

PEACE, HEALTH AND DEVELOPMENT

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Studies of the Costa Rican Model I: Peace, Health and Development in Costa Rica

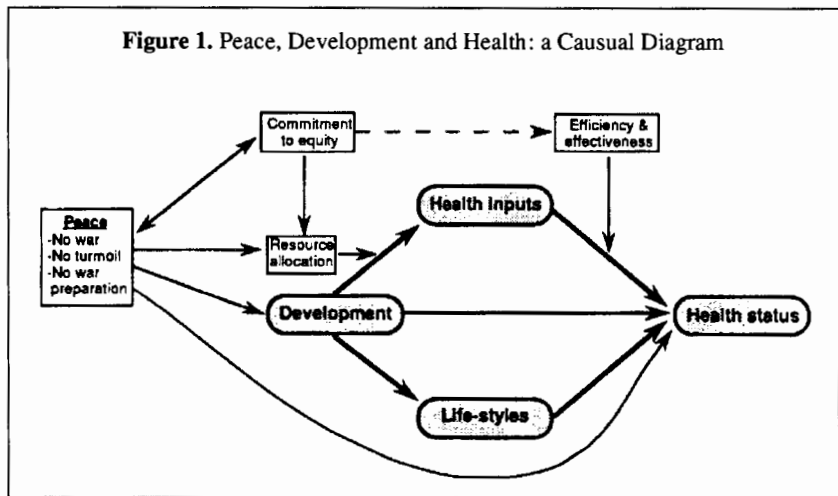
by Luis Rosero-Bixby

Introduction

Costa Ricans have cultivated peace and democracy for decades. They have also achieved outstanding levels of health. Their economic well-being is not so good, however. The 1949 constitution abolished the armed forces in this small Central American country. By 1990, life expectancy at birth was over 75 years – a figure similar to those of Germany or the USA. In contrast, per capita gross national product (GNP) was about a tenth that in the USA or Japan and slightly below the Latin American average. This paper explores the connections between peace, development and health achievements in Costa Rica.

Framework

Figure 1 presents a causal diagram to organize the ideas in this paper. The diagram portrays health status of a population as determined by three groups of factors: (1) development, (2) health inputs, and (3) life-styles. Development acts directly on



health throughout many obvious pathways, such as food availability, housing, transportation systems, education, institutions, and so forth. The diagram proposes that development also acts indirectly on health by effecting the other two types of factors. Health inputs include aspects such as hospitals, physicians, drugs, and public health interventions. Life-styles refer to mainly cultural factors such as breast-feeding practices, diet, stress, physical exercise, and tobacco and alcohol consumption. For example, a country's wealth determines the availability of physicians and medical facilities; in turn, sedentariness and fatty diets can be by-products of affluence.

This causal diagram also includes effect-modifiers and background factors shaping the aforementioned determinants of health status and their impact.

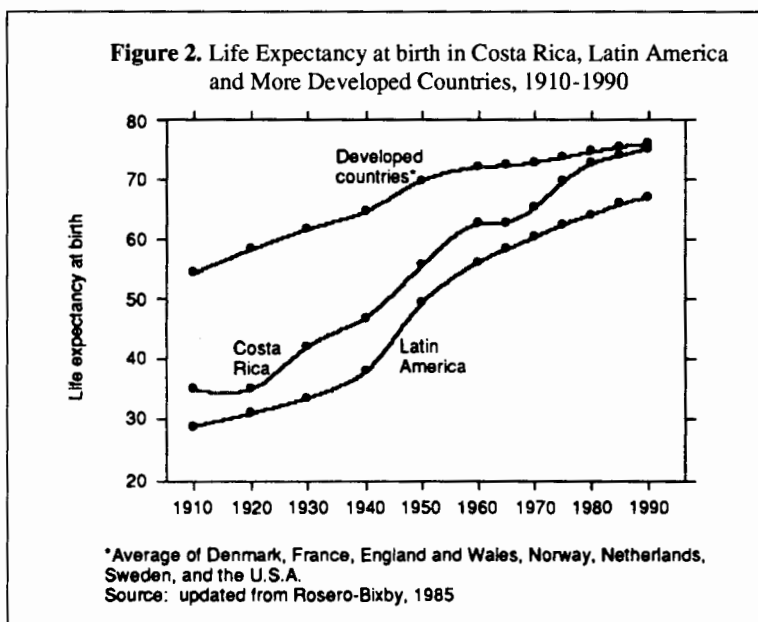
These factors are the following:

