

# IV

## DEATHS

The human species is unique among its ecological competitors in that it is able to adapt its environment to its biological and cultural necessities. The ability to introduce ecological change has led to alterations in epidemiological and demographic factors; these changes ultimately translate into improved living conditions and to lowering the traditionally high morbidity and mortality levels which mankind has experienced throughout history (1). In Costa

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(1) Manuel J. Carvajal, "Population Growth and Human Productivity: An Overview," in Manuel J. Carvajal (ed.), Population Growth and Human Productivity (Gainesville: University of Florida Press, 1976), pp. 1-6.

Rica, as in other developing countries, the application of imported technologies in health-related fields has made it possible to reduce both morbidity and mortality, thus prolonging the life expectancy of the population.

Between 1964 and 1968 the number of deaths registered in Costa Rica decreased both relative to the total population and in absolute terms. The number of deaths registered in 1969, however, increased in relation to 1968 in both absolute and relative terms. During the period 1964-1969 the number of registered deaths dropped by an average annual rate of 1.2 percent. Such a decrease, of course, was reflected in a decrease in the country's death rate, from 8.5 per 1,000 in 1964 to 6.8 per 1,000 in 1969 (2). The death rate varies considerably among provinces; for example, the death rate in Guanacaste experienced a sharp decline in 1969 relative to 1964, but in Limón the death rate in 1969 actually was higher than in 1964. The following table indicates that the lowest death rates for 1964-1969 occur in the provinces comprising the Central Plateau, which seems to imply that health-related services tend to be concentrated in that region.

Province	Death Rate (per 1,000 people)				
	1964	1965	1967	1968	1969
Costa Rica	8.8	8.1	7.0	6.5	6.8
San José	8.2	7.0	6.1	5.7	6.1
Alajuela	8.4	7.9	7.0	6.5	6.9
Cartago	9.9	9.7	7.9	6.8	6.6
Heredia	7.7	7.3	6.8	6.3	6.6
Guanacaste	9.5	8.7	6.6	5.9	6.4
Puntarenas	9.3	9.1	7.9	7.6	7.3
Limón	11.6	11.4	10.8	9.7	12.5

(2) In calculating the death rate, the estimated population on July 1 of each year is used in the denominator, as reported in the Anuarios Estadísticos for 1963-1969.

The rate of natural increase of the population (i.e., the number of births minus the number of deaths per 1,000 people) can be obtained by combining the birth rate presented in Chapter II and the death rate. Of course, the rate of natural increase excludes both international and internal migration. Between 1964 and 1969 this rate dropped dramatically, from 37.0 to 27.5 per 1,000, or by approximately 2.7 percent per year. This does not mean that the country's population has decreased, but rather it indicates that the population increased at a decreasing rate. The rates of natural increase during the five-year period for the seven provinces were as follows:

Province	Rate of Natural Increase (per 1,000 people)				
	1964	1965	1967	1968	1969
Costa Rica	38.2	38.4	31.9	29.5	27.5
San José	35.7	35.9	29.8	28.1	27.1
Alajuela	38.4	39.2	31.9	29.2	26.7
Cartago	37.9	37.8	31.4	28.3	26.2
Heredia	34.2	31.5	27.8	25.1	23.5
Guanacaste	45.6	45.5	36.9	32.8	29.0
Puntarenas	41.6	42.7	35.7	34.0	30.4
Limón	36.8	36.8	33.1	31.9	29.6

The availability and quality of health-related services which are capable of reducing high rates of morbidity and mortality depend on the allocation of both human and financial resources. Since both human and financial resources are scarce, a population characterized by a rapid growth rate is disadvantaged relative to a population characterized by a less rapid rate of growth; other things being equal, the lower the population growth rate the more successful tends to be the implementation of programs designed to eradicate disease and extend life expectancy.

The number of deaths occurring with medical assistance as a proportion of all deaths decreased sharply for the whole country and for each province in 1965, but increased in subsequent years until 1969, although never reaching 1964 levels. If this proportion is taken as an index of the coverage of health-related services, it can be concluded that medical coverage is concentrated in San José and Heredia and to some extent in Alajuela and Cartago, which are the four provinces comprising the Central Plateau. The following table presents the percentages of all registered deaths in which the patient received some medical attention immediately prior to expiration.

Province	Deaths Registered with Medical Assistance (percentage)				
	1964	1965	1967	1968	1969
Costa Rica	63.3	55.3	58.5	59.7	59.7
San José	74.9	68.8	69.1	69.9	69.6
Alajuela	66.1	55.6	61.1	62.8	64.9
Cartago	64.6	52.6	61.1	62.4	60.2
Heredia	81.7	72.6	74.9	79.5	74.8
Guanacaste	34.2	27.3	32.6	33.2	32.5
Puntarenas	50.3	45.2	46.2	47.9	49.1
Limón	54.1	50.6	49.0	48.0	49.7

Deaths seem to be more selective of men than women for the entire country, as well as for each province, and each year. The composition of registered deaths by sex throughout the period is as follows.

