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SOCIOECONOMIC DETERMINANTS OF MORTALITY IN LATIN AMERICA

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Mortality in Latin America has experienced notorious declines in recent decades, but it still shows clear excesses over the levels reached in more developed regions. The relation of death with socio-economic conditions is well known, although the way of action and the relative weight of the various factors involved are not entirely clear. In this paper we analyzed the existing knowledge on characteristics and sources of socio-economic differentials of mortality in Latin America, in order to explain better the current situation and its perspectives.

Synthesis of the Social and Economic Situation in Latin America

This situation was analyzed for the period 1950-1975 by the Economic Commission for Latin America (ECLA).<sup>2</sup> The report calls attention to the fact that the development in the region has denied the expectation prevailing in the 50's, that "a continuous progress based on the industrialization, associated to certain socio-economic reforms, would bring about a social transformation with more equalitarian goals". The economic progress has been important. Growth rates of the internal product per inhabitant, in spite of the population increase, were of 2,6 per cent and they sped up to a 3,7 per cent during 1966-1973. The most dynamic sector has been the industrial one, showing a five-fold increase of its product during those 25 years, while the agricultural one is a long way behind. The most important agents of the process have been the State and the transnational corporations; the latter ones have abandoned the primary sector and have entered commerce and industry. External financing has closely linked these countries -mainly the large ones- with the international financing market. The total sum for the services of the external debt that the region, nowadays, has to face, jeopardizes an important part of the present resources of the region.

Such economic growth "has come along with an uneven distribution of its benefits, because the ownership of the means of production as well as the technical progress and the modernization now tend to concentrate". Towards 1970, the sector considered "modern" (mainly the manufacturing industry and mining), produced 50 per cent of the product, but only occupied 12 per cent of the labour force. On the other hand, the "primitive" sector of production absorbs a third of the employment and only contributes 5 per cent of the product. This sector has a working population with low productivity and very low income. The uneven income distribution has not been modified between 1960 and 1970: 50 per cent of the most poor population obtains 14 per cent of the total income, while the better-off 15 per cent obtains 74 per cent. The productive system shows an evident insufficiency to generate employment. According to ILO estimates,<sup>3</sup> elaborated for a number of countries which cover 75 per cent of the region's population, the 28 per cent of the labour force is not used in the productive process (open unemployment and underemployment). According

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<sup>2</sup> CEPAL, Tendencias y proyecciones a largo plazo del desarrollo económico de América Latina. E/CEPAL/1027. 3 de marzo de 1977.

<sup>3</sup> OIT, El problema del empleo en América Latina y el Caribe: situación, perspectivas y políticas. Santiago, Chile, noviembre 1975.

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to the same source, 43 per cent of the population (approximately 110 million) lived in 1973 in "serious poverty conditions, and about 35 per cent had no income level which could provide a minimum balanced diet".

Facing this situation and as a palliative, countries tend to increase social services, among which education and health are the most successful. Nevertheless, "if one considers the indicators according to social groups, it is clear that the most impressive improvements of some social strata (medium groups) leave the marginal groups in an even worse situation (especially the rural poor people)". Up to here the summary of the main relevant points of the ECLA report.

The life expectancy at birth in Latin America was 61,4 years in 1970-1975, varying among countries from 46,8 to 69,8 years.<sup>4</sup> In regard to 1950-1955 mortality shows an important improvement; the corresponding values were at that time of 52,1, 36,9 and 66,3 years. What relationship has this mortality situation in the region with the socio-economic context that has been summarized?

## 2. Conceptual Frame of the Analysis

Mortality in a population is a function of the frequency of illness (incidence) and the probability of dying of the sick person (lethality). Health and disease are two moments of the same dynamic process. Death, as an individual phenomenon, has biological determinants, whose mechanisms are the etiopathogenesis of the disease. But this biological conception is unable to explain by itself the mortality considered at a collective level. The multicausal approach of the epidemiology has permitted the description of the distribution and course of diseases in the population. According to the epidemiological conception, health-disease is a process depending on the balance between man, various external pathogenic factors and the physical, biological and social environments. Several studies have shown the relation of disease and death with variables such as income, diet, sanitation, education, medical care, etc. It has been shown also that all these factors, in their turn, are closely correlated between them. But, in fact, the non-equalitarian distribution in the population of all these components of the level of living are but the visible expression, the measurable link, of a causal chain which generates in the social, economic and politic organization.

Laurell,<sup>5</sup> among others, has contributed to elaborate a more comprehensive causal conception of the health-disease phenomenon at a collective level. In sum, in this hypothesis it is sustained that, at this level, the phenomenon has a social determination and should be studied within the context of a social theory. The root of the process lies in the way in which man transforms natural resources and establishes relations with other men in order to produce and appropriate the resulting product. This process is fundamentally a social one, and expresses itself on a given socio-economic formation as a combination of different modes of production, one of which is dominant. In Latinamerican countries, for example, more or less advanced capitalist sectors coexist with subsistence economies or in a simple mercantile stage. In this context, it is also important the degree of development of the productive forces, which determine, among other things, the efficiency with which man transforms nature on behalf of his own benefit. In this way, the technological progress of man and the improvement of the working tools he has created, have enabled him to eliminate the risk of hunger and epidemics in many countries. Lastly, the relative weight of the various groups of pressure in a given society, influences the proportion that each of them obtains from the total goods and services produced. An organized working class, for instance, can obtain better salaries and the implementation of more equalitarian social policies. All this set of factors, among others, produce differences in the level of living of the various social sectors of a country, which at the same time, influence the occurrence of sickness and death. The whole process is historical and dynamic, in the sense that in each society, social relations of production change and generate themselves consecutively.

<sup>4</sup> Somoza, J., América Latina: situación demográfica alrededor de 1973 y perspectivas para el año 2000. CELADE, Serie A, No. 128, Enero 1973.

<sup>5</sup> Laurell, C., Algunos problemas teóricos y conceptuales de la epidemiología social. Rev. Centroamericana de Ciencias de la Salud. Año 3, No. 6, Enero-Abril 1977.

In this explanation, the existence of biologic determinants in the process health-disease-death is not being denied in any way. The idea is to articulate biological factors within a social context, on the thesis that social causes can bring and transform biologic determinants. For example, the higher infant mortality of children born of women of extreme ages and the higher risk of children of high order to birth, have a biological explanation. On the other hand, the social determinants of fertility explain that women of low socio-economic groups have an early, high and extended fertility, so a larger proportion of their births occur in groups of more risk. The relative weight of the biologic and social factors will depend on the historical stage in which we find each social structure, as well as the level and structure of the resulting mortality. Socio-economic factors play a more important role in the genesis of mortality in Latin-american countries, where a high mortality prevails, especially in the first years of life, linked to preventable causes such as malnutrition, diarrhoea and other infectious diseases.

No doubt that the model which has been described concisely requires a much larger elaboration, as indicated, among others, by Cordeiro,<sup>6</sup> in order to explain in different historical contexts the relation of the socio-economic and biologic determinant factors in the genesis of the level and the distribution of mortality in a specific population and at a given moment. Nevertheless, the hypothesis has a greater explanatory value than when one simply affirms that mortality is the result of "poverty" or of the level of the economic and social development. The model needs to be verified empirically. Research following this line of thinking, is very scarce; among other reasons because the necessary information needed to establish proper analytical categories, is not usually collected.

In the following text, available information on Latin America regarding the socio-economic differentials of mortality is systematically reviewed and it is analyzed whether those differentials are consistent with the theoretical explanation summarized above.

### 3. The Socio-geographic Differentials of Mortality

#### 3.1 Differentials among Latinamerican countries

Table 1 presents the mortality under two years of age in Latinamerican countries around 1968-1970. We have selected this age because it is the most sensitive age to the living conditions of the population. According to these estimates, there are 952 000 annual deaths of this age, which could have been prevented if Latinamerica had reached the mortality level existing in the United States in 1970. The region is considerably heterogenous as to the risk of dying, which varies between 202 per 1000 births in Bolivia and 38 per 1000 in Uruguay. It is estimated that more than half of the children born in Latin America are exposed to a mortality over 120 per 1000, which is twelve times higher than the mortality existing in Sweden.

The relationship of the mortality level of Latin America with some characteristics of its social development has been studied by ECLA.<sup>7</sup> A set of four social indicators (hospital beds per 1000 inhabitants, protein consumption, literacy and houses provided with drinking water) have a high lineal correlation with the life expectancy at birth ( $r=0.94$ ). Of a greater significance is to study the mortality of these countries in relation to the characteristics of its socio-economic structure, a matter which exceeds the possibilities of the present paper. Nevertheless, a quick analysis of some countries having extreme mortalities, is very suggestive.

