and child mortality and to low productivity are: acute respiratory illnesses, diarrheal diseases, early childhood diseases (measles, polio, diphtheria, whooping cough, tetanus) malaria, tuberculosis, dengue fever, Chagas' disease, and schistosomiasis. Chagas' disease and schistosomiasis are particularly important for Tropical South America (particularly Brazil, Argentina, Peru). While there have been considerable improvements in health status in Latin America and the Caribbean in the last twenty years, Central America as a sub region falls behind the rest of the region in demonstrating such improvements. The factors affecting Central America's relatively poor health status as compared within the hemisphere and over time are: (a) level of socioeconomic development, and economic growth; (b) access to safe water and sanitation facilities; (c) coverage of health services; (d) population growth and distribution, migration, and fertility patterns; (e) nutrition status; and (f) literacy.

HEALTH AND NUTRITION STATUS IN CENTRAL AMERICA

While health status in Central America is generally poorer than in the rest of Latin America and the Caribbean, and, while Central America has not progressed as far as its neighbors in resolving health problems, considerable variation exists within Central America, both with regard to the types of health problems faced by each country and the way individual countries choose to address their health problems. In comparing countries within Central America on the various indicators of health status utilized above, it becomes apparent that Costa Rica and Panama are considerably better off than the other Central American countries, Mexico and El Salvador fall into the middle range, while Guatemala, Honduras and Nicaragua are considerably worse off than the rest of the region, and exhibit some of the worst health indicators in the hemisphere. Belize generally compares well to the rest of Central America, almost comparable to Panama and Costa Rica, but is still considerably worse off than other English speaking Caribbean countries (Jamaica, Barbados, etc.).

Life Expectancy

Table IX presents the average years of life expectancy for the eight countries of Central America and their rank order. Data

from 1975-80 indicate that life expectancies for the populations of Belize, Costa Rica, and Panama are close to that for the United States (73 years for the same time period.) Mexico at 64.4 years and El Salvador at 62.2 years represent an intermediate level. The low life expectancies for Guatemala, Honduras and Nicaragua (all below 58 years) indicate continued high infant and child mortality. This is because the threats to survival are most severe during the first year of life. A low life expectancy does not mean that a majority of people die at this age, but rather that a substantial proportion of mortality is occurring among infants and young children.

Figure X presents the gains in life expectancy since 1970. The three countries with the lowest life expectancies in 1965-70 (El Salvador, Guatemala and Honduras) achieved the greatest gains in life expectancy during the period. These results are not surprising, and reflect the fact that when infant and child mortality rates are high, usually due to the effects of communicable diseases, the initial returns from public health activities (immunization, sanitation, health education, etc.) can be significant. As infant and child mortality are reduced, more complex and intensive interventions are required to further reduce infant mortality, thereby extending life expectancy to levels evident in developed countries (70+ years).

Infant and Child Mortality

As mentioned above, the Infant Mortality Rate (IMR) and the Child Mortality Rate (CMR) are sensitive overall measures of health status and social welfare. In Table X the IMR's for Central America are presented and the countries are ranked on the basis of 1980 rates. Nicaragua, Honduras and Guatemala have the highest rates in Central America. Moreover, in these countries, particularly Guatemala and Honduras, the IMR's have not declined significantly since 1970. Mexico and El Salvador rank considerably lower but still exhibit high rates of infant mortality. Costa Rica, Belize and Panama have made dramatic improvements in reducing infant mortality and are approaching levels of infant mortality of developed countries (IMR for the U.S. 1979=13.8/000). The infant mortality data, then, are consistent with the life expectancy data presented above and reinforce the conclusion drawn that Costa Rica, Panama, and Belize enjoy a level of health status far superior to the rest of Central America.

In Table X Child Mortality Rates are also presented. In Belize and Costa Rica, deaths among children aged 1-4 years have been reduced to below two deaths per 1,000 children of that age group. Panama ranks close behind with a CMR of 2.1/000.

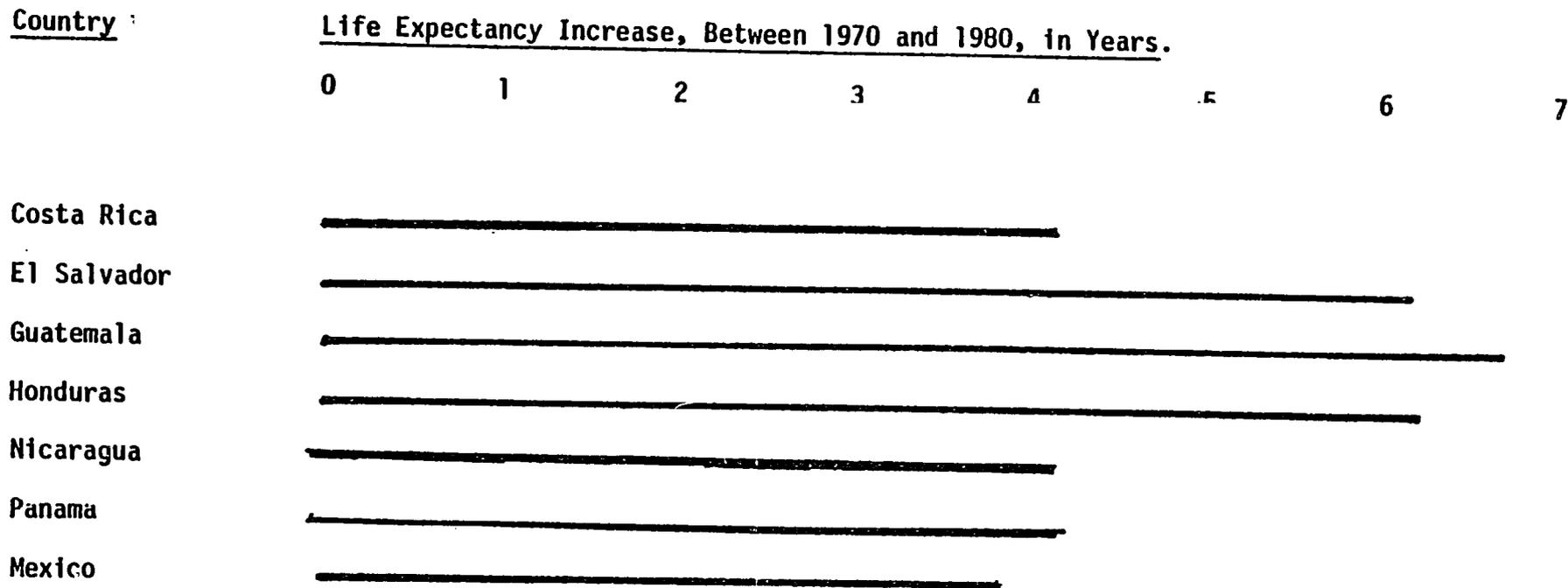
Table IX

LIFE EXPECTANCY AT BIRTH (years) BY COUNTRY

<u>Country</u>	<u>1965-70</u>	<u>Rank</u>	<u>1975-80</u>	<u>Rank</u>
Belize	-		67.7*	3
Costa Rica	65.6	1	69.7	1
El Salvador	56.0	4	62.2	5
Guatemala	51.2	5	57.8	6
Honduras	50.9	6	57.1	7
Mexico	60.8	3	64.4	4
Nicaragua	50.5	7	55.2	8
Panama	64.9	2	69.6	2
North America (U.S.&Canada)	70.6		73.0	

Source: PAHO; Health Conditions in the Americas

*Source: PAHO Program Budget 1983



* No information on Belize.