- *Efficiency and effectiveness* of health interventions, which make the impact of interventions vary widely. For example, expensive investments in prestige facilities, such as some city hospitals, have little or no impact on the health status of the masses. In contrast, inexpensive interventions can be very effective in controlling highly prevalent conditions. Immunization and oral rehydration therapy are examples of low cost, high effectiveness interventions.
- *Resource allocation* decisions of governments and individuals regulate the link between development and health inputs. What countries allocate for health care ranges between one and ten per cent of the gross domestic product approximately.
- *The commitment to equity* of societies and governments is at the core of resource allocation decisions regarding the health sector. Welfare oriented governments tend to give more importance to, and spend more money on, health, social security, education and the likes. Moreover, predilection for equity can result in more effective health interventions by serving less privileged sectors.
- *Peace* can influence the health status of a population in several ways. The most obvious is the toll of war casualties; that is the impact that diverse forms of war exert upon physical and mental health of civilians and combatants (Zwi & Ugalde 1991). Whereas war disrupts many aspects of society, peace creates favourable conditions for socioeconomic development and thus for improved health. In addition, peace has clear implications on resource allocation decisions, since defence budgets compete for resources with the health sector. When building up an army is a priority, little is left for health or

education. Moreover, peace and commitment to equity reinforce each other. Internal turmoil is less likely in egalitarian societies. Militarism, on the other hand, is a source of inequities and frequently is just the guardian of an inequitable order. Note that in all this reasoning, peace is not just the absence of diverse forms of war but it is also the absence of internal turmoil, militarism and preparation for war.

Health Levels in Costa Rica

By 1920, life expectancy at birth in Costa Rica was 35 years compared to 58 years in seven more developed nations and 29 years in Latin America (Figure 2). By 1990, the figures were: 75 years in Costa Rica, 76 years in the group of more developed



countries, and 67 years in Latin America. These figures underscore how far behind Costa Rica and Latin America were from the health levels of developed countries in the early decades of this century. The gap narrowed over time, however, and almost disappeared for Costa Rica. The life expectancy figures also show that health in Costa Rica had an initial advantage over the Latin American average and that this gap widened in the 1970s.

The relative advantage of Costa Rica over Latin America is consistent with the historical peculiarities of this country, which since colonial times crafted a relatively egalitarian and democratic society of poor peasants (Seligson 1980). Militarism was almost nonexistent since the early years of the republic due to

the fact, among others, that Costa Ricans did not have to fight an independence war. In spite of poverty, the leaders of this country gave priority to education and culture inspired by European liberals of the nineteenth century. In 1930 its illiteracy rate was only 33 per cent, which is lower than in most countries of the region (Mata & Rosero-Bixby 1988, Table 2.8). A revolution in 1949 consolidated this Costa Rican model of development, and the social-democratic party that has dominated the political scene since then reinforced it (Ameringer 1978).

