

## THREE

## Escaping Death in the Tropics

**FOR THE MAJORITY OF** the world's population not fortunate enough to be born in a rich country, the battles against infectious disease had hardly been joined by 1945. Yet history did not have to be relived, or at least not at the same glacial pace. In 1850, the germ theory had yet to be established. By 1950, it was common knowledge, so that at least some of the improvements that had taken a century in the leading countries could happen more quickly in those that followed. That India today has higher life expectancy than Scotland in 1945—in spite of a per capita income that Britain had achieved as early as 1860—is a testament to the power of knowledge to short-circuit history. The rapid if uneven reduction in infant mortality in poor countries allowed millions of children to live who would otherwise have died and caused the “population explosion”—from 2.5 billion in 1950 to 7 billion in 2011—an explosion that is today gradually coming to an end. Over the postwar years, life expectancies in poor countries moved closer to life expectancies in rich countries, at least until the 1990s, when HIV/AIDS in Africa undid the postwar progress in the most seriously affected countries. Inequalities in life expectancy, which had expanded from 1850 when the rich countries pulled away, decreased after 1950 as poor countries caught up, and then expanded again with the advent of the new epidemic.

There are many countries where large fractions of children still die, and there are three dozen countries where more than 10 percent die before their fifth birthday. They are not dying of the “new” diseases, like HIV/AIDS, or exotic tropical diseases for which there is no cure. They are dying from the same diseases that killed European children in the seventeenth and eighteenth centuries, intestinal and respiratory infections and malaria, most of which we have known how to treat for a long time. These children are dying from the accident of where they were born, and they

would not be dying had they been born in Britain, Canada, France, or Japan.

What is it that maintains these inequalities? What is it that makes it so dangerous to be born in Ethiopia or Mali or Nepal, and so safe to be born in Iceland or Japan or Singapore? Even in a country like India, where mortality rates have fallen rapidly, large fractions of children remain malnourished; they are skinnier and shorter than they ought to be for their age, and their parents are among the shortest adults on the planet, perhaps even shorter than the stunted adults in eighteenth-century England. Even today, and in spite of India being one of the fastest-growing countries in the world, why is it that so many Indians are trapped in the destitution that was the ultimate outcome of the Neolithic revolution?

In the years after World War II, in what the United Nations (UN) calls the less-developed regions of the world, large numbers of infants and children continued to die. In the early 1950s, more than a hundred countries lost more than a fifth of their children before their first birthday. These countries included all of sub-Saharan Africa, South Asia, and South East Asia. In 1960, the World Bank estimates that forty-one countries had child mortality rates (death by age 5) of more than a fifth, and in a few the rates were close to two-fifths. In the 1950s and 1960s, most of the world had mortality rates not very different from those in Britain a hundred or two hundred years before. But change was on the way.

The most rapid increases in life expectancy came very soon after the war. The demographer Davidson Gwatkin reports that around 1950, countries such as Jamaica, Malaysia, Mauritius, and Sri Lanka saw *annual* increases in life expectancy of more than one year for more than a decade.<sup>1</sup> In Mauritius, life expectancy rose from 33.0 years in 1942–46 to 51.1 years in 1951–53; in Sri Lanka, it rose by fourteen years in the seven years after 1946. Of course, these dashes for immortality cannot continue forever, and they can come only from large, one-time reductions in infant and child mortality. They were caused partly by the introduction of penicillin, which had first become available during the war; partly by use of the somewhat older sulfa drugs;

and probably in largest part by what is called “vector control,” the chemical assault on disease-bearing pests, particularly mosquitoes and especially those of the genus *Anopheles*, which carry malaria. Much of the progress against malaria was later reversed when the mosquitoes became resistant and when the use of the highly effective insecticide DDT was stopped worldwide because of its environmental effects (largely from its overuse in agriculture in rich countries). Even if the effects on malaria were temporary, they were temporarily large, and subsequent advances in other directions, such as immunization campaigns, more than made up for the losses.

UNICEF, the arm of the UN responsible for the health and well-being of children, received the Nobel Peace Prize in 1965 for its work among the world’s children. Immediately after World War II, UNICEF vaccinated children in Europe against tuberculosis, and it extended its reach in the 1950s to worldwide campaigns against tuberculosis, yaws, leprosy, malaria, and trachoma; it also sponsored clean water and sanitation projects. The Expanded Programme on Immunization (EPI) of the World Health Organization (WHO) was launched in 1974; it promoted immunization against diphtheria, pertussis (whooping cough), and tetanus (the DPT vaccine covers all three), as well as measles, polio, and tuberculosis. Most recently the Global Alliance for Vaccines and Immunisation (GAVI Alliance) was established in 2000, in an attempt to reinvigorate the work of the EPI. The progress of immunization has slowed somewhat in recent years, perhaps because the populations that were the easiest to reach and the most willing have already been covered. Another important innovation to help maintain the rate of mortality decline was the demonstration of the effectiveness of oral rehydration therapy (ORT) during a cholera outbreak in Bangladeshi and Indian refugee camps in 1973. A solution of salt and glucose in water, taken orally, prevents the dehydration that kills many children with diarrhea. The treatment costs only a few cents a dose, and it was hailed by the medical journal *The Lancet* as “potentially the most important medical advance this century.”<sup>2</sup> ORT is another good example of how a pressing need, together with scientifically informed trial and error, can sometimes lead to a spectacular life-saving innovation.