Source: World Population Prospects as Assessed in 1980, U.N., N.Y., 1981.

TABLE X
Country-Specific Health Status, Rates per 1,000 Population

Country	Infant Mortality Rate (0-1 yr)			Rank in 1980 (High-Low)	Rate of Deaths in Children (1-4 yr)			Rank in 1980 (High-Low)
	1960	1970	1980		1960	1970	1980	
Belize			27	6	6.7	4.3	6 ^A	7
Costa Rica	68.6	61.5	19.1 ^A	8	6.9	4.8	1.3 ^A	8
El Salvador	76.3	66.7	53.0 ^A	5	17.5	11.1	6.9 ^B	2
Guatemala	91.9	87.1	85.9	3	29.0	24.0	12.4	1
Honduras			87	2	13.9	9.9	4.3 ^A	3
Nicaragua		-	101.7	1	9.1	-	3.6	4
Panama	56.9	40.5	21.3	7	9.6	7.5	2.1	6
Mexico	74.2	68.5	60.2 ^B	4	3.1	9.5	3.3	5

Source: P.A.H.O., 1982

A: 1979 figure

B: 1980 figure

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At the other extreme, the CMR for Guatemala is reported to be 12.4/000 which is two times higher than the next highest country, El Salvador (6.9). This data confirms earlier conclusions regarding the relative positions of Nicaragua, Honduras and Guatemala vis-a-vis the rest of Central America. In addition it serves to highlight what may be a special problem for El Salvador (high child mortality rate as compared to infant mortality and life expectancy). Child mortality is closely linked to : (a) nutritional status, (b) immunization status of the child, and (c) breastfeeding/child rearing practices.

Major Causes of Death

Taken as a whole, mortality from infectious and parasitic diseases provides a good indication of a country's health status. More developed countries are associated with a very low proportion of deaths attributable to infectious and parasitic diseases. Table XI presents the number of deaths and per cent of total deaths from infectious and parasitic diseases. In Guatemala nearly one death in three is due to these causes. For two countries, Belize and Nicaragua infectious and parasitic diseases are responsible for over one fifth of all deaths. In Honduras and El Salvador the proportion of deaths from these diseases is approximately 18%. In Costa Rica, on the other hand, only 5% of deaths are attributable to infectious diseases.

Infectious and parasitic diseases affect infants and children most severely. By comparing the two columns "deaths less than 5 years" and "all ages" it is evident that the majority of deaths from infectious and parasitic diseases occurs in children. When we consider that the corresponding figure for the U.S. is under 1% (deaths due to communicable diseases), it must be concluded that infectious and parasitic diseases are major health problems in most Central American countries and cause considerable loss of life at an early age.

Major Health Problems

Major health problems in Central America include: all early childhood diseases, malaria, dengue fever, tuberculosis, typhoid, sexually transmitted diseases, and in certain countries, chronic diseases (cancer, cardiovascular disease and metabolic disorders). A high percent of death due to chronic diseases indicates generally that the major causes of death and disability in children and in the productive population have been eradicated or controlled. This is the case in Panama and Costa Rica. As significant improvement in the prevention or cure of these chronic diseases will not occur without the introduction of new knowledge and complex technology, much as in

Table XI

NUMBER AND PERCENT OF TOTAL DEATHS
FROM INFECTIVE AND PARASITIC DISEASES
(ICD-8 001-136)
By Year, Age and Country*

<u>Country</u>	(1) <u>Year</u>	(2) Age <u>5 yrs.</u>	(3) <u>All Ages</u>	(4) <u>Total No. of Deaths</u>	(3) (6) <u>% of Total</u>
Belize	1979	57	87	385	22.6%
Costa Rica	1979	312	465	9,143	5.1%
El Salvador	1974	3,719	5,518	30,533	18.1%
Guatemala	1978	12,370	19,066	5,918	31.0%
Honduras	1978	2,433	3,426	18,127	18.9%
Nicaragua	1977	2,248	2,648	12,492	21.2%
Panama	1974	744	1,263	9,015	14.0%
Mexico	1976	40,178	51,235	455,660	11.2%
United States	1978	2,631	18,042	1,927,788	0.9%

*excludes tuberculosis

Source: PAHO; Health Conditions in the Americas

the U.S., no further discussion of these diseases as major health problems will be provided. The incidence of childhood diseases is difficult to measure as these diseases are cyclical (subject to seasonal epidemics), and grossly underreported. Deaths from these diseases are easier to measure, and this data was presented above. In summary, both the incidence and death rates for these diseases are high in Central America, highest in Nicaragua, Honduras and Guatemala, lowest in Panama and Costa Rica.

Malaria

Table XII lists reported cases per 100,000 population of malaria, tuberculosis and typhoid fever for 1977 and 1980. This data provides insights into the status of communicable disease control in a country and to a lesser extent provides an indication of overall health status. The case rate for malaria increased in all of the countries of Central America except Honduras and Panama during this period. Honduras sustained extremely high levels of malaria; only Panama experienced a significant decline. In just three years the number of cases rose dramatically, revealing perhaps the most critical and difficult health problem the region will face in the years to come. Due to extreme and uncontrolled use of pesticides, for agricultural production in most cases, the malaria vectors in Central America (several species of Mosquitos) are by and large resistant to most insecticides. This resistance is particularly widespread in Central America and parts of Northern South America.

Dengue Fever

As mentioned above, recurrent epidemics of dengue fever have occurred in Central America since 1977-78. Valid and representative data are not available as to the number and location of cases because diagnosis of this disease is difficult and most cases are not reported. The problem seems to be most severe in Honduras, where a hemorrhagic-like dengue fever was reported in 1981-82.

Tuberculosis

Tuberculosis remains a major health problem in all Central American countries. In Belize significant progress has been made in reducing the incidence of TB. Costa Rica with the second lowest rate has not achieved much reduction since 1977. Guatemala recorded the highest TB rate, though it has achieved a significant reduction between 1977 and 1980. The TB rate in Honduras increased slightly during the time period.