<sup>6</sup> Cordeiro, H. et.al. Los determinantes de la producción y distribución de la enfermedad. Rev. Mexicana de Ciencias Políticas y Sociales, No. 84, Abril-Junio 1976.

<sup>7</sup> CEPAL, Población y desarrollo en América Latina. Fondo de Cultura Económica, 1975.

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Table 1

PROBABILITY OF DYING BETWEEN BIRTH AND TWO YEARS OF AGE IN LATIN AMERICA COUNTRIES  
AROUND 1968-1970

Country	Probability of dying <sup>a</sup> (per 1000)	Born alive (estimated) <sup>b</sup>		Estimated deaths under two years of age <sup>c</sup>			
		(1000's)	Per-centage	Ob-served	Ex-pected	Excess <sup>d</sup>	
						Number	Per-centage
Bolivia 1971-1972..	202						
Haiti 1971 .....	176	994	9.5	176 498	20 874	155 624	88.2
Peru 1967-1968 ....	169						
Nicaragua 1966-1977	149						
Guatemala 1968-1969	149	611	5.8	89 261	12 831	76 430	85.6
El Salvador 1966-1967	145						
Honduras 1969-1970..	140						
Brazil 1970 .....	133						
Ecuador 1969-1970 ..	127	4 054	38.7	535 596	85 134	450 462	84.1
Dominican Republic 1970-1971 .....	123						
Chile 1965-1966.....	91						
Colombia 1968-1969..	88	3 355	32.1	289 633	70 455	219 178	75.7
Mexico 1970 .....	85						
Costa Rica 1968-1969	81						
Paraguay 1967-1968..	75						
Argentina 1965-1966..	58	1 451	13.9	81 047	30 471	50 576	62.4
Panama 1970 .....	58						
Venezuela 1971 .....	52						
Cuba 1970 .....	48						
Uruguay 1970 .....	38						
LATIN AMERICA ....	112	10 465	100.0	1 172 035	219 765	952 270	81.2
United States 1970 .	21						
Sweden 1972 .....	11						

Sources: <sup>a</sup> Behm, H., et.al., Mortalidad en los primeros años de vida en países de la América Latina, CELADE, Serie A Nos. 1024 a 1032 y 1036 a 1039, 1976-1978. Mexico, Panama, United States and Sweden: N.U. Demographic Yearbook 1973 and 1974. Brazil: estimation by the Brass method with data from 1970 census.

<sup>b</sup> Average of 1965-1970 and 1970-1975 estimations, Latin America, Demographic Situation Around 1973 and Projections For Year 2000. CELADE, Serie A No. 1020, 1975.

<sup>c</sup> Observed deaths applying the probability of (a) to births of (b). Expected deaths obtained applying q(2) of U.S.A. 1970 (21 per 1000) to births of (b).

<sup>d</sup> Observed deaths minus expected deaths.

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Among the countries of low mortality is Argentina, where the capitalist development has been early and more advanced than in other countries of the region.<sup>8</sup> Due to the absence of a previous feudal structure, the development of a vast modern export agriculture was made possible. The labour force was favoured by an important European immigration which achieved favorable salary conditions and contributed with its own patterns of life and consumption. The life expectancy at birth in Argentina is 68.2 years in 1970-1975 and the summarized indicators in Table 2 are among the best in the region. Costa Rica has fundamentally an agricultural economy, with a sound economic growth. Following a successful banana strike in the 30's, a policy was implemented extending considerably several social benefits, such as education and health. Life expectancy at birth also reaches 68.2 years and the socio-economic indicators are quite favourable.

Table 2  
EXPECTANCY LIFE AT BIRTH AND SOME SOCIO-ECONOMIC INDICATORS OF SELECTED  
LATIN-AMERICAN COUNTRIES, 1970

Country	Life expectancy 1970-1975 a	GDP per capita 1970 b	Rate of growth of IPB per capita 1966-1973 <sup>c</sup>	Percentage of income <sup>c</sup>	
				50% more per <sup>c</sup>	50% more wealthy
Argentina .....	68.2	1 208	3.4	23.0	31.0
Costa Rica .....	68.2	656	4.1	19.0	41.0
Honduras .....	53.5	278	0.4	11.0	50.0
Haiti.....	47.5	112	1.4	-	-

	Percentage of EAP in <sup>d</sup>		Percentage of population living in extreme poverty <sup>c</sup>	Percentage of illiterate population e	Percentage of population with- out drinking water <sup>e</sup>
	Agriculture	Manu- facturing			
Argentina .....	14.8	19.7	11.0	7.4	64.0
Costa Rica .....	36.4	11.9	-	11.6	78.0
Honduras .....	56.8	11.6	49.0	53.0	38.0
Haiti .....	-	-	-	81.2	11.0

Sources: <sup>a</sup> Somoza, J., América Latina: situación demográfica alrededor de 1973 y perspectivas para el año 2000. Serie A, No. 128, 1975.

<sup>b</sup> CEPAL, Evolución de la economía regional en 1977. Notas sobre la economía y el desarrollo de América Latina. No. 274/275, julio 1978.

<sup>c</sup> CEPAL, Tendencias y proyecciones a largo plazo del desarrollo económico de América Latina. E/CEPAL.1027, 1977.

<sup>d</sup> OIT, Anuario de estadísticas del trabajo, 1975.

<sup>e</sup> IASI, América en cifras, situación social, 1974.

<sup>8</sup> Cueva, A., El desarrollo del capitalismo en la América Latina. Ed. Siglo XXI. 1971.

Among the countries with high mortality is Honduras, whose economy has been controlled for a long time by an agro-exporting (banana) foreign enterprise which has distorted the progress of the rest of the country. The life expectancy reaches only to 53.5 years and the socio-economic indicators are extremely unfavorable; the income distribution in Honduras is one of the most unequal in the region. In Haiti, the country with the highest mortality in Latin America, an economy of subsistence and feudal relations of production predominate with a scarcely incipient development of the capitalist sector.

### 3.2 Regional differences within the countries

Geographical differences of mortality within the countries are of interest, because they are the frame of national policies and because they can be better interpreted in the socio-economic context of each country. Carvalho<sup>9</sup> describes in Brazil differences in the life expectancy at birth in 1960-1970, which go from 44.2 years in the backward region of the North-Eastern Central region, to 61.9 years in the South Region, both of which are related to the income, as we will show it further on. Castillo et.al.<sup>10</sup>, in Mexico, 1970, using mortality estimates (corrected by omission), finds differentials which go from 124 per 1000 in Chiapas to 43-44 per 1000 in the larger industrial centers of the Distrito Federal and Nueva de Leon. Among the States the correlation with a socio-economic index is of -0.58. Taucher<sup>11</sup> describes rates of infant mortality in Chile, 1973-1975, ranging between 46 per 1000 in Santiago (the country's capital) and 122 per 1000 in the province of Malleco, an agricultural and underdeveloped region.

These notorious contrasts are examples of the diversity of death risks that exist within one of these countries, but the precision of its causes requires further analysis.

### 3.3 Urban-rural contrasts of mortality

*otro* The dicotomic urban-rural classification used in the census is not adequate to express the variety of socio-economic conditions existing between large cities and the isolated rural communities. A finer classification was done by Behm and Rosero<sup>12</sup> for Ecuador, 1969-1970, in the study of mortality in the first two years of life (Table 3). Mortality has an inversed non-linear relation with the degree of urbanization. The risk in the rural population is 48 per cent greater than in the urban region. Mortality in big cities is 31 per cent less than in the remaining urban sector. Scattered rural population has a risk 13 per cent greater than the more concentrated population. X

Ortega et.al.<sup>13</sup> describes a higher mortality in rural population in Honduras, 1971-1972; life expectancy at birth is 11.4 years less than in the urban population. Rural surmortality is found in all ages. Absolute differences are particularly marked in the first year of life and over 65 years of age (Table 8).

<sup>9</sup> Carvalho, J.A., et.al., Renda e concentracao de mortalidade no Brasil. CEDEPLAR, junio 1977.

<sup>10</sup> Castillo, G., et.al. Evaluación de la mortalidad infantil en la República Mexicana durante el período 1930-1970. Evaluación y Análisis. Serie III, No. 1, 1975.

<sup>11</sup> Taucher, E., Mortalidad infantil en Chile: tendencias, diferenciales y causas. CELADE, octubre 1978.

<sup>12</sup> Behm, H. y Rosero, L., La mortalidad en los primeros años de vida en países de América Latina: Ecuador 1969-1970. CELADE, Serie A no. 1031, 1977.

<sup>13</sup> Ortega, A. y Rincón, M., Encuesta Demográfica Nacional de Honduras, Fascículo IV (Mortalidad). CELADE, Serie A No. 129, agosto 1975.