Province	Sex Composition of Registered Deaths (percentage)					
	1964		1967		1969	
	M	F	M	F	M	F
Costa Rica	53.9	46.1	53.6	46.4	55.0	45.0
San José	53.8	46.2	52.2	47.8	54.0	46.0
Alajuela	55.1	44.9	55.0	45.0	54.3	45.7
Cartago	52.6	47.4	53.3	46.7	53.9	46.1
Heredia	53.0	47.0	52.5	47.5	56.5	43.5
Guanacaste	53.7	46.3	53.6	46.4	55.7	44.3
Puntarenas	53.3	46.7	54.9	45.1	55.4	44.6
Limón	55.5	44.5	54.7	45.3	58.6	41.4

As the impact of health-related programs is manifested through an increase in average life expectancy, the proportion of deaths occurring at younger ages tends to decline relative to deaths occurring at older ages. Therefore, it is expected that the proportion of all noninfant deaths that occur at less than, say, 50 years of age should be lower in those regions characterized by a more widespread and efficient distribution of health-related services relative to regions less developed in this respect. Between 1964 and 1968 the proportion of noninfant deaths occurring under 50 years of age declined in the country from 45.1 to 38.3 percent, but then increased to 40.2 percent in 1969. The proportion varied in 1969 from a low of 31.4 percent in Heredia to a high of 57.1 percent in Puntarenas. Variations by province in the percentage of noninfant deaths occurring under 50 years of age can be observed in the next table.

Province	Noninfant Deaths Under 50 Years of Age (percentage)				
	1964	1965	1967	1968	1969
Costa Rica	45.1	43.2	42.0	38.3	40.2
San José	37.7	37.0	33.0	30.5	32.8
Alajuela	43.7	43.2	41.5	38.6	40.9
Cartago	45.7	39.4	42.3	34.8	38.6
Heredia	39.4	32.4	35.9	27.3	31.4
Guanacaste	57.0	57.4	51.5	51.0	45.2
Puntarenas	60.5	60.9	60.5	55.9	57.1
Limón	46.7	40.6	48.0	45.2	50.2

The infant mortality rate (i.e., the number of deaths of children aged less than one year per 1,000 people) experienced a sharp decline between 1964 and 1968, although it increased slightly in 1969 relative to 1968. The number of infant deaths that occurred during the five-year period decreased by more than 20 percent, which is equivalent to an average rate of decline of 4.5 percent per year. The lowest infant mortality rates are reported for San José and Heredia, while Limón is the only province where the infant mortality rate in 1969 exceeded the 1964 level. Interprovince variations in this rate are as follows.

Province	Infant Mortality Rate (per 1,000 people)				
	1964	1965	1967	1968	1969
Costa Rica	3.5	3.0	2.4	2.1	2.3
San José	3.0	2.1	1.7	1.4	1.7
Alajuela	3.3	2.7	2.4	2.2	2.3
Cartago	4.4	3.9	3.1	2.6	2.4
Heredia	2.3	2.1	1.9	1.7	1.6
Guanacaste	4.1	4.0	2.7	2.5	2.6
Puntarenas	4.2	4.3	3.4	3.2	3.1
Limón	4.4	4.6	3.6	3.2	4.9

The availability of medical assistance in infant mortality cases was slightly less than for adults and children one year of age and older during the 1964-1969 period. The proportion of all infant deaths that occurred with medical assistance decreased abruptly from 1964 to 1965 and increased in subsequent years until 1969. The highest rates of medical assistance were reported in Heredia with more than four-fifths of all infant deaths in 1969 being registered with medical assistance, while in Guanacaste medical assistance was rendered in fewer than one-third of all infant death cases in the same year. Geographical variations in this health indicator by province are presented in the following table.

Province	Infant Deaths with Medical Assistance (percentage)				
	1964	1965	1967	1968	1969
Costa Rica	60.8	51.7	56.3	57.5	58.6
San José	76.4	67.2	71.7	70.2	71.7
Alajuela	66.8	57.9	63.1	64.6	68.0
Cartago	60.1	48.5	56.7	61.0	60.1
Heredia	76.2	74.9	79.7	81.8	81.2
Guanacaste	29.9	22.2	28.4	29.1	30.0
Puntarenas	46.8	46.1	43.1	46.7	48.1
Limón	53.1	48.5	48.5	51.7	48.9

Several studies point out that biological factors such as congenital malformations and conditions of birth delivery dominate neonatal death differentials; a few days after birth, however, cultural and environmental factors become increasingly important in explaining infant deaths (3). Therefore, the existence of more and better sanitation and health services is likely to lead to a lesser incidence of infant deaths at later stages relative to infant deaths occurring at very early stages. The percentage of infant deaths occurring at less than 3 weeks of age in Costa Rica increased between 1964 and 1967 but declined in 1968 and 1969. The province of San José showed a steady upward trend in this index during the five-year period, while the trend in Limón was downward. The other provinces are characterized by mixed changes.