Table XIII

PERCENTAGE OF CHILDREN 6 TO 59 MONTHS OF AGE WITH HEIGHT FOR AGE AND WEIGHT FOR AGE RETARDATION IN 2 NATIONAL SURVEYS CONDUCTED IN EL SALVADOR IN 1965 AND 1976

Survey Year	Sample Size	Percentage of Children	
		Below 90% of Height for Age	Below 75% of Weight for Age
1965	507	48.5	27.5
1976	786	34.0	22.6

Source: Valverde et al 1981,
 Overview of Nutrition Status in
 the Western Hemisphere:
 Central America and Panama
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Typhoid

With regard to typhoid fever, the familiar comparative pattern holds true. Typhoid fever is a significant problem in El Salvador, Honduras, Guatemala and Nicaragua, albeit a significant downward trend may be observed. Countries with low rates have maintained low rates.

Malnutrition

The most reliable evidence for assessing the underlying nutritional situation is anthropometric measurements i.e. weight-for-age, height-for-age, or weight for-height measurements of children under 5 years of age compared to a reference standard. This type of information is available for only a few countries in Central America.

Four of the Central American countries have adequate data to look at trends in the nutritional situation based on anthropometry. Costa Rica made substantial improvements in childhood nutritional status over the last 15 years, reducing chronic and severe malnutrition among children under 5 from 13.5 to 8.4%. Current scattered reports from health facilities in Costa Rica, however, indicate that the recent economic upheavals have had a negative impact on the nutritional status of children. El Salvador and Guatemala made only marginal improvements in preschool nutritional status prior to 1979 (Tables XIII, XIV). In addition, fragmentary evidence from both of these countries indicate that the political unrest and economic difficulties of the last two years have resulted in a deterioration of the nutritional situation. Panama showed no reduction in childhood malnutrition between 1965-1980 (Table XV). Information on trends in nutritional status is unavailable for the other Central American countries. Data from nutrition surveys in the 1960's are included in the country profiles (Annex II) for Honduras and Nicaragua, and a 1970 survey is included for Belize.

Special Note on Nicaragua and El Salvador

Information used in this presentation date from 1980 or before as there is minimally a 2 year lag time for countries to collect this data and for international agencies to process it. Information more recently available from the Governments of Nicaragua and El Salvador indicate that dramatic changes in health status may have occurred in both countries since 1980. In Nicaragua, for example, the Government reports that the number of vaccinations provided (measles, polio, D.P.T) have

Table XII

Reported Cases of Malaria, Tuberculosis, and Typhoid Fever 1977 and 1980 by Country
Expressed as Rate per '100,000 Population

<u>Reported cases of:</u> <u>Country</u>	<u>Malaria</u>		<u>Tuberculosis</u>		<u>Typhoid Fever</u>	
	<u>1977</u>	<u>1980</u>	<u>1977</u>	<u>1980</u>	<u>1977</u>	<u>1980</u>
Belize	600	944	21	13	3	1
Costa Rica	11	17	22	20	1	.2
El Salvador	757	1991	62	47	40	23
Guatemala	527	863	101	78	21	15
Honduras	1187	1160	48	52	32	20
Mexico	29	36	17	16	5	6
Nicaragua	501	816	75	35	43	43
Panama	40	17	50	-	1	2

Source: PAHO (1982) pp 331, 336, 337

more than doubled since 1979. The coverage of the malaria program has expanded dramatically and it appears that the incidence of malaria has declined. The expansion of coverage of health services in Nicaragua is the result of increased government commitment to social welfare services (4.9% to 19.8% public sector budget devoted to health since the revolution), and the training and deployment of massive numbers of health workers both local (i.e. 200,000 malaria "brigadista") and foreign (Cuban physicians).

In El Salvador, on the other hand, the health situation has deteriorated markedly since 1979-80. The continuing violence, the worsening economic situation and the increasing numbers of displaced persons have contributed to this decline. The Ministry of Health reports a 55% increase in cases of measles since 1980-81; whooping cough increased by 324% and typhoid 273%. Reported cases of diarrhea, the most frequently reported communicable disease, numbered more than 150,000 per year from 1980-82. Taking into account possible biases in the data, it appears likely that El Salvador now ranks with Guatemala and Honduras as the countries with the worst health status in Central America and Nicaragua may have moved out of this category and replaced El Salvador as a country, like Mexico, in the middle range with regard to infant mortality, child mortality, etc.

HEALTH RESOURCES AND SERVICES IN CENTRAL AMERICA

As mentioned above, health status is a function of: income, education, population growth and distribution, nutrition, access to safe water and sanitation services, and access to health services. The first three factors are discussed elsewhere in this briefing document. Problems of food consumption and nutrition status are described above. El Salvador and Guatemala have the most malnutrition, followed by Honduras and Panama. It is interesting to note the sustained high rate of malnutrition in Panama despite its economic growth and commitment and ability to provide health services. Malnutrition and disease interact in a "synergistic" manner. Malnutrition can increase the severity of diseases and negatively impact disease outcome. (Well-nourished children do not die from measles.) In addition, the onset of disease can precipitate serious malnutrition in children who are already marginally malnourished. In this way countries with high child mortality are the countries with the highest percentage of malnutrition (and vice versa). Maps of the severity and distribution of malnutrition in Central America are presented in Annex I.

The incidence of diarrheal disease in particular is closely linked to the availability of safe water. Death from diarrhea

Table XIV

PERCENTAGE OF CHILDREN 6 TO 59 MONTHS OF AGE WITH HEIGHT FOR AGE AND WEIGHT FOR AGE RETARDATION IN 3 NATIONAL SURVEYS CONDUCTED IN GUATEMALA IN 1965 AND 1977

Survey Year	Sample Size	Percentage of Children	
		Below 90% of Height for Age	Below 75% of Weight for Age
1965	684	54.8	33.6
1976	521	49.0	34.6
1977	512	46.0	30.5

Source: Valverde et al 1981,
 Overview of Nutrition Status in
 the Western Hemisphere
 Central America and Panama
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Table XV

PERCENTAGE OF CHILDREN 0 TO 60 MONTHS OF AGE WITH LOW HEIGHT FOR AGE AND WEIGHT FOR AGE CONDUCTED IN 2 NATIONAL SURVEYS IN PANAMA IN 1967 and 1982

Survey Year	Sample Size	Percentage of Children	
		* Below 70% of Height for Age	* Below 75% of Weight for Age
1967	597	22.8	11.4
1980	3314	22.0	15.8

* Greater than 2 standard deviations of the mean of tl.

Source: Valverde et al 1981,
 Overview of Nutrition Status in the
 Western Hemisphere:
 Central America and Panama
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is a measure of the country's health services and nutritional status. Table XVI presents data on access to safe water in Central America. While the majority of the urban population in each country has access to water--most in household connections--the range in access to water in rural areas is significant. Not surprisingly, Panama and Costa Rica, who have significantly reduced the incidence of and mortality from diarrhea, have by far the highest rural coverage of water systems. At the other end of the spectrum is Guatemala with 16% of the rural population having access to safe water. This data generally parallels the overall infant and child mortality presented above.