Table 3

MORTALITY IN CHILDREN UNDER TWO YEARS OF AGE  
BY DEGREE OF URBANIZATION, ECUADOR 1969-1970

Geographical Areas	Probability of dying (per 1000 born alive)
TOTAL	127
Urban Population .....	98
Large cities .....	80
Intermediate cities ...	114
Other urban .....	117
Rural Population .....	145
Concentrated rural ....	134
Dispersed rural .....	151

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Sources: Behm, H. and Rosero, L., Mortalidad en los primeros años de vida, Ecuador, 1969-1970, CELADE, Serie A, No. 1031, 1977.

Table 4

MORTALITY IN URBAN AND RURAL POPULATION, HONDURAS, 1971-1972

Indicator	Population		Ratio rural/urban mortality
	Urban	Rural	
Life expectancy at birth	61.5	50.1	-
Crude rate of mortality <sup>a</sup>	9.0	16.5	1.8
Infant mortality rate <sup>b</sup> ..	85.6	127.2	1.5
Rates by ages <sup>a</sup> .....			
1 - 4	10.5	22.6	2.2
5 - 14	2.7	4.5	1.7
15 - 44	2.2	4.8	2.2
45 - 64	12.2	16.6	1.4
65 and more	39.6	58.2	1.5

<sup>a</sup> Per 1000 population.

<sup>b</sup> Per 1000 live births.

Source: Ortega, A. y Rinoón, M., Encuesta Demográfica Nacional de Honduras, Fascículo VI, CELADE, Serie A No. 129, agosto de 1975.

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Behm et.al <sup>14</sup> have studied the risk of death in the first two years of life in urban and rural population of 12 Latinamerican countries, deriving estimates from the census information by way of the Brass method (Table 5). It should be noted that the method tends to underestimate mortality in some rural areas, so real differences might be greater. In two-thirds of these countries there exists an excess of 30-60 per cent of the rural risk as compared with the urban one. In countries of higher mortality this means that one out of each 5-6 children born alive in the rural regions, dies before reaching the age of two years. Such differences are particularly significant if one considers the fact that in most of these countries, the majority of the population is rural.

Table 5

PROBABILITY OF DEATH BETWEEN BIRTH AND AGE TWO YEARS IN URBAN AND RURAL POPULATIONS SELECTED LATINAMERICAN COUNTRIES AROUND 1968-1970

Countries	Probability of death (per 1000 live births)		Percentage of rural sur-mortality	Percentage of rural population
	Urban	Rural		
Bolivia, 1971-1972 .....	166	224	34.9	62
Peru, 1966-1967 .....	132	213	61.4	40
Nicaragua, 1966-1967 .....	143	152	6.3	65
Guatemala, 1968-1969 ...	119	161	35.3	64
El Salvador, 1966-1967 ...	139	148	6.5	60
Honduras, 1969-1970 .....	113	150	32.7	69
Ecuador, 1969-1970 .....	98	145	48.0	59
Dominican Republic, 1970-1971	115	130	13.0	60
Chile, 1965-1966 .....	84	112	33.3	25
Colombia, 1968-1969 .....	75	109	45.3	36
Costa Rica, 1968-1969 .....	60	92	53.3	59
Paraguay, 1967-1968 .....	69	77	11.6	63

Source: Behm, H., et.al. Mortalidad en los primeros años de vida en países de la América Latina. CELADE, Serie A, No.1024 a 1032 y 1036 a 1039, 1976-1978.

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<sup>14</sup> Behm, H. y Primante, D., Mortalidad en los primeros años de vida en países de la América Latina, Notas de Población No.16, Año VI, CELADE, abril 1978.

To what extent do the prevailing social relations of production in Latin American agriculture explain the excessive rural mortality? In a recent analysis of social development in rural areas in Latin America<sup>15</sup> ECLA and FAO found that, during the period of 1970-1975, the problems in this area have not been solved and, in many cases, they became worse. "Problems of food, employment, income and living conditions are not due to an insufficient expansion of production or to the persistence of traditional agricultural structures". "They seem to be more related to modalities under which a transformation of the socio-economic structures of agriculture is being brought about". "This process tends to deepen the capitalist character of the agriculture productive system ... with expansion of a sub-sector of modern agriculture, composed by a relatively small number of medium and large enterprises linked through commercial, agro-industrial and financing mechanisms with national and international markets". "It carries on the decay of the traditional agriculture, in view of the concentrating character of the process, in terms of production as well as of resources and incomes, with obvious implications on employment and the living conditions of rural population". "They constitute links in the expansion of mercantile production, within which socio-economic structures of agriculture are rearranged in order to fulfill its functions of providing food and cheap labour forces, essential functions for the process of capital accumulation in the whole of the economic system". The report points out, that in this process, "the small producer has remained attached to the salary earners conforming the majority of the rural workers of low income,

The various reforming attempts and the agrarian revolutions in Latin America - as mentioned in the report - have had a limited character and have not reached its completion. They have been opposed by organized fronts of agrarian managership, while the peasants have not been able to organize themselves with enough strength to defend their right to work and own the land. On the other hand, as a result of the high concentration of resources in the exportation sector of the agrarian economy, the production for internal consumption has not had the expected growth. ECLA-FAO have defined this growth as an essential requirement for the solution of nutrition problems of the population. Del Canto, Teller et.al.<sup>16</sup> point out that in Central America countries this has competed to have an ever increasing importation of food, creating dependence on markets and international prices.

The previous quotations illustrate the true social, economic and political setting of the high rural mortality in Latin American countries. They also show that the "explanation" on mortality differentials cannot be found in the analysis of conventional demographic variables (such as urban/rural, for example) nor in some socio-economic indicators, but the use of categories which identify the insertion of the individual in the social process of production. There are some studies, in the nutrition field, which provide information on this respect. Hernández<sup>17</sup> analyzed the socio-economic, diet and nutrition changes which were produced between 1958 and 1971 at the Municipality of Conduacan (Mexico), due to the implementation of a program on agricultural development intended to increase exportation crops (sugar cane and banana). Simultaneously a health center and a high school were set-up and the electricity supply was enlarged. "The explosive economic growth of the area favored only one sector of the population. While the privileged sector of the population began to consume greater quantities of meat, milk and other products, the agricultural working class remained more or less in the same situation. Undernourishment still continues, affecting the same proportion of children, with the same severity, and surely with the same consequences. Not only was the change in food production incapable of preventing malnutrition, but global economic growth brought about

<sup>15</sup> CEPAL, El desarrollo social en las áreas rurales de América Latina. Notas sobre la economía y el desarrollo de América Latina. No. 276, agosto 1978.

<sup>16</sup> Del Canto, J., et.al. Componentes de los problemas socioeconómicos y nutricionales y crecimiento demográfico en Centroamérica. Conferencia sobre interacción entre agricultura, ciencia y tecnología de alimentos y nutrición. Ciudad de Guatemala, 6-10 noviembre 1978.

<sup>17</sup> Hernández, M., et.al. Effect of economic growth on nutrition on a tropical community. Ecology of Food and Nutrition. Vol. 3. 1974.

by the agricultural project was likewise incapable of doing so". On the other hand, Valverde et.al.<sup>18</sup> find in the study of four rural villages in Guatemala that the frequency of moderate malnutrition in children increases from 17 to 38 per 100, insofar as the area of land which a peasant owns is reduced from more than 5 "manzanas" to less than 2.

Beghin<sup>19</sup> of the Instituto de Nutrición de América Central y Panamá (INCAP), discussing the relation of malnutrition with development, says that, in general, it is accepted that malnutrition depends on "poverty", ("social deprivation"): which "is the product of a complicated and yet not too well understood set of conditions in which exploitation, injustice in the distribution of economic and political power, and the inequalities in the distribution of the product of the economic activity, play an important role". He adds: "There are no technocratic solutions for malnutrition. Nutritional interventions cannot be decontaminated, be free of political considerations. Nutrition is not aseptic".

It is interesting to point out that in the studies of malnutrition in Central America, Teller<sup>20</sup> has found that in Panama and Guatemala, between 1965 and 1975, the prevalence of more severe malnutrition (II and III degree) has increased among children less than five years old, while mortality has decreased. In Hernández' paper, in spite of the described conditions, the rate of infant mortality showed a 50 per cent reduction during the period of observation. These facts demonstrate the complexity of the mechanisms by which the socio-economic context affects the health-disease-death process. They also point out that lethality changes may to a certain extent dissociate the trend of mortality and of morbidity. In general, they confirm that the development of the capitalist system is associated to the decline of mortality, a fact on which there is a wide historical experience on advanced countries. Nevertheless, the intensity and timing of that decline will depend upon the historical and structural characteristics of a given society and its insertion in the world's economy. To ignore this situation or simplify the explanations of a complex phenomenon, are two errors which should be avoided in the analysis of the real determinants of mortality.