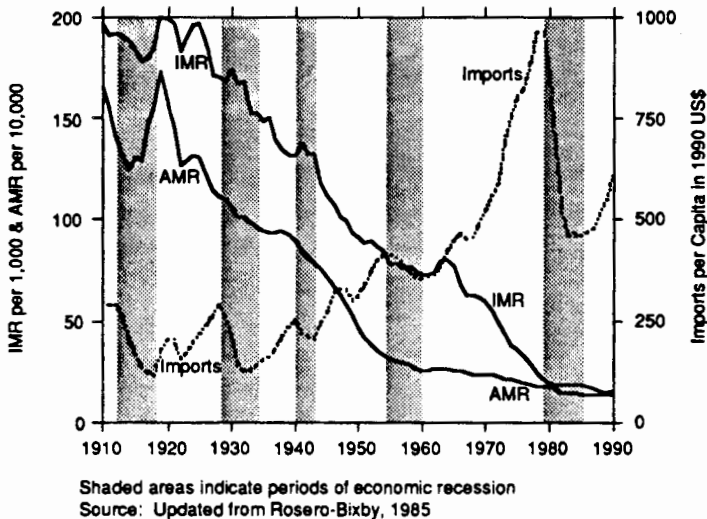
The evolution of live expectancy in Costa Rica between 1920 and 1970 approximately parallels that in Latin America. In particular, Figure 2 shows a meteoric progress in the 1940s and 1950s. In these decades, life expectancy rose by about 17 years – an astonishing gain of 19 hours of life per day during a 20-year period. This progress coincides with advances in medical and sanitary technology that took place during, or shortly after, World War II (antibiotics, DDT, new vaccines). This fast rate of progress narrowed the gap to more developed countries. The parallel evolution of Costa Rica and Latin America came to an end in the 1970s, however. Whereas the progress was modest in the region, Costa Rica registered impressive gains. Life expectancy rose from 65 to 73 years in the decade, bringing Costa Rica to the level of developed nations.

Health and Development

How does the progression of health indicators correlate with economic development in Costa Rica? Figure 3 compares the 1910-1990 series of infant and adult mortality rates with the series of per capita imports as an indicator of the state of the economy and living standards. The figure also identifies the approximate periods of economic stagnation (shaded areas). The comparison suggests some connection between economic development and infant mortality rate. Both the steepest relative decline in infant mortality and the fastest economic growth in this century occurred in the decade of the 1970s. In addition, during periods of economic stagnation (or shortly thereafter) infant mortality increased or its pace of decline slowed down. Since the 1980s were years of economic hardship, it is not surprising that infant mortality decline stalled during these years.

The correspondence, if any, between adult mortality and the economy is less clear than for infant mortality. The steepest decline in adult mortality took place in the 1940s and early 1950s, a period in which a sustained economic growth (with two brief parentheses) also occurred.

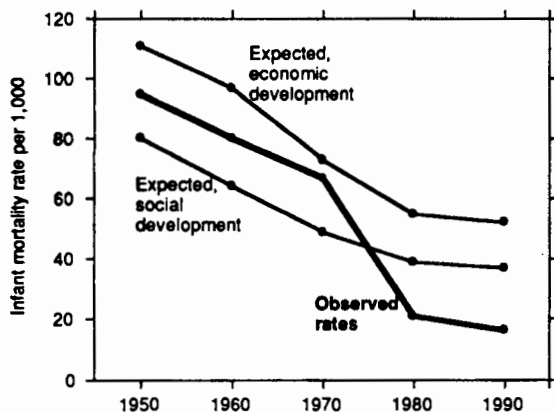
Figure 3. Infant Mortality Rate (IMR), Adult Mortality Rate (AMR), and Imports per Capita. Costa Rica, 1910-1990



It should be pointed out, however, that economic trends by no means explain completely the mortality trends in Costa Rica. It even seems that mortality decline did not relate primarily to the economy. For example, economic factors cannot explain at all of the decrease in mortality during the first half of the twentieth century, a period in which, despite economic stagnation, mortality rates decreased substantially. Improvements in education and public health, and adoption of new treatments or preventive techniques seem to have influenced mortality independently of the economic situation.