Accurate measures of access to health services are more difficult to obtain, and no inferences may be made as to the quality of these services from the data available.

The most common measure of access to health services is the number of health workers available in the country. These figures are presented in Table XVII. The most critical health personnel for the purposes of delivering routine preventive and curative health services in rural areas are nurses and nursing auxiliaries. Once again Panama, Costa Rica and Belize employ greater numbers of such personnel. While the physician data follows the same pattern (with regard to Panama and Costa Rica) it is important to note that the distribution of physicians within each of these countries is highly skewed to urban areas, therefore the number of available physicians is not a good measure of access to rural health services. In addition, these figures for all categories represent health workers in both the private and public sector. As the rural populations in these countries are virtually dependent on the public sector to provide health services, these figures are at most a very indirect measure of coverage.

Another measure of access to health care is actual numbers of consultants and/or services provided per 100 persons or by percent of target group. Table XVII also presents number of consultations by 100 persons. What should be noted here is the disparity between all of the Central American countries and the U. S. While each of the Central American countries supposedly provides universal access to free health services, the utilization of these services is significantly less than in developed countries. (Variations between the Central American countries are due in part to differences in definition of what constitutes a consultation.)

A better overall measure of health services is the vaccination coverage of a population. Table XVIII provides 1981 data on percent of coverage in pregnant woman and infants (under one year of age) for the Central American countries. Vaccination

Table XVI

. % Population with Access to Water Supply Services, 1979

	<u>Population</u> Total %	<u>Urban</u> Total %	(% Household connections of total Urban)	<u>Rural</u> Total %
Belize	66	78	(64)	27
Costa Rica	81	100	(98)	64
El Salvador	48	67	(61)	34
Guatemala	42	89	(51)	16
Honduras	55	91	(50)	35
Mexico	59	73	(69)	32
Nicaragua	46	81	(63)	9
Panama	83	100	(93)	64

Table XVII

NUMBER PHYSICIANS, NURSES, AND NURSING AUXILIARIES
PER 10,000 POPULATION, 1979 AND
NUMBER CONSULTATIONS PER 100 POPULATION 1980

	<u>Physicians</u>	<u>Nurses</u>	<u>Auxiliaries</u>	<u># Consultations/ 100 Pop</u>
Belize	4.1	14.4	3.1	97.2
Costa Rica	9.3	5.5	21.9	-
El Salvador	4.9	3.8	8.3	51
Guatemala	5.1	1.1	6.6	40
Honduras	3.5	1.5	8.1	90
Mexico	8.0	5.4	8.2	18
Nicaragua	3.6	3.7	15.7	99
Panama	8.5	11.0	18.2	171
U.S.	20	51.3		460

Table XVIII

Vaccination Coverage in Children under 1 Year and Pregnant Women, by Vaccine Type and Dose, Including Dropout Rates. Region of the Americas, 1981.

Sub-Region and Country	Pop. under 1 year	Coverage (%) in children under 1 year of age							Coverage (%) in pregnant women			
		DPT 1st dose	DPT 3rd dose	Dropout 1st/3rd dose	POLIO 1st dose	POLIO 3rd dose	Dropout 1st/3rd dose	MEASLES	BCG	TT 1st dose	TT 2nd dose	Dropout 1st/2nd dose
NORTHERN AMERICA												
Canada												
U.S.A.	3,165,121											
CARIBBEAN^a												
Antigua and Barbuda	1,500	...	79.0	...	...	47.0	...	...	...	...	...	...
Bahamas	5,506	...	55.0	...	...	53.0	...	...	...	...	...	...
Barbados	4,200	...	58.9	...	...	55.0	...	...	...	...	...	...
Belize	5,301	...	50.0	...	...	51.0	...	28.7	54.3	...	...	...
Cuba	134,025	...	99.9	...	...	...	...	56.3	98.7	...	...	...
Dominica	1,722	...	93.0	...	...	93.0	...	...	...	...	...	...
Dominican Republic ^b	191,337	59.1	26.9	54.5	84.1	42.4	49.6	17.4	33.8	36.2	25.5	29.6
Grenada	2,510	...	43.0	...	...	41.0	...	...	...	...	...	...
Haiti	221,001	...	...	...	...	...	...	...	...	...	...	...
Jamaica	57,461	...	39.4	...	...	37.0	...	...	...	...	...	...
Saint Lucia	4,000	...	63.6	...	...	65.3	...	...	...	...	...	...
St. Vincent and the Grenadines	3,000	...	32.0	...	...	33.0	...	...	...	...	...	...
Trinidad and Tobago	26,300	...	51.9	...	...	45.5	...	...	...	...	...	...
CONTINENTAL MIDDLE AMERICA												
Costa Rica	70,960	96.3	84.4	12.4	97.6	86.5	11.4	52.0	82.3	...	...	...
El Salvador	198,168	54.2	52.2 ^c	...	50.4	47.1 ^c	...	57.8	54.6	...	...	...
Guatemala	288,133	65.7	...	...	66.3	...	...	...	30.3	...	...	...
Honduras ^b	160,479	64.0	36.0	43.8	64.0	37.0	42.2	35.0	42.0	17.5	10.9	37.8
Mexico	2,955,938	13.0	9.6	26.2	44.2	31.4	29.0	11.6	12.9	...	...	...
Nicaragua	150,938	47.4	17.7	62.7	64.1	18.3	71.5	15.2	50.3
Panama	54,846	79.5	48.5	39.0	82.4	49.7	39.7	52.2	76.2

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Data for English-speaking Caribbean countries from CAREC SAC, 83/4, Director's Report for 1982

Data from 1982 EPI evaluations

- c) Second dose only
- d) National immunization days
- e) Three quarters only

rates for the third dose of DPT, of diphtheria, pertussis (whooping cough) and tetanus, are highest in Costa Rica (84.4%)*. With population in the 45-55% range of coverage are El Salvador (52.2%), Belize (50.0%) and Panama (48.5%). Reported vaccination coverage was 36% in Honduras, 17.7% in Nicaragua, and 9.6% in Mexico.

As to the significance of these rates, vaccination coverage in the 90-100% range is thought to effectively interrupt disease transmission in the population. Below that level, outbreaks can occur.

SUMMARY

Comparative data have been presented on health status and health services in Central America, in order to describe the relative progress of Central America versus the rest of the hemisphere in controlling diseases, reducing mortality and alleviating suffering. In addition, the Central American countries have been ranked one against the other on the basis of the health and nutrition situation in each country. General conclusions which may be drawn from this presentation are:

1. Mortality rates for infants and children are higher in Central America than in the rest of the hemisphere.
2. While progress has been made in the last 10-20 years in reducing infant and child mortality, Central America lags behind the rest of the hemisphere in achieving significant improvements.
3. Communicable diseases (measles, polio, malaria, tuberculosis, diarrhea, respiratory diseases) are the major cause of death and disability in Central America. In other parts of the hemisphere, chronic diseases are the major causes of death and disability.
4. The resurgence of malaria is a particularly serious problem for Central America due to the appearance of insecticide resistant strains of malaria-carrying mosquitos. This resistance is a result of the extreme and uncontrolled use of insecticides for agricultural production.