Let us consider now mortality in urban environment. The findings which we have prevented (Table 5) show that, although urban mortality is still high in Latin America, in general, it is lower than in the rural population. What is the situation in the big cities of these countries? These cities, which usually correspond to the national capital, are characterized by its great demographic growth, originated in a strong internal immigration. They are the center of political and economic power, and concentrate a great part of the resources and social services of the public sector (including medical care). The capitalist development of the economy begun in these cities and is at a more advanced stage. The fact that industries are usually set-up in these cities, condition an earlier and stronger development of the worker's union in them.

Arruñada et.al.<sup>21</sup> analyzed the distribution of the infant mortality in the city of Buenos Aires in 1973, when the trend of this rate tended to level-off around 30 per 1000. The results are summarized in Table 6 and show considerable differences of this mortality in a city which has a great development and an infant mortality relatively low. Higher

<sup>18</sup> Valverde, V., et.al. Relationship between family land availability and nutritional status. Ecology of Food and Nutrition. Vol. 6, No. 1, 1977.

<sup>19</sup> Beghin, I., et.al., Desnutrición, desarrollo nacional y planificación. Conferencia Internacional sobre "Propuestas prácticas para combatir la desnutrición". Cairo, Egipto, 25-29 mayo 1977.

<sup>20</sup> Teller, Ch., et.al., Población y nutrición: implicaciones de la dinámica socio-demográfica para políticas nacionales de alimentación y nutrición. XI Congreso Internacional de Nutrición, Río de Janeiro, Brasil, 27 de agosto al 1o. de setiembre de 1978.

<sup>21</sup> Arruñada, M., et.al., Diferenciales socio-económicos de la mortalidad infantil, Capital Federal, Argentina, 1976 (inédito).

rates are observed in region I, where slums predominate. They are associated, as well, to the lowest socio-economic level, to the fact that the mother is not in a legal union and is an immigrant in the city. When some of these conditions coincide, subpopulations exposed to high risk, can be identify. For example, in region I, the lowest socio-economic level group has a mortality rate of 101 per 1000, and the children of unmarried women, of 70 per 1000.

In table 7, mortality in the first two years of age in the capital cities of some Latinamerican countries, around 1968-1970, is shown (Behm et. al. 22). These populations do not correspond exactly to the capital city but account for the majority of its population.

Table 6

SOCIO-ECONOMIC DIFFERENTIALS OF INFANT MORTALITY  
CITY OF BUENOS AIRES, 1973

Groups	Rate (per 1000 births)
FEDERAL CAPITAL	30
Geographic region	
I	45
VI	17
Socio-economic indicator	
1 (lowest)	68
4 (highest)	16
Marital status of the mother	
Single or in common-law marriage	42
Married	22
Migration	
Immigrants	39
No migrants	20

Source: Arruñada, M., Rothman, A. y Segre, M., Diferenciales socio-económicos de la mortalidad infantil en la Capital Federal, Argentina (inédito).

<sup>22</sup> Behm, H., et.al., Mortalidad en los primeros años de vida en países de América Latina. CELADE. Serie A No. 1024-1032 y 1036-1039, 1976-1978.

Table 7

MORTALITY UNDER TWO YEARS OF AGE, LATINAMERICAN CAPITALS,  
AROUND 1968-1970

Country, area	Probability of dying (per 1000 births)					
	National total	Capital, per years of education				
		Total	None	1-3	4-6	7 and more
Bolivia						
La Paz .....	202	179	199 <sup>a</sup>	202	96	
Perú						
Región metropolitana .....	169	93	123 <sup>b</sup>	97 <sup>c</sup>	86 <sup>d</sup>	
Guatemala						
Guatemala .....	149	76	122	88	59	
Nicaragua						
Managua, urban .....	149	103	164	131	99	
El Salvador						
San Salvador, urban .....	145	118	184	136	98	
Honduras						
Tegucigalpa .....	140	97	117	91	64	
Ecuador						
Quito y Guayaquil .....	127	80	149	106	79	
Dominican Republic						
National district .....	123	109	162	132	99	
Chile						
Large cities <sup>f</sup> .....	91	72	138	83	77	
Colombia						
Metropolitan area .....	88	51	78	60	46 <sup>g</sup>	
Costa Rica						
San Jose, Heredia, urban .....	81	49		72	52	
Paraguay						
Metropolitan region .....	75	64	97 <sup>a</sup>	57	25	
Argentina						
Metropolitan region .....	58	43	70 <sup>a</sup>	48	30	

<sup>a</sup> 0-3<sup>e</sup> 7-9<sup>b</sup> 0-4<sup>f</sup> 90 per cent corresponds to Santiago and Valparaiso, urban population<sup>c</sup> 5<sup>g</sup> 4-5<sup>d</sup> 6 and more<sup>h</sup> 6 and more

The risk of dying of the child in the capital of these countries is lower (and frequently, substantially lower) than in the whole country. Nevertheless, when the education of the mother is used to identify subpopulations with different levels of living, it is evident that mortality is very heterogeneous within the capital. The lowest level sector has a risk considerably greater, reaching the one existing in the rural population just analyzed. It shows that the risk is more associated to the place that a family holds within the socio-economic structure rather than to its geographical residence. As it will be shown further on when we analyze the differential mortality in Costa Rica by social classes, the children of proletarian families form a part of this population of greater risk. Also included here are the so-called marginal populations which do not participate effectively in the process of production, among other reasons because the labor market is unable to absorb a population of intensive growth. The conditions of unemployment or underemployment thus determined are associated to low levels of living and, consequently, to a greater mortality.

In sum, the populations of the bigger cities in Latinamerican countries have a lower mortality than in the rest of the country, in relation to the better conditions of life which, in general, the capitalist development has originated, mainly centered in these cities. Nevertheless, in the present stage, the contradictions of the system create within them important socio-economic differentials of mortality.

#### 4. Other Aspects of the Socio-economic Differentials of Mortality

In this chapter, studies on differential mortality are examined, according to their levels of income, levels of education, ethnic groups and social classes, which have not been considered before.