In the 1970s a breakthrough in Costa Rican infant mortality occurred (Halstead et al 1985, Caldwell 1986). Between 1972 and 1980, infant mortality fell 13 per cent per annum, compared to a decline of 2 per cent per annum between 1955 and 1972 (Rosero-Bixby 1986). Although this breakthrough coincides with times of economic prosperity, improved socioeconomic conditions alone can hardly explain it. To check this point, Figure 4 compares the observed infant mortality rates with the expected rates according to the country's level of social and economic development. Seven economic and three social indicators were translated into a theoretical index of level of development using "correspondence relationships" from a multinational model (Rosero-Bixby 1985). Expected infant mortality rates were then determined based on these correspondence relationships and the index average. The results of

**Figure 4. Observed and Expected Infant Mortality Rates.
Costa Rica 1950-1990**



Source: updated from Rosero-Bixby, 1986

this exercise confirm that Costa Rica is more advanced socially than economically. The expected infant mortality rate, according to the level of economic development, is, indeed, higher than the rate that corresponds to the level of social development. The infant mortality rate observed until 1970 is intermediate between the two expected rates, and its trend is consistent with the general advancement of the country. But just until 1970. Between 1970 and 1980, in contrast, the observed reduction in infant mortality (69 per cent) turns to be approximately three times steeper than the expected reduction (20 per cent to 25 per cent). In the 1980s the slope of the expected and observed curves is again similar.

Since socioeconomic change can explain only about one-third of the observed reduction in infant mortality in the 1970s, a tentative conclusion is that health policies implemented in that decade may be primarily responsible for the infant mortality decline.

Health Interventions

Significant public health programmes began in Costa Rica in of the 1920s, with the creation of the Sub-Secretariat of Hygiene and Public Health in 1922, which was promoted to ministerial level in 1929 (Meza-Lago 1985). An ambitious social security system started in 1941, which provided, along other benefits, medical and hospital care to workers in the formal sector and, since 1955, to their families. The health sector was substantially

reorganized in the early 1970s, as part of the first national health plan launched in 1972. A law mandated the universalization of the social security system, which resulted in an expansion of the system's coverage from 39 per cent in 1970 to 70 per cent in 1980 (Rosero-Bixby 1991b). All public hospitals were transferred to the social security system between 1973 and 1976, giving them badly needed resources and a unified control. Most importantly, the Ministry of Health established primary health care programmes in rural areas in 1972 and in urban slums in 1976, to deliver basic services and education to otherwise forgotten communities (Saenz 1985). By 1980, these programmes covered 60 per cent of the Costa Rican population (90 per cent in rural areas) with services that included quarterly visits to every household by a health worker.

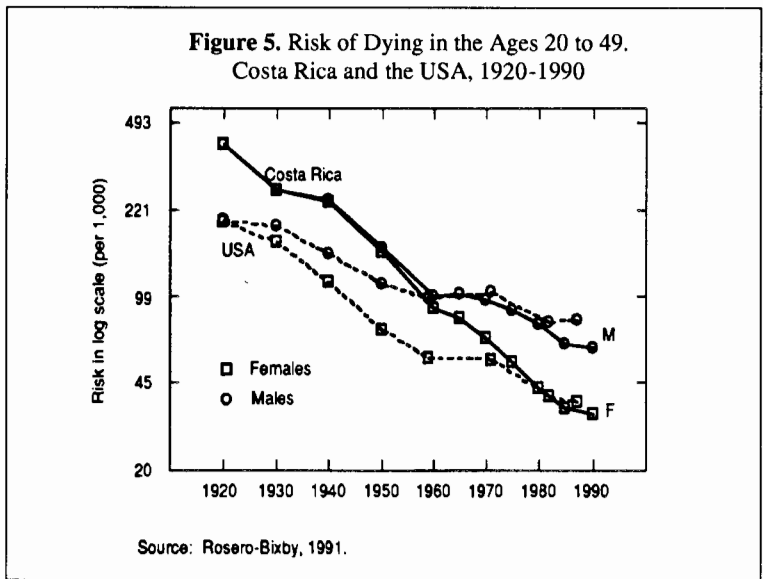
At present, Costa Rican medicine is highly socialized. For example, only 1.2 per cent of all hospital discharges come from the private sector. Coverage of, and access to, medical services are high (although their quality can be questioned). For example, 96 per cent of births occur in hospitals. The budget outlay for health in the public sector peaked at 7.6 per cent of the GDP in 1980. Since then it has declined to 5.6 per cent of the GDP in 1990 (Rosero-Bixby 1991b).