* At least two, and preferably three, doses of DPT vaccine are required for assurance of protection.

40.

5. Costa Rica, Panama, and to a lesser extent Belize have better health and nutrition status than the rest of Central America, and have made the greatest improvements in health care (including access to safe water) since 1960.

6. Unconfirmed data suggests that health conditions have significantly improved in Nicaragua and dramatically declined in El Salvador.

7. While nutrition has improved, malnutrition is still a significant problem in all countries of Central America except Costa Rica.

Based on the data presented above, key health issues for consideration in Central America are as follows:

1. For Panama, Costa Rica, and Mexico continued financial support to sustain the health delivery system at its present level and quality will be the most challenging health problem in the next five years. Declining economic situations, lack of foreign exchange, etc. are already adversely affecting the ability of these countries to sustain quality health care. The same may be said for Nicaragua's ability to continue its support for health services at its present level.

2. Key health problems for Belize include an alarming increase in malaria and a growing shortage of human resources in health ("brain drain").

3. Guatemala and Honduras will need to expand access to safe water and health care before significant improvements in the reduction of mortality and morbidity will be achieved. In addition, increased attention must be placed on vector control for malaria and dengue in both countries.

4. El Salvador's major health problem will be (a) sustaining a minimum level of health services for the population, especially the displaced persons, (b) addressing emergency medical needs as a result of the civil strife, and (c) instituting vector control and sanitation measures to control malaria.

ANNEX II *
COUNTRY PROFILES

Country: Belize

Health Status:

Life Expectancy: 67.7
Infant Mortality Rate: 27.0
Child Mortality Rate: 2.2
Death From:
 Infectious Disease: 10.8
 Tumors: 8.6
 Heart Disease: 34.4
 Accidents: 3.8
Cases Malaria/100,000 pop.: 944
 (1980)
% Low Birth Weight
 <2,500 Grams: N/A
% Children Malnourished: 13% Children
 under 3, Caribbean Food
 and Nutrition Institute
 Survey 1978

Health Services/Resources:

% Population with Water: 66
% Children Immunized:
 Tetanus, Diphtheria
 Whooping Cough: 50
 Measles: 28.7
 Polio: 51
 Tuberculosis: 57.0
Number Consults/100 pop: 97.2
Physicians/10,000: 4.1
Nurses/10,000: 14.4
Auxiliaries/10,000: 3.1
Health as % GDP: 2.9
Health as % Public Sector
 Budget: 9.1
Per Capita Health Expenditure: \$32

* Small differences may be observed between multicountry tables and individual country profiles. These differences are due to different sources of data. Individual country profile data is from PAHO Budget 1983.

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Country: Costa Rica

Health Status:

Life Expectancy: 73.2

Infant Mortality Rate: 19.1

Child Mortality Rate: 1.1

Death From:

Infectious Disease: 4.1

Tumors: 18.2

Heart Disease: 19.1

Accidents: 4.9

Cases Malaria/100,000 pop. : 1/ (1980)

% Low Birth Weight

<2,500 Grams: 6.8

% Children Malnourished: See attached

Health Services/Resources:

% Population with Water: 100

% Children Immunized:

Tetanus, Diphtheria
Whooping Cough

Measles: 52

Polio: 86.5

Tuberculosis: 82.3

Number Consults/100 pop:

Physicians/10,000: 9.3

Nurses/10,000: 5.5

Auxiliaries/10,000: 21.9

Health as % GDP: -

Health as % Public Sector
Budget: 5.0

Per Capita Health Expenditure: -

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COSTA RICA

Protein-Calorie Malnutrition

Information on malnutrition as evidenced by growth retardation is available from 3 anthropometric surveys conducted in 1966, 1975, and 1978.

PERCENTAGE OF CHILDREN 0 TO 60 MONTHS OF AGE WITH HEIGHT FOR AGE AND WEIGHT FOR AGE RETARDATION IN THREE NATIONAL SURVEYS CONDUCTED IN COSTA RICA IN 1966, 1975 AND 1978:

Survey Year	Sample Size	Percentage of Children	
		*Below 90% of Height for Age	*Below 75% of Weight for Age
1966	791	16.9	13.5
1975	1910	7.2	12.3
1978	3063	6.8	8.6

* A child with height retardation has a height for age below 90% of the 50th percentile of the Iowa standards while for weight retardation the child should have a weight below 75% of the 50th percentile of the same standard.

While Costa Rica made substantial reductions in childhood malnutrition, according to the 1978 survey, children in families of some rural workers experienced rates of malnutrition that were two to three times the national average.

30.6%	Small Farmers in Basic Grains
27.9%	Farm Laborers in Basic Grains
15.6%	Banana Workers
15.5%	Coffee Workers

Map 1 illustrates the regional variation in malnutrition as evidenced by height retardation.

Salt was iodized in Costa Rica in 1971 and the prevalence of goiter decreased to 3 percent by 1979. Sugar was fortified with vitamin A by law beginning in 1975. Two years after the program was initiated serum blood levels indicated that vitamin A deficiency had been reduced from 32 to 2.3 percent of all children under 5. The government is considering the possibility of discontinuing the program. There is no information to ascertain the present condition of the population with respect to anemias, or riboflavin and thiamine deficiencies.

Least-Cost Diet

The monthly cost of a minimum diet for a family of four in 1982 was \$113.73.

Country: El Salvador

Health Status:

Life Expectancy: 64.5

Infant Mortality Rate: 84.8

Child Mortality Rate: 6.9

Death From:

Infectious Disease: -

Tumors: -

Heart Disease: -

Accidents: -

Cases Malaria/100,000 pop.: 757
(1980)

% Low Birth Weight
<2,500 Grams: 6.7

% Children Malnourished: See attached

Health Services/Resources:

% Population with Water: 53

% Children Immunized:
Tetanus, Diphtheria
Whooping Cough: 522

Measles: 57.0

Polio: 47.1

Tuberculosis: 54.6

Number Consults/100 pop: 51

Physicians/10,000: 4.9

Nurses/10,000: 3.9

Auxiliaries/10,000: 8.3

Health as % GDP: -

Health as % Public Sector
Budget: 7.5

Per Capita Health Expenditure:

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EL SALVADOR

Protein-Calorie Malnutrition

The anthropometric findings on children less than 5 years come from two national surveys conducted in 1965 and 1976 (Table XIII). Regional variation in malnutrition are presented in Map 3 and below.