##### 4.1 Mortality and Income level

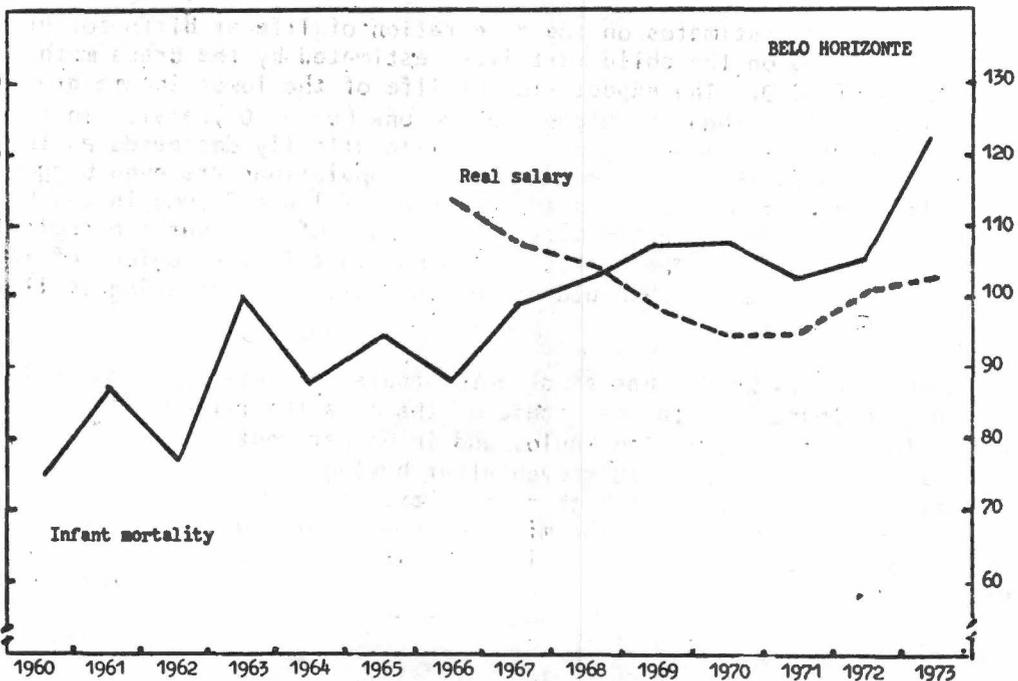
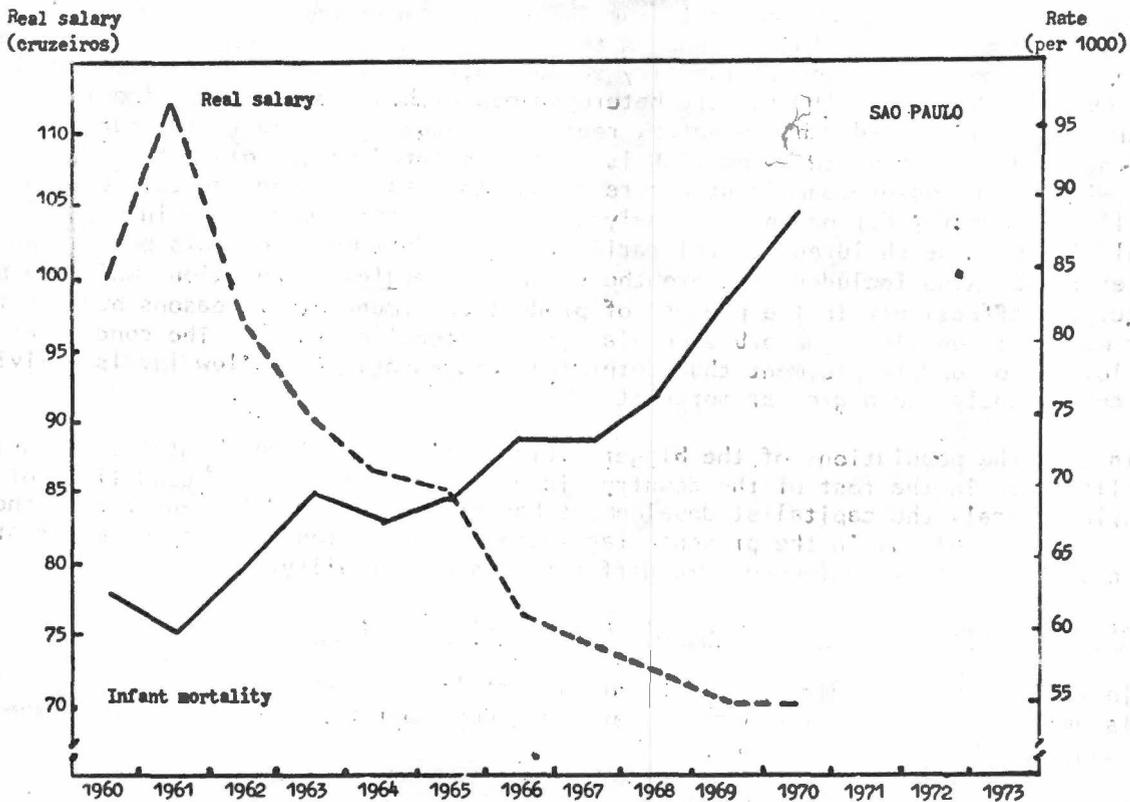
Carvalho<sup>23</sup> has made estimates on the expectation of life at birth for Brazil by groups of income, based on the child mortality, estimated by the Brass method with the population census of 1970. The expectation of life of the lower income group ( $e=49.9$  years) is 12.1 years less than the higher income one ( $e=62.0$  years). In spite of the heterogeneity of mortality among regions, it systematically decreases as income rises. Considering the regions, the differences among subpopulations are even bigger: the expectation of life goes from 42.8 years in the group of lower income in the Northeast Central region, to 66.9 years in the better-off groups of the Southern region, which is one of the most progressive. The author points out that in the regions of low mortality there is a tendency to greater absolute differences of the expectation of life according to the level of income.

In the same country, Wood<sup>24</sup> has studied the course of infant mortality in two major cities of Brazil (Figure 1). In the decade of the 60's the rate has increased between 1960 and 1970 in 40 per cent in Sao Paulo, and in 68 per cent in Belo Horizonte between 1960 and 1973. The increase persists even after having corrected the rates by errors in the registration of residence. In both cities (excepting 1961 for Sao Paulo) it is observed simultaneously a decline of the minimum real salary, which the author considers it is a cause for the increase of mortality. It is estimated that the proportion of the population having an income lower than the minimum salary is of 46 per cent in Belo Horizonte and of 43 per cent in Sao Paulo. Wood calls attention to the fact that the great economic development in Brazil in 1960-1970, comes together with a regressive distribution of income: the 5 per cent more rich of the population has increased its participation in the total income in 72 per cent, while the situation has not improved for the three quarters part of the population which have lower incomes.

<sup>23</sup> Carvalho, J.A., et.al. "Ingreso y concentración ...", op.cit.

<sup>24</sup> Wood, Ch., Tendência de mortalidade infantil e distribuição de renda: estudo sobre Belo Horizonte e São Paulo. Simposio sobre o progresso da pesquisa demográfica no Brasil. Rio de Janeiro, 7-9 de Junho, 1976.

Figure 1  
 INFANT MORTALITY AND REAL SALARY. SAO PAULO AND BELO HORIZONTE,  
 BRAZIL. 1960-1973



Source: Wood, Ch., Tendência de mortalidade infantil e distribuição de renda: estudo sobre Belo Horizonte e Sao Paulo. Simposio sobre o progresso da pesquisa demografica no Brasil. Rio Janeiro, 7-9 junho, 1976.

#### 4.2 Mortality and level of education

The level reached by the individual in the formal system of education is another variable used at length in the study of the differential mortality. Among other investigators, Preston<sup>25</sup>, has calculated a multiple regression based on the cross sectional study of 120 countries around 1970, which shows that a rise of 10 per cent in the proportion of literates is associated to an increase of two years in the expectation of life at birth. Education has a direct effect in some determinants of mortality; the mortality of the child, for example, is influenced by the beliefs and values that the mother has on the care of her child when sick or well. Yet, above all things, education is correlated with other indicators of the level of life and its differences express the uneven distribution of resources and services in the population.

Behm et.al.<sup>26</sup> have analyzed the risk of death between birth and two years of age in 12 Latinamerican countries in terms of the education of the mother. Some of the results are summarized in Table 8 and in Figure 2. The countries have very different levels of mortality, but in all of them it is observed that the risk of death in a child at this age declines in a monotonous way as the education of the mother increases. Thus the children of illiterate women have a risk which is 3.5 to 5 times greater than those of women who have reached ten or more years of education. In countries of high mortality, the absolute differences of mortality among education groups are greater than those with lower mortality. There is also a tendency as to the reduction of mortality in terms of education, being it less marked between the groups of higher education. In the children of women with ten or more years of education, the differences of mortality between countries tend to be less (it ranges from 26 in Argentina to 70 per 1000 in Peru). The children of illiterate and semi-illiterate women in the majority of countries have death risks surpassing 100 per 1000 born alive. In eight of 14 countries, mortality is higher than 170 per 1000 in the groups with no education and reaches its maximum in Bolivia, where one of every four born alive never reaches the age of two. The enormity of these excesses is evident if it is considered that this risk, in Sweden in 1970, was only of 11 per thousand.

In Figure 2, provisional estimations for Cuba have been included, obtained from data of the Encuesta Nacional de Ingresos y Egresos de 1974. The figures show that not only the national level is considerably low (29 per 1000), but that differences on account of education are also much lower, with a range of 29 to 46 per 1000.

The significance of the described mortality contrasts depend on the distribution of births by educational groups in each country, which are the population exposed to risk. In order to obtain an epidemiologic view of the child mortality under two years of age, in each country, strata according to the level of that mortality were defined using geographic variables (regions, urban/rural population) and the level of education of the woman. In each stratum was estimated the number of born alive annually (on the basis of the average number of children declared in the census) and the expected deaths in the first two years of life, according to the death risk of the group. The results for the set of 12 countries are shown in Table 9.

<sup>25</sup> Preston, S., Mortality, morbidity and development. Paper presented to the Seminar on Population and Development in the ECWA Region, September, 1978.

<sup>26</sup> Behm, H., et.al. "Mortalidad en los primeros ...", op.cit.