Is there a demonstrable connection between these policy developments and health improvements in Costa Rica? A regression analysis based on ecological data for the 79 Costa Rican cantons checked this point regarding the infant mortality breakthrough of the 1970s. It found that contemporary improvements in public health services accounted for up to three fourths of the infant mortality decline in the 1970s, with about 40 per cent decline attributable to primary health care interventions alone. In contrast, socioeconomic development accounted for about 20 per cent of the decline and family planning the remaining 5 per cent. In addition, the study showed that, by targeting the less privileged population, primary care interventions had the merit of reducing geographic and socioeconomic differences in child mortality (Rosero-Bixby 1986).

The Costa Rican breakthrough in infant mortality in the 1970s is thus a good example of the great potential of public health programmes. Efficient and effective interventions, targeted to the right people and to the right health conditions, can truly overcome the adverse determinism of underdevelopment on health.

Life-styles

In spite of the achievements (especially those in the 1970s), Costa Rican infant mortality is still far behind that of developed nations. By 1990 the infant mortality rate (16 per thousand) is twice as high as in the USA and three times higher than in Japan or the Nordic countries. In contrast, health status among Costa Rican adults compares quite favourably with that of the developed world. For example, by 1990, the mortality risk of adult men at the ages of 20 to 49 is 21 per cent lower than for their counterparts in the USA (Figure 5). By the same token, in 1985 men's life expectancy at the age of 40 in Costa Rica was



two years longer than in France and five years longer than in the Czech Republic (Rosero-Bixby 1991). Although Costa Rican women enjoy substantially lower death risks than men, the comparison with developed nations is not as favourable as for men.

The decline in adult mortality in Costa Rica has been extraordinary. Whereas in 1920 a twenty-year-old Costa Rican had a 40 per cent chance of dying before reaching the age of 50, in 1990 this risk has been reduced to 6.1 per cent for men and 3.3 per cent for women. The risk of dying for Costa Rican men and women doubled that of USA citizens by 1920; men closed this gap by 1960 and women closed it by 1980.

How come Costa Rican adults enjoy a longer life expectancy than their counterparts in countries with substantially higher living standards and finer health services? The answer seems to

lie in life-styles, as well as in the negative health effects of certain aspects of economic development. Table 1 compares the risks of dying in Costa Rica and the USA from causes in which the risk difference is more than five points per thousand. It is clear from the table that heart diseases and respiratory cancer are the key figures behind the comparatively low mortality of adults in Costa Rica. A substantially lower consumption of cigarettes in Costa Rica than in the USA is a likely explanation of some of this difference (Ravenholt 1990). Other plausible determinants for the lower heart disease mortality in Costa Rica are a less stressful life-style, less sedentariness, particularly in rural areas, and less fat and protein in the diet.

Table 1. Risk of Dying in the Ages 25-74 years from Selected Causes of Death. Costa Rica 1988 and the United States 1987.

Cause of death	Risk per 1,000		Difference CR-US	Ratio CR/US
	CR-88	US-87		
Males				
Heart disease	117.8	204.5	-86.7	0.58
Respiratory cancer	18.8	68.5	-49.7	0.27
Other cancer	72.9	101.1	-28.2	0.72
Automobile accidents	18.4	12.7	5.7	1.45
Stroke	34.0	26.6	7.4	1.28
Stomach cancer	47.8	5.8	42.0	8.30
Females				
Heart disease	71.7	99.9	-28.2	0.72
Respiratory cancer	5.7	28.5	-22.9	0.20
Other cancer	67.6	86.5	-19.0	0.78
Stroke	27.0	21.1	5.9	1.28
Cervical cancer	11.0	2.8	8.3	3.96
Diabetes	20.0	9.7	10.3	2.06
Stomach cancer	18.5	2.4	16.1	7.56