Vitamin and Mineral Deficiencies

In a 1976 study on vitamin A, 76 percent of all children had low vitamin A levels, and 82 percent of families consumed less than 25 percent of the recommended levels of vitamin A. In 1978, the prevalence of anemia was 13 percent among preschool children, 13 percent among pregnant women, and 16 percent among lactating women.

Least-Cost Diet

Data from 1980-82 suggest that 60 percent of the population are not able to purchase a basic food basket which in 1982 was \$1.65 per capita.

REGIONAL DIFFERENCES IN HEIGHT FOR AGE AND WEIGHT FOR AGE RETARDATION IN CHILDREN 6 TO 59 MONTHS OF AGE STUDIED IN EL SALVADOR, 1976

Regions	Sample Size	Percentage of Children	
		*Below 90% of Height for Age	*Below 75% of Weight for age
Coffee	1043	51.8	22.6
Subsistence (Central)	1047	46.2	24.9
Subsistence (North)	1477	39.6	22.7
Cotton and Sugar (Coastal)	1504	37.1	16.3
Urban Slums	1369	33.4	15.3

Country: Guatemala

Health Status:

Life Expectancy: 57.8
 Infant Mortality Rate: 85.9
 Child Mortality Rate: 12.4
 Death From:
 Infectious Disease: 33.2
 Tumors: 3.2
 Heart Disease: 3.9
 Accidents: 2.1
 # Cases Malaria/100,000 pop.: 527
 (1980)
 % Low Birth Weight
 <2,500 Grams: 10
 % Children Malnourished: See attached

Health Services/Resources:

% Population with Water:
 % Children Immunized:
 Tetanus, Diphtheria
 Whooping Cough:
 Measles:
 Polio:
 Tuberculosis: 30.3
 Number Consults/100 pop: 40
 Physicians/10,000: 5.1
 Nurses/10,000: 1.1
 Auxiliaries/10,000: 6.1
 Health as % GDP: 3.2
 Health as % Public Sector
 Budget: 10
 Per Capita Health Expenditure: -

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GUATEMALA

Protein-Calorie Malnutrition

Information on malnutrition was collected in 3 national surveys conducted during the summers of 1965, 1976 and 1977 (Table XIV). The reductions in childhood malnutrition can be considered only marginal for the 12 year period. There is also considerable variation in the level of malnutrition by regional area and by occupational or economic activity of the household. Map 2 illustrates the regional pattern for height retardation and reveals a similar regional variation in malnutrition. The table below reveals the variation in malnutrition by occupation of the head of rural households for a region.

Vitamin and Mineral Deficiencies

The iodization of salt began in 1959. By 1965 the prevalence of goiter was reduced to 5.2 percent and it was no longer classified as a public health problem. By 1979, goiter had reemerged as a health problem. The national prevalence was 10.6 percent but in some areas it was as high as 18 percent. Sugar was fortified with vitamin A in 1975. By 1977 only 10 percent of children under 5 had deficient serum retinol levels as compared with 22 percent of children before sugar fortification was implemented. There is no recent information to ascertain the condition of the population with respect to anemias, or riboflavin and thiamine deficiencies.

Least-Cost Diet

In 1982, a basic minimum requirement food basket cost \$0.92 per capita in urban areas and \$0.77 in rural areas. Of the total population 36.5 percent (44 percent of rural families and 17 percent of urban families) cannot afford to purchase the basic food basket.

PREVALENCE OF WEIGHT RETARDATION IN CHILDREN 2 TO 3 YEARS OF AGE FROM FAMILIES DEDICATED TO DIFFERENT ECONOMIC ACTIVITIES IN 4 RURAL VILLAGES OF EASTERN GUATEMALA

Group	Sample Size	Percentage of cases with weight retardation
Farmers with access to less than 2 manzanas of land	37	37.8
Farmers with access from 2 to 4.9 manzanas of land	74	31.1
Salaried agricultural workers	43	27.9
Skilled workers and merchants	39	17.9
Farmers with access to 5 or more manzanas of land	36	16.7

Country: Honduras

Health Status:

Life Expectancy: 58.8
 Infant Mortality Rate: 87.0
 Child Mortality Rate: 4.3
 Death From:
 Infectious Disease: 26.8
 Tumors: 5.5
 Heart Disease: 13.1
 Accidents: -
 # Cases Malaria/100,000 pop.: 1187
 (1980)
 % Low Birth Weight
 <2,500 Grams: 9.2
 % Children Malnourished: 31% (last
 survey taken 1965)

Health Services/Resources:

% Population with Water: 55
 % Children Immunized:
 Tetanus, Diphtheria
 Whooping Cough: 36
 Measles: 35
 Polio: 37
 Tuberculosis: 42
 Number Consults/100 pop: 90
 Physicians/10,000: 3.5
 Nurses/10,000: 1.5
 Auxiliaries/10,000: 8.1
 Health as % GDP: -
 Health as % Public Sector
 Budget: 11
 Per Capita Health Expenditure: -

BEST AVAILABLE DOCUMENT

Country: Mexico

Health Status:

Life Expectancy: 65.4

Infant Mortality Rate: 60.2

Child Mortality Rate: 3.3

Death From:

Infectious Disease: 20.3

Tumors: 5.8

Heart Disease: 11.8

Accidents: 2.8

Cases Malaria/100,000 pop.: 29
(1980)

% Low Birth Weight
<2,500 Grams: -

% Children Malnourished: -

Health Services/Resources:

% Population with Water: 70

% Children Immunized:

Tetanus, Diphtheria
Whooping Cough: 9.6

measles: -

Polio: 31.4

Tuberculosis: 12.9

Number Consults/100 pop: 18

Physicians/10,000:

Nurses/10,000: 5.4

Auxiliaries/10,000: 8.2

Health as % GDP: 1.2

Health as % Public Sector
Budget: 8.0

Per Capita Health Expenditure:

BEST AVAILABLE DOCUMENT

Country: NicaraguaHealth Status:

Life Expectancy: 55.2
 Infant Mortality Rate: 101.7
 Child Mortality Rate: 3.6
 Death From:
 Infectious Disease: 29.4
 Tumors: 4.9
 Heart Disease: 15.4
 Accidents: 4.3
 # Cases Malaria/100,000 pop.: 501
 (1980)
 % Low Birth Weight
 <2,500 Grams:
 % Children Malnourished: 15%
 1965 Survey

Health Services/Resources:

% Population with Water: 46
 % Children Immunized:
 Tetanus, Diphtheria
 Whooping Cough: 61.5
 Measles: 20
 Polio: 83
 Tuberculosis: 65.2
 Number Consults/100 pop: 99
 Physicians/10,000: 3.6
 Nurses/10,000: 3.7
 Auxiliaries/10,000: 15.7
 Health as % GDP:
 Health as % Public Sector
 Budget: 19.8
 Per Capita Health Expenditure:

BEST AVAILABLE DOCUMENT

Country: Panama

Health Status:

Life Expectancy: 70.2

Infant Mortality Rate: 21.2

Child Mortality Rate: 2.1

Death From:

Infectious Disease: 7.9

Tumors: 13.6

Heart Disease: 16.2

Accidents: 4.9

Cases Malaria/100,000 pop.: 40
(1980)

Low Birth Weight

<2,500 Grams: 9.7

% Children Malnourished: See attached

Health Services/Resources:

% Population with liter: 100

% Children Immunized:

Tetanus, Diphtheria
Whooping Cough: 100.5

Measles: 52.2

Polio: 49.7

Tuberculosis: 76.2

Number Consults/100 pop: 171.0

Physicians/10,000: 8.5

Nurses/10,000: 11.0

Auxiliaries/10,000: 18.2

Health as % GDP:

Health as % Publ .tor
Budget: 6.3

Per Capita Health Expenditure:

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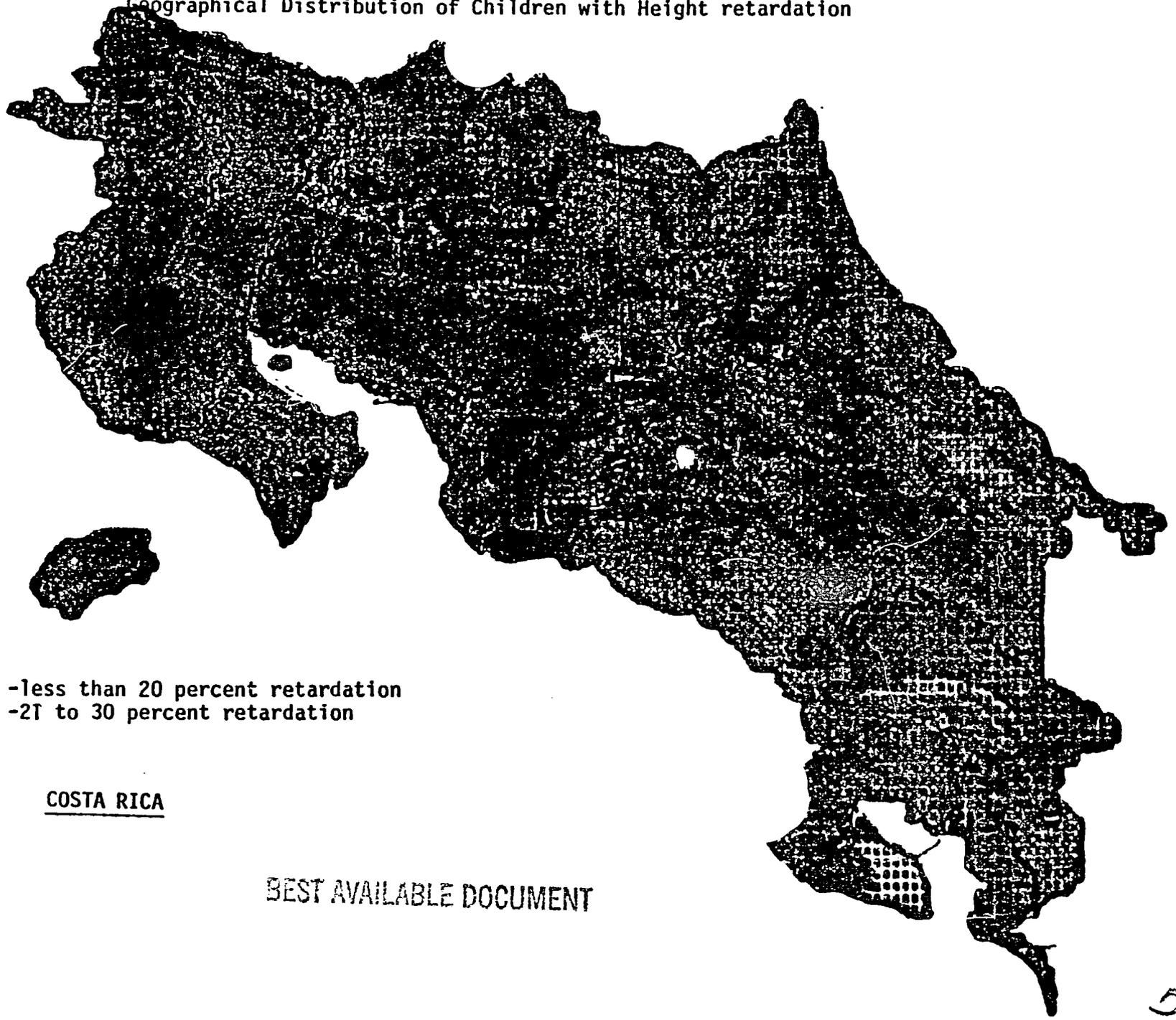
PANAMA

Protein-Calorie Malnutrition

Malnutrition of preschool children has changed little since 1967 according to the results of two anthropometric surveys of preschool age children conducted in 1967 and 1980 (Table 7). Map 4 reveals the regional variation in malnutrition according to height retardation. Although the percentages of malnourished children are greater in rural areas, a larger number of malnourished children are located in marginal urban areas. In addition, malnutrition is concentrated in households whose principal support is from agricultural labor, or very small farms, and in women-headed households.

Information on vitamin and mineral deficiencies and cost of the minimum diet is not available.