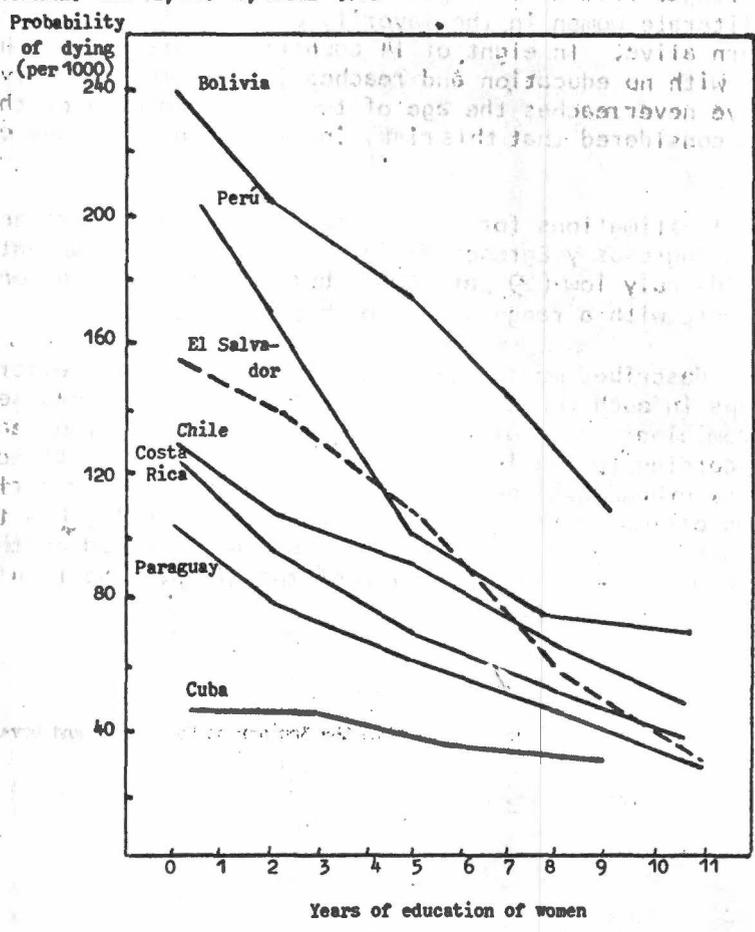
Table 8

MORTALITY UNDER TWO YEARS OF AGE BY EDUCATION OF WOMEN.  
LATINAMERICAN COUNTRIES, 1966-1971

Country	Probabilities of dying (per 1000)						Ratio (2) / (1)
	Total (1)	Years of study of the mother					
		None (1)	1-3	4-6	7-9	10 and more (2)	
Bolivia.....	202	245	209	176	110	-	-
Peru <sup>b</sup> .....	169	207	136	102	77	70	3.0
Nicaragua.....	149	168	142	115	73	48	3.5
Guatemala.....	149	169	135	85	58	44	3.8
El Salvador.....	145	158	142	111	58	30	5.3
Honduras.....	140	171	129	99	60	35	4.9
Ecuador.....	127	176	134	101	61	46	3.8
Dominican Republic.....	123	172	130	106	81	54	3.2
Chile.....	91	131	108	92	66	46	2.0
Colombia <sup>c</sup> .....	88	126	95	63	42	32	3.9
Costa Rica.....	81	125	98	70	51	33	3.8
Paraguay.....	75	104	80	61	45	27	3.9
Argentina.....	58	96	75	59	39	26	3.7
Cuba <sup>d</sup> .....	41	46	45	34	29	-	-

<sup>a</sup> 7 and more  
<sup>b</sup> The groups are: 0-2, 3-4, 5, 6-9, 10 and more  
<sup>c</sup> The groups are: 0, 1-3, 4-5, 6-8, 9 and more  
<sup>d</sup> Provisional figures.

Source: Behm, H. y Primante, D., Mortalidad en los primeros años de vida en América Latina. Notas de Población. Año VI, No. 16, abril 1978.



Source: Table 8.

Table 9

POPULATION STRATA ACCORDING THE RISK OF DYING UNDER TWO YEARS OF AGE  
IN 12 LATINAMERICAN<sup>a</sup> COUNTRIES, AROUND 1968 - 1970

Stratum of mortality	Probability of dying (per 1000 births)	Percentage of total included in stratum		
		Women 15-49 years old	Births	Deaths under two years of age
TOTAL		100	100	100
Low.....	Less than 40	5	3	1
Middle.....	40-79	28	20	10
Middle high.....	80-119	26	27	22
High.....	120-159	19	22	24
Very high.....	160 and more	22	28	43

	Characteristics of born alive in the stratum					
	Percentage by years of education of mother			Population in		Percentage in the country capital
	7 and more	4-6	0-3	Urban area	Rural area	
Low.....	100	-	-	98	2	72
Middle.....	36	49	15	91	9	47
Middle high.....	7	45	48	51	49	15
High.....	-	7	93	41	59	10
Very high.....	-	4	96	27	73	6

<sup>a</sup> Countries are: Bolivia, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay, Perú and Dominican Republic.

Source: Behm, H. y Primante, D., La mortalidad en los primeros años de vida en la América Latina. Notas de Población, No. 16, Año VI, CELADE, abril de 1978.

The study identifies in those countries a stratum of population which has a relatively low mortality for the region (27 to 37 per 1000). It is formed by the children of women who have reached, at least, middle or high-school education, which is a privileged situation in a region where the levels of education are generally low. Almost all of these women live in an urban area and the 72 per cent of them live in the capital city of the country (or its surroundings). By their level of education, it should be assumed that they belong to middle and high social groups, who have a wide geographic and economic access to the greatest resources and services concentrated in large cities, including medical care. It is a minority group: only 5 per cent of the women of 15-49 years old belong to this stratum. Because of the educational structure of the group, they have low fertility, so that they only generate 3 per cent of the total number of births of these countries. Exposed to a low mortality, these children contribute with scarcely 1 per cent of the total number of deaths under two years. The group has the value of showing that in Latin America, children who are born in privileged social groups have a chance to survive which is close to the one observed in more developed countries.

Unfortunately, this is a situation which is an exception. The core of the problem concerning early child high mortality in Latin America, is formed by the strata of high and very high mortality. In the group in which this is above 160 per 1000, we find 22

per cent of the women in fertile age. The facts that determine a high mortality also condition a greater fertility, in such a way that this group contributes with the 28 per cent of total births; among these births, 43 per cent of the total deaths of infant under two years occurs. There are no women of high education in this stratum; most of them are illiterate or semi-illiterate. 73 per cent live in rural areas and 6 per cent in the capital city of the country. This last group corresponds probably to the marginal sectors in the urban population.

If the strata of high and very high mortality are added up, we have a group which covers 41 per cent of women in fertile age. They procreate half of the total births, which are exposed to a mortality at least then times higher than the one in Sweden. Thus, this group generates two thirds of all the deaths under two years of age, in this set of countries. The group is mainly formed by inhabitants of Bolivia, Peru, Ecuador, Guatemala, Nicaragua, Honduras and El Salvador. It should be pointed out that the study does not include, among other countries, the biggest two of the region: Mexico and Brazil. For this latter one, we have already mentioned that there exists marked contrasts of mortality in accordance with the family income.

#### 4.3 Mortality and ethnic group

In several countries of the region (Bolivia, Ecuador, Peru, Guatemala) there subsists important numerical indigenous population. After having been deprived of their best lands during the conquest, they remained for a long period under a servile system of production. Nowadays, pre-capitalist forms of production still prevail among them, or they have joined the market in conditions generally precarious, situation which the agrarian reform has not changed basically.

In the aforementioned study of Behm et.al., it was possible to identify directly or indirectly, these populations with the census information. (Table 10)

Table 10  
MORTALITY UNDER TWO YEARS OF AGE BY ETHNIC GROUPS.  
SELECTED LATINAMERICAN COUNTRIES. 1968 - 1972

Country	Total	Probability of dying (per 1000)		
		Indigenous population	Non-indigenous population	Indigenous population sur. mortality (percentage)
Guatemala <sup>a</sup> ...	149	173	128	35.2
Bolivia <sup>b</sup> ...	202	258	149	73.2
Ecuador <sup>c</sup> ....	-	197	143	37.8

<sup>a</sup> Condition specified in the census as "indigenous" and "non-indigenous".

<sup>b</sup> Indigenous population: the one that speaks only native languages (Quechua, Aymará). Non-indigenous population: the one that speaks only Spanish.

<sup>c</sup> Indigenous population: "cantones" of the highlands with predominant indigenous population in the 1950 census. Non-indigenous population: "cantones" of the highlands where the indigenous population was a minority.

Source: Beha, H. y colaboradores, Mortalidad en los primeros años de vida en países de la América Latina. CELADE, Serie A, No. 1025, 1031 y 1037. San José, Costa Rica, 1977-1978.

All of them are countries where the mortality under two years of age in the non-indigenous population is already high. Even so, the population supposedly indigenous has a surmortality which varies between 35 and 73 per cent, reaching death probabilities as excessive as 173-258 per 1000 births.

4.4 Mortality and social class

As already mentioned, the mortality differentials in terms of diverse socio-economic variables do not allow the explanation of these differentials in a consistent and systematic way. In the hypothesis that the health-disease-death phenomenon is overdetermined by the place occupied by the individual in the social productive process, the most logical approach of analysis should be the identification of the prevailing means of production in a given society and the social classes they originate. This type of analysis is rarely found, among other reasons because of the difficulty to identify the relevant variables in the population. In this chapter, two approximations to this line of analysis are summarized.