Province	Infant Deaths Under 3 Weeks of Age (percentage)				
	1964	1965	1967	1968	1969
Costa Rica	31.5	32.3	35.6	35.5	35.0
San José	33.8	37.5	42.2	42.3	46.1
Alajuela	31.4	29.6	34.5	34.6	32.8
Cartago	25.9	29.9	28.8	34.9	31.2
Heredia	29.6	39.6	39.0	36.4	39.4
Guanacaste	32.5	33.0	37.1	31.6	30.6
Puntarenas	32.3	28.9	34.8	34.4	32.4
Limón	30.7	28.1	26.6	26.0	23.4

The fetal mortality rate refers to the number of fetal deaths per 1,000 live births. During the 1964-1965 period the number of fetal deaths decreased at an average annual rate of 6.4 percent, which is a greater rate of decline than that of births. All provinces with the exception of Puntarenas and Limón reported a lower fetal mortality rate in 1969 than in 1964.

(3) Roland Pressat, Demographic Analysis (Chicago: Aldine-Atherton, 1972), p. 84 and Ralph Thomlinson, Population Dynamics (New York: Random House, Inc., 1965), p. 138.

Province	Fetal Mortality Rate (per 1,000 births)				
	1964	1965	1967	1968	1969
Costa Rica	18.5	18.9	16.3	16.8	15.0
San José	17.2	16.8	12.1	12.7	11.1
Alajuela	19.7	20.1	17.3	19.7	16.9
Cartago	28.8	28.6	27.0	24.2	21.4
Heredia	22.2	20.7	16.3	16.0	14.4
Guanacaste	11.8	13.2	10.4	9.1	8.2
Puntarenas	16.2	18.9	17.7	19.2	19.2
Limón	16.7	17.9	25.4	26.6	24.6

Fetal deaths seem to be selective of males to a greater extent than are all deaths. The relative incidence of male fetal deaths between 1964 and 1969 declined slightly for all provinces except Puntarenas; year-to-year fluctuations, however, indicate the absence of a clear trend with respect to this indicator.

Province	Sex Composition of Fetal Deaths (percentage)					
	1964		1967		1969	
	M	F	M	F	M	F
Costa Rica	60.5	39.5	57.7	42.3	54.5	45.5
San José	58.6	41.4	59.7	40.3	54.5	45.5
Alajuela	63.4	36.6	61.7	38.3	48.6	51.4
Cartago	64.6	35.4	56.1	43.9	59.9	40.1
Heredia	64.6	35.4	50.0	50.0	51.1	48.9
Guanacaste	57.1	42.9	51.9	48.1	55.6	44.4
Puntarenas	54.8	45.2	57.7	42.3	56.0	44.0
Limón	57.9	42.1	56.7	43.3	56.2	43.8

With the exception of Guanacaste, the extent of medical assistance in cases of fetal deaths was considerably higher than for all deaths; in Guanacaste only one out of 5 fetal deaths received medical assistance in 1969, while in San José, Alajuela, and Heredia 9 out of 10 fetal deaths received such assistance. The variation in this index among provinces can be observed in the following table.

Province	Fetal Deaths with Medical Assistance (percentage)				
	1964	1965	1967	1968	1969
Costa Rica	66.8	60.1	73.4	73.1	81.0
San José	80.9	78.9	86.7	85.4	90.5
Alajuela	69.4	63.8	77.2	80.4	89.6
Cartago	65.9	55.9	73.5	72.8	85.4
Heredia	70.7	75.3	75.0	92.2	88.9
Guanacaste	17.3	11.6	30.4	17.2	20.4
Puntarenas	57.8	44.9	66.4	61.2	74.0
Limón	66.7	58.7	76.7	71.7	78.7

The tables by province, county, and district in this chapter are as follows: Table 6 presents deaths by sex with and without medical assistance, registered according to place of residence. Table 7 contains deaths other than infant deaths by age bracket and sex, registered according to place of residence. Table 8 shows infant deaths by sex, registered according to place of residence. Table 9 includes infant deaths with and without medical assistance, registered according to place of residence. Table 10 refers to infant deaths by age bracket, registered according to place of residence. Table 11 contains fetal deaths by sex, registered according to mother's place of residence. And Table 12 presents fetal deaths with and without medical assistance, registered according to mother's place of residence.