Source: Rosero-Bixby, 1991

It is important to point out that the privileged health status of Costa Rican adults is also a product of controlling infectious and parasitic diseases in the past. In particular, the control of malaria and tuberculosis was as a key factor for the improvement of adult health before 1970 (Rosero-Bixby 1991). The fight against these diseases can be linked mainly to the import of cost-effective technologies (DDT, streptomycin, tuberculin reaction, and BCG vaccine), as well as the efficient implementation of local public health programmes to use them.

The role of economic development in the decline of adult mortality in Costa Rica is not only unclear but even detrimental in several ways. An analysis of the trends in adult mortality by

cause of death, documents important increases in pathologies associated to modernization. The clearest of them was an eight-fold increase in the death risk from automobile accidents among young adults between 1951 and 1971. Other suggestive death risks that increased in the same population and period were in cardiovascular diseases, diabetes, and respiratory cancer (Rosero-Bixby 1991).

Conclusion

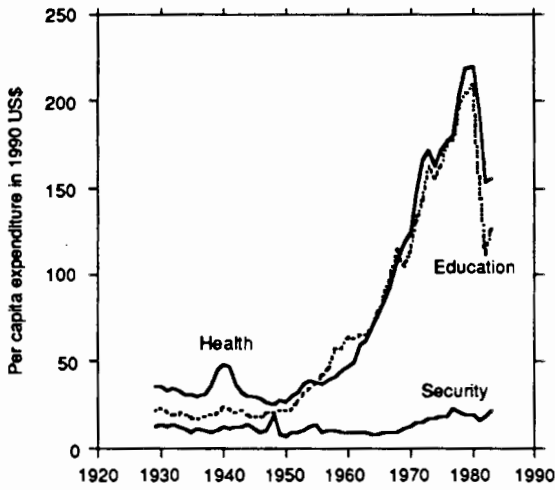
Health status in Costa Rica is exceptionally good, especially considering the country's limited level of economic development and, consequently, the limited resources available for health care. The health achievements of Costa Rica are, of course, the result of many different factors. Economic development seems to be an important determinant of infant mortality, but not so important for adult mortality trends. Costa Rica has in part overcome the socioeconomic determinism on infant mortality with efficient and effective health interventions. In particular, primary health care programmes were instrumental for the breakthrough in infant mortality trends in the 1970s. In turn, life-styles seem to be a key factor for Costa Rica, having adult mortality levels which are even lower than the levels in developed countries. Some aspects of economic development seem to have been detrimental for the health of Costa Rican adults in the past, which puts a cautionary note on future trends.

In understanding the health achievements of Costa Rica, two elements mentioned early in the paper owe consideration, namely commitment to equity and peace. Striking characteristics of Costa Rican history are its refusal to have an army and the emphasis given to quality of life aspects of development, including education, freedom, tolerance, and equity.

The commitment to equity puts health high on the list of priorities of governments and generated that important ingredient known as political will. The drive for equity was also in part responsible for the implementation of more cost-effective programmes, such as those of primary care launched in the 1970s, with excellent results.

The Costa Rican pledge to peace probably reinforced its commitment to equity. Moreover, by keeping expenditures in defence and security low, this comparatively poor country managed to invest substantially in education, health and other social sectors. Figure 6 is an eloquent proof of this connection: whereas per capita expenditures have increased very little in

Figure 6. Public Expenditure per Capita in Health, Education, and Security. Costa Rica 1930-83



Source: Mata and Rosero-Bixby, 1988.

over 50 years, the expenditures in health and education have multiplied several times. The world would be a substantially better place if other countries showed a similar record.

Acknowledgements

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