Taucher<sup>27</sup> has analyzed infant mortality in Chile, 1972-1973, comparing the children of "blue collar" workers with the children of "white collar" workers. Hence, it is a comparison between workers, separating those who are properly in the process of production of goods and in manual functions, from the non-manual salary earners situated mainly in service sectors and which correspond to middle class groups. Even so, contrasts are notorious. (Table II)

Table II

INFANT MORTALITY BY FATHER'S OCCUPATION AND MOTHER'S EDUCATION.  
CHILE, 1972-1973

Education	Rates per 1000 births					
	Infant		Neonatal		Post-neonatal	
	Children of					
	White collar workers	Blue collar workers	White collar workers	Blue collar workers	White collar workers	Blue collar workers
TOTAL	29.8	66.9	16.8	25.6	12.9	41.2
None .....	86.2	108.6	35.0	38.0	51.3	70.6
Primary .....	38.1	62.7	18.3	24.1	19.7	38.6
High School and more ..	23.8	59.9	15.6	26.4	8.2	33.5

Source: Taucher, E., Mortalidad infantil en Chile: tendencias, diferenciales y causas. CELADE, octubre de 1978.

<sup>27</sup> Taucher, E., "Mortalidad infantil ...", *op.cit.*

The rate of infant mortality of the "blue-collar" workers group doubles the rate of the "white-collar" workers group, and this differential is larger in the post-neonatal mortality (3.2 times). Within each occupational group, the highest level of education is associated to a lower mortality, but concerning blue-collar workers the step from a primary education to a higher level is not accompanied by an important reduction of the rate, suggesting that the effect of the social class is of more weight. Mortality in children of illiterate "blue-collar" workers (109 per 1000) is 4.6 times higher than in employees with more education (23.8 per thousand). In Chile, births of illiterate mothers amount to only 7 per cent, although they originate 13 per cent of infant deaths. The group of greater significance is made up by the children of blue-collar workers with some education; in this group, 60 per cent of births and 69 per cent of deaths in the first year of life occur.

Taucher also analyzes the causes of death in the two occupational groups which are presented in Table 12 for the post-neonatal mortality. It is observed that the greatest mortality of children of blue-collar workers is related to clear excesses in those causes which are total or partially avoidable with the current medical knowledge. They comprise infectious diseases (especially diarrhea), acute respiratory disease and malnutrition.

Behm et.al.<sup>28</sup> have obtained estimates of probability of death between birth and two years of age for Costa Rica, 1968-1969, using the census information on occupation and occupational category of the head of the family. This information does not permit the exact identification of social classes and its subdivisions, but it has been used in the best way so as to get an approximation. 37 per cent of households had to be discarded because the head of the family did not belong to the economic active population or because he was looking for work for the first time, or the information on occupation was incorrectly given; part of workers on own account were also excluded, because their classification was not possible. Results appear in Table 13.

Table 12  
 POST-NEONATAL MORTALITY: CAUSES OF DEATH ACCORDING TO  
 FATHER'S OCCUPATIONAL GROUP. CHILE 1972-173

Group of causes of death	Rates per 100,000 births		Ratio (2)/(1)
	Children of		
	White collar workers (1)	Blue collar workers (2)	
Reducible mortality...	937	3 243	3.5
Infectious ethiology.	385	1 233	3.2
Respiratory diseases.	462	1 683	3.6
Malnutrition.....	41	227	5.6
Accidents .....	49	100	2.0
Non-avoidable mortality	120	124	1.0
Ill-defined causes ....	136	589	4.3
Other causes .....	71	128	1.8
TOTAL .....	1 263	4 083	3.2

Sources: Taucher, E., Mortalidad infantil en Chile: tendencias, diferenciales y causas. CELADE, octubre, 1978

<sup>28</sup> Behm, H. et.al. Resultados provisionarios obtenidos en una investigación sobre fecundidad mediante el método de hijos propios, en Costa Rica. (CELADE).

Table 13

PROBABILITY OF DYING BETWEEN BIRTH AND TWO YEARS OF AGE BY SOCIAL CLASS.  
COSTA RICA, 1968-1969

"Social classes"	Probability of dying (per 1000 births)
<b>TOTAL</b>	<b>80</b>
<u>High and middle bourgeoisie</u>	<u>20</u>
Farm owners. Proprietors in the industrial and commercial sector. Executive and managerial employees. Higher status professionals.	
<u>Middle class</u>	<u>39</u>
Salaried employees in clerical work. Salesmen. Primary and high-school teachers. Other professionals and technicians.	
<u>Proletariat</u>	<u>80</u>
Wage earners: craftsmen, manufacturing workers, labourers, service workers.	
- Probable skilled workers (7 and more years of education)	46
- Probable semi- and unskilled workers	
With 4-6 years of education	73
With 0-3 years of education	102
<u>Agriculture workers</u>	<u>99</u>
Small farmers. Agriculture wage earners. Semi-proletarized small farmers.	
With 4-6 years of education	80
With 0-3 years of education	112

Source: Behm y colaboradores. Resultados provisionarios de un estudio de fecundidad (métodos hijos propios) en Costa Rica. CELADE, 1978.

The category called "middle and high bourgeoisie" is not made up exclusively of proprietors of means of production, but it surely includes the most important of them. Mortality of their children is 20 per 1000, which is the existing level in the United States in 1970. The mortality in the "middle class" is twice the previous group.

The proletariat, mainly urban, corresponds best to a social class. Its mortality (80 per 1000) again doubles the previous group. The level of education, which probably expresses their degree of skill as to labour force, differentiates subgroups which have a mortality varying between 46 and 102 per 1000; the latter subgroup thus reaches the level of the high mortality existing among rural workers.

The group of "agriculture markers" has a substantially lower level of education in comparison to the urban proletariat (22 per cent are illiterate and 38 per cent have only 1-3 years of education). It has not been possible to identify the social categories more significant to the analysis (small farm proprietors, proletariat, marginal population, etc.). The group has the highest mortality of the country (99 per 1000), increasing to 112 per 1000 for the illiterate or semi-illiterate, a risk which is 5.6 higher than the middle and upper bourgeoisie.

With all the mentioned limitations of this classification of social class, the results are significant. Costa Rica is a country with a relatively low mortality in the region, with important declines in recent decades. A large part of the population is covered with the benefits of social policies, especially in health and education. Even so, sharp contrasts are noticed in the mortality of the first years of life, the most sensitive to living conditions. The working class has a mortality which is 4-5 times higher than the privileged group. The latter one reaches the existing levels of mortality of the advanced world. The middle class has benefited more than the manual workers. The proletarian population has a lower mortality than the rural working class; they are favoured by their predominantly urban residence, where the capitalist development is more advanced and where this class has a labour organization more powerful than the greater part of the rural sector.

##### 5. General Comments

A comprehensive analysis of the socio-economic determinants of mortality in Latin America has several limitations. The countries of the region have clear differentials on their historical stage of development of their socio-economic structures. On the other hand, there exists a great heterogeneity of mortality among different countries and in different populations within each country. Lastly, the review of available information points out that it is not systematic nor complete, particularly in the categories of analysis which are more important. Nevertheless, some important conclusions may be reached.

Whatever index is used, the differentials which are detected show that around 1970, marked socio-economic contrasts of mortality prevail, so that the groups with higher risk have rate 4-5 times larger than those less exposed. Differentials of this type have been described frequently, even in more advanced countries. The important fact is that in Latin America, these differentials are much greater than those existing at present in industrial countries, and they are more similar to these which existed in these countries in the past (Nizard and Vallin<sup>29</sup>, Antonovski<sup>30</sup>). On the other hand, as these marked contrasts exist in countries where it prevails a high mortality, the more exposed groups reach very high levels of risk. This means that in the very XX century, when spectacular progress has been achieved regarding techniques to reduce mortality, these populations are living under conditions similar to the ones which prevailed in Europe almost a century ago. What is worse, these populations are not minorities; in many countries they include a considerable proportion of the total population.

This situation has a marked influence in determining the current levels of mortality in the region and its future perspectives. The reduction of the gap in mortality between Latin America and the more advanced world, will require that these socio-economic contrasts of mortality be reduced sharply and that a substantial decline in mortality achieved in extensive sectors of the population exposed to greater risks.

29

Nizard, A. y Vallin, J., Influence du développement sur la mortalité différentielle. IUSSP. Congrès International de la Population, México, 1977.