Geographical Distribution of Children with Height retardation

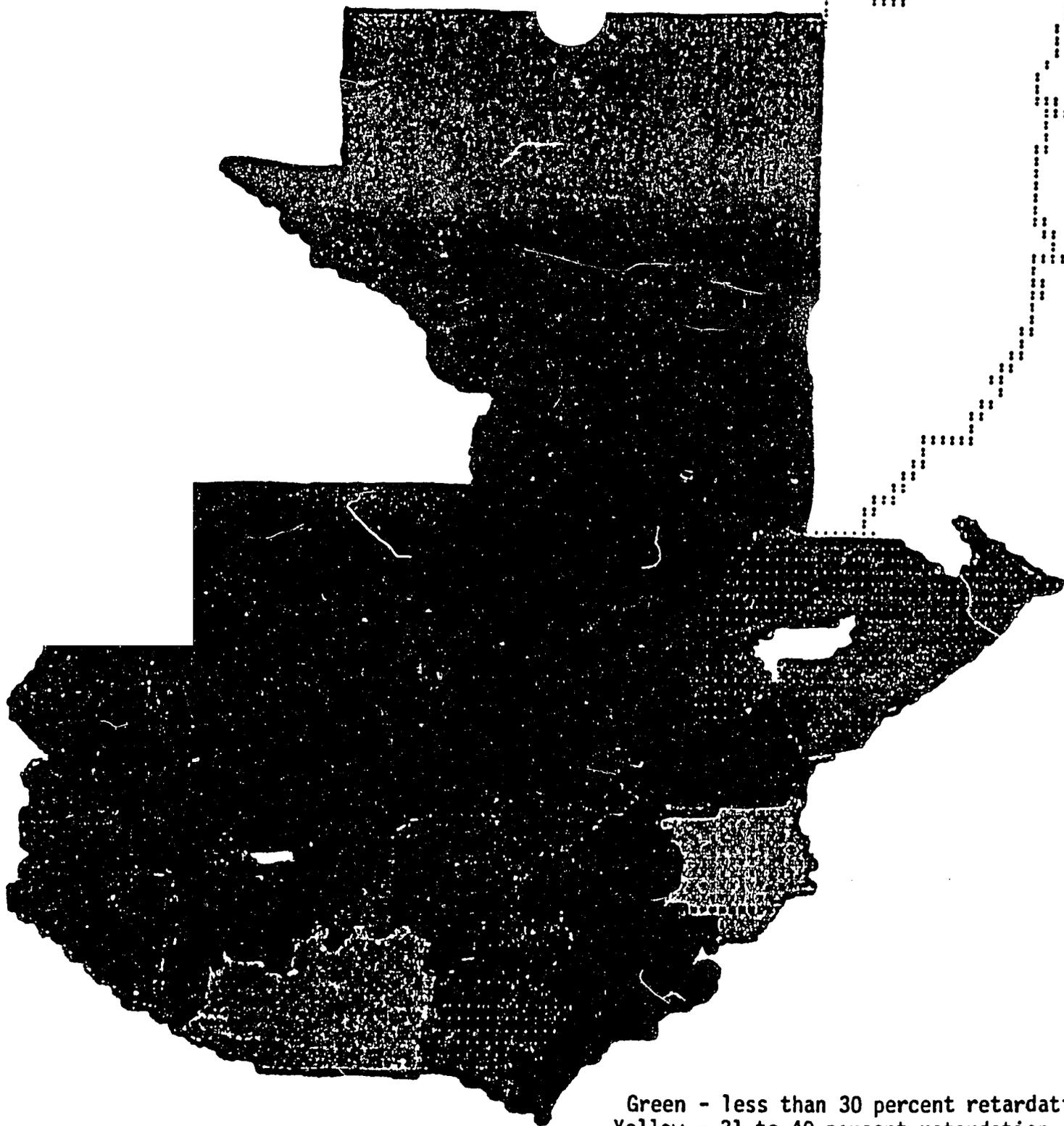


Blue -less than 20 percent retardation
Green -21 to 30 percent retardation

COSTA RICA

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Geographical Distribution of Children with Height Retardation



Green - less than 30 percent retardation
Yellow - 31 to 40 percent retardation
Red - 41 to 50 percent retardation
Black - greater than 51 percent retardation

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GUATEMALA

Geographical Distribuiton of Children with Height Retardation

EL SALVADOR

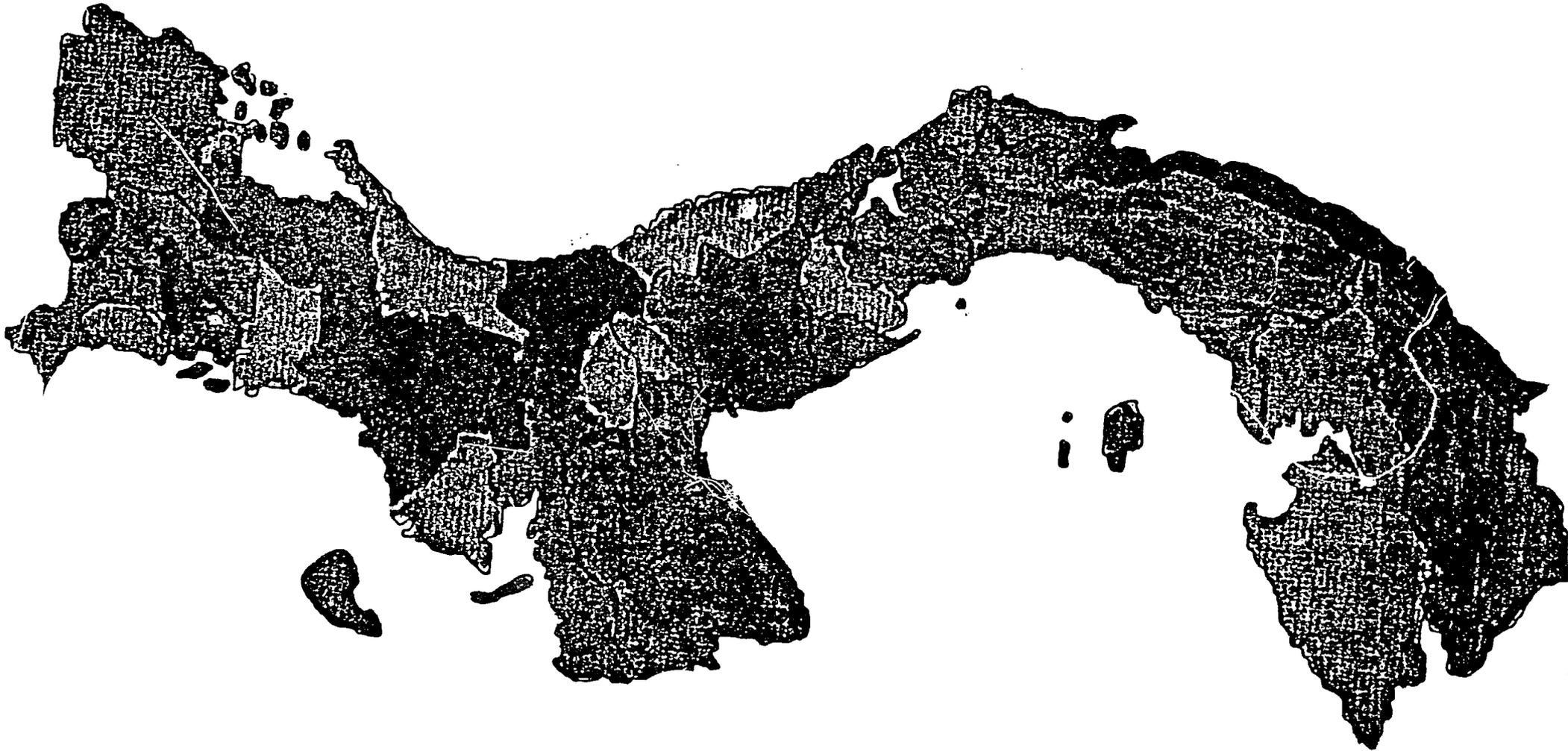


Blue - less than 20 percent retardat.
Green - 21 to 30 percent retardation
Yellow - greater than 31 percent retardation

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Geographical Distribution of Children with Height Retardation

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- Blue - less than 20 percent retardation
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- Black - greater than 50 percent retardation