30

Antonovsky, A., Social class, life expectancy and overall mortality. Milbank Memorial Fund Quarterly, Vol. XLV, No. 2, April, 1967.

Although in the studies just analyzed, the social class variable appears specified only by exception, everything seems to indicate that mortality is closely related to it. The groups with a greater risk of death are formed by the working class, in relation to its more unfavorable living conditions. This situation is originated in the social relation system of production which prevails in the area, which fosters, on the part of some social sectors, a process of concentration and accumulation of the means of production, the technical progress and the value generated by the work, to the detriment of the class afore mentioned.

Nevertheless, there is no doubt that the development of the capitalist system in Latin America is related to the decline of mortality. This development is more advanced in the urban sector, where also the mortality tends to be lower. This process can have several explanation. The system needs to create an internal market and it is also vital for it, the reproduction of labour force. In this way, the development of the productive system and its modernization, expands the supply and consumption of goods. At the same time, salary and social policies (social securities, health, education) improve, in a relative way, the living conditions of the workers. On the other hand, the workers organization enables them to increase their participation in the wealth they produce.

in the rural sector, mortality is, in general, higher. As explained in the ECLA- AC report, the agricultural capitalist development is associated to the concentration of productive means (especially land and technical modernization), to the detriment of the proprietors, determining their progressive proletarianization. On the other hand, the concentration of financial and technical means in the agro-exportation sector (which is important in the economic development in some countries) substracts resources from the sector producing basic food for internal consumption, largely by middle and small farmers. On account of this, the internal supply of food decreases and the need to import them increases. This is another mechanism which hinders the overcoming of malnutrition which prevails in the rural population and affects its mortality.

In the context of this complex and dynamic process, mortality in Latin America has had an important and variable decline in the last decades. That this advance is still insufficient is shown by the levels and differentials of mortality, mentioned before. There are other facts in this situation which are cause of worry. The Panamerican Health Organization<sup>31</sup> evaluated the achievement of regional goals set up in order to reduce child mortality under five years of age for the decade 1961-1971. This achievement was found satisfactory for the age of 1-4 years, but regarding infant mortality only 21 per cent of the objective was reached in Meso America and 36 per cent in South America. Montoya<sup>32</sup> projected the trends of infant mortality observed in Latin American countries in 1950-1971. He found that, in order to reach a decline of 50 per cent, it was needed more than 25 years in six countries and between 11 and 25 years in other eleven countries. Accinelli and Muller<sup>33</sup> point out that the historical increase of life expectancy in Argentina stopped between 1960-1970, when life expectancy reached 66 years. An increase in the rate of infant mortality in important cities of Brazil has already been mentioned, for the same decade.

<sup>31</sup> Organización Panamericana de la Salud. Hechos que revelan progreso en salud. Publicación científica No. 227, setiembre 1971.

<sup>32</sup> Montoya, C., Levels and trends of infant mortality in the Americas. World Health Statistics Report, Vol. 27, No. 12, 1974.

<sup>33</sup> Accinelli, M. et.al. Un hecho inquietante: la evolución reciente de la mortalidad en la Argentina, CENEP, 1977.

Swackin<sup>34</sup> has analyzed the historical course of the average annual increases of life expectancy at birth in the advanced world and in different regions of the Third World in relation to the level of this expectancy in various periods. When life expectancy is approximately 51-52 years, he finds that Latin America has increases of 0.60 years, which are greater than the ones observed in East and South Europe (0.54 years) and in West Europe (0.38 years). Yet, while life expectancy rises in Latin America, the increase tends to decline (0.36 years when  $e_0 = 57.7$ ) while in Europe it tends to increase, reaching 0.71 years when  $e_0 = 62.4$  years in South-East Europe. In more advanced regions, the tendency to a lower rate of increase only occurs when reaching an expectancy of 70 years. Swackin<sup>34</sup> states that "mortality, particularly infant and child mortality, in large areas of the Third World is now tending toward an increasingly slow rate of decline, very possibly if not probably en route toward stabilization at levels significantly higher than those prevailing in the West". He also points out that the marked declines in mortality which have been observed in some countries, such as Taiwan and South Korea, seem to be an exceptional rather than a usual situation in the developing world.

When comparing Third World with the advanced, industrial countries, it is necessary to point out the differences in the respective historical contexts. The advanced capitalist countries have achieved an expectacular decline of mortality, among other reasons, because they have been able to make full use of their extraordinary technical progress in the prevention and treatment of diseases in the XX century. The rise in the level of living in those countries has been favoured because they dominated large colonial empires and, at present, they are the source of powerful central economies. In Latin America, on the contrary, the capitalist process is found in some countries in a stage in which the process of accumulation is developing with extreme hardness. Besides, they are dependent on central economics and have to share their process of accumulation with them. The ECLA report has underlined the role of the transnational corporations in this respect.<sup>35</sup>

What is the contribution that health care can have in regard to the decline of mortality in such conditions? This point will be discussed in another session of the meeting. Here it is briefly commented in order to complete a global vision of the problem. Since the second half of the 40's, new and powerful means are available for preventing and treating a number of diseases, especially infectious ones, which open up important possibilities to control mortality.

The decline observed in the mortality of the Third World, since 1950, led to the general thought that mortality had freed itself of its socio-economic determinants and that the gap with the advanced world could be reduced substantially although development would not reach similar progress in those areas. The subsequent course has not confirmed these optimistic predictions, in spite of the unquestionable progress obtained.

The reasons for this evolution are found, in the first place, in the limitations imposed upon the effectiveness of health techniques, derived from the persistence of unfavourable conditions affecting the health of man in his physical and social environment, such as the ones described before for Latin America. In addition to these reasons, the effectiveness of the techniques for prevention and treatment of disease depend on the extent they can be actually applied and on the coverage reached on the population. The health sector of the Latinamerican countries, in charge of this task, cannot be independent of the restrictions imposed by the system as a whole. Consequently, in spite of an unquestionable progress, the health systems of the region are concentrated on the greater urban sectors, give priority to a hospital medicine, and discriminate its benefits by social classes. In this way, populations which are more exposed to the risks of

34

Swackin, D., The end of an era: a review of the literature and data concerning Third World mortality trends, Overseas Development Council, July 1978.

35

Belmar, with data based in a report to the Senate of the United States, points out that between 1960 and 1972, the net investments of American capital in Latin America reach the sum of \$4,000 million dollars while the dividends obtained by the United States add up to \$13,000 million for the same period of time. (Belmar, R., The Health of Latin America: a case study in the impact of dependency upon the health of nations). (Not published).

Becoming sick and dying, obtain a late and inefficient care, if any. The meeting of Ministers of Public Health of the Americas<sup>36</sup>, in 1972, indicate: "Our problem consists of providing services to the 37 per cent of the inhabitants who actually do not receive any kind" ... whose "great majority lives in rural environment or in marginal dwellings of the big cities". "The task that awaits us in the decade just initiated, clearly indicates that without a substantial change in the traditional structures, it will not be possible to make real the coverage which implies the right to health". On the other hand, as Hansluwka<sup>37</sup> has pointed it out, once relative declines have been obtained from a high mortality by means of health programs of relatively low cost, the maintained progress not only requires of a more complex infrastructure, but also of parallel improvements in the economic and social sectors. "If the underlying socio-economic environment deteriorates itself, the rate of further reductions may diminish or cede to stagnation".

In sum, the analysis of the socio-economic determinants of mortality in Latin America show that in order to improve the current situation, it is required, on one hand, to achieve in the health sector, an extensive and efficient use of present technology available, surpassing the barriers which today limit and discriminate its use. But it shows as well that the modification of the present social and economic structures is a decisive step, since they are the deep roots of the high mortality prevailing in large sectors of the Latinamerican population and of their unsatisfactory progress.

It is pertinent to recall here a quotation made by Antonovsky<sup>38</sup>. In the sinking of the "Titanic", in 1912, 3 per cent of the female passengers of the first class was lost, 16 per cent of the second class and 45 per cent of the third class. In the imaginary ship that is Latin America, there are 345 million passengers, subjected to differential risks by social class as cruel or even more than those of the "Titanic". Annually, almost a million bodies of children less than five years old are thrown overboard. They come mostly from the "third class" and above all, they should not have died. Our responsibility is to show, to the political levels of decision and to the people, with scientific objectivity, the magnitude of this monstrous genocide and the deep causes which originate it.

<sup>36</sup> Organización Panamericana de la Salud. III Reunión Especial de Ministros de Salud de las Américas. Documento No. 123, setiembre 1973.

<sup>37</sup> Hansluwka, H., Health, population and socio-economic development. In "Population growth and economic development in the Third World." IUSSP, 1977.

<sup>38</sup> Antonovsky, A., "Social class ...", op.cit.