These medical and technical advances were implemented even in places where local capacity was limited. Mosquitoes could be sprayed by foreign experts or contractors directed by foreign experts, and immunization campaigns could be directed from WHO in Geneva as short-term, almost military-style operations using local paramedics to give the shots. Vaccines were (and are) cheap and were often centrally obtained by UNICEF or WHO at favorable prices. These health campaigns, known as “vertical health programs,” have been effective in saving millions of lives. Other vertical initiatives include the successful campaign to eliminate smallpox throughout the world; the campaign against river blindness jointly mounted by the World Bank, the Carter Center, WHO, and Merck; and the ongoing—but as yet incomplete—attempt to eliminate polio.

Medical and public health advances were not the whole story; better education and higher incomes have helped too. Rates of economic growth have been high by historical standards since World War II, and there have been improvements in education—not everywhere, but in many countries. Women are more likely to be educated than used to be the case. In Rajasthan in India, where I was involved in collecting data, almost all of the adult women we interviewed could neither read nor write. Yet we regularly passed lines of uniformed girls (locally referred to by the British term “crocodiles”) setting off to school. Between 1986 and 1996, the fraction of rural Indian girls enrolled in school rose from 43 to 62 percent, and although the schools are sometimes terrible, even badly educated women are likely to be better and safer mothers than mothers who have no education at all. There is a large amount of research from India and other countries showing that the children of more educated mothers do better in both survival and subsequent outcomes; beyond that, educated women have fewer children and can devote more time and resources to each child. Lower fertility is good for mothers too, reducing the health risks of pregnancy and childbirth, and allowing women greater opportunities in their own lives.

Improvements in education may be the single most important cause of better health in

lower-income countries today.

Economic growth puts more money into the hands of families, who are better able to feed their children, as well as into the hands of local and national governments, who are better able to make improvements in water supply, sanitation, and pest eradication. In most districts of India in 2001, more than 60 percent of households had access to piped water, while two decades before very few districts met this target; piped water is not always safe water, but it is much safer than water from most traditional sources.

Writing in 1975, the demographer Samuel Preston—the world’s most acute observer of mortality—estimated that less than a quarter of the increase in life expectancy between the 1930s and the 1960s came from increases in domestic living standards, with the vast majority coming from new ways of doing things, vector control, new drugs, and immunizations.<sup>3</sup> Preston’s calculations were for the limited group of countries for which he had data, several of which were not poor in 1945. His conclusion came from looking at graphs like Figure 3 in Chapter 1. He calculated how much life expectancy would have increased if the curve relating life expectancy to income had remained fixed and countries moved along it with economic growth (the contribution of income to better health), and how much of the gain came from the upward movement of the curve itself (the contribution of new methods that permit better health without any increase in living standards).

Later authors have split the credit between innovation and income differently, and there is no reason to suppose that the balance will be the same at all times, as Preston himself emphasized. The important new ways of saving lives—antibiotics, vector control, immunization—do not arrive evenly or predictably, and when one runs out of steam, there is no guarantee that there will be another waiting in the wings. Yet the big issues are always there: income on the one hand, treatment and innovation on the other hand, or the market versus public health, with education improving the effectiveness of both. If the diseases of poor countries are indeed “diseases of

poverty” in the sense that they will vanish if poverty is reduced, then direct health interventions may be less important than economic growth. Economic growth would be “twice blessed”; it would increase material living standards directly *and* improve health as a bonus. If Preston’s findings are still true today—a question I shall address later in this chapter—the magic of income will not be enough, and health must be addressed directly by health interventions. Note the similarity between Preston’s findings and the conclusion of Chapter 2 that the mortality decline in Europe and North America from 1850 to 1950 was predominantly due to the conquest of disease by new ways of addressing health, with economic growth playing an important, but subsidiary, role.

Whatever takes the credit, there is no doubt about the extent of mortality reduction. The UN reports that, in the fifteen-year period from 1950–55 to 1965–70, the “less-developed regions” of the world saw an increase in life expectancy of more than ten years, from 42 to 53 years. By 2005–10, this had increased by another thirteen years, to 66 years. Although improvements continued in the “more-developed regions,” they were much slower; see Figure 1, which shows the progress for selected regions of the world. The top line is for Northern Europe, defined as the Channel Islands, Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Norway, Sweden, and the United Kingdom. In these countries together, life expectancy started at 69 and gained ten years by the beginning of the twenty-first century; I shall look at how this happened in the next chapter. The other regions, East Asia (including Japan), Latin America and the Caribbean, South East Asia, South Asia, and sub-Saharan Africa, have all gained more than 10 years, so that the gaps between them and Northern Europe have decreased. Even for sub-Saharan Africa, which has gained the least, the gap between it and Northern Europe has narrowed, from 31.9 years in the early 1950s to 26.5 years in 2005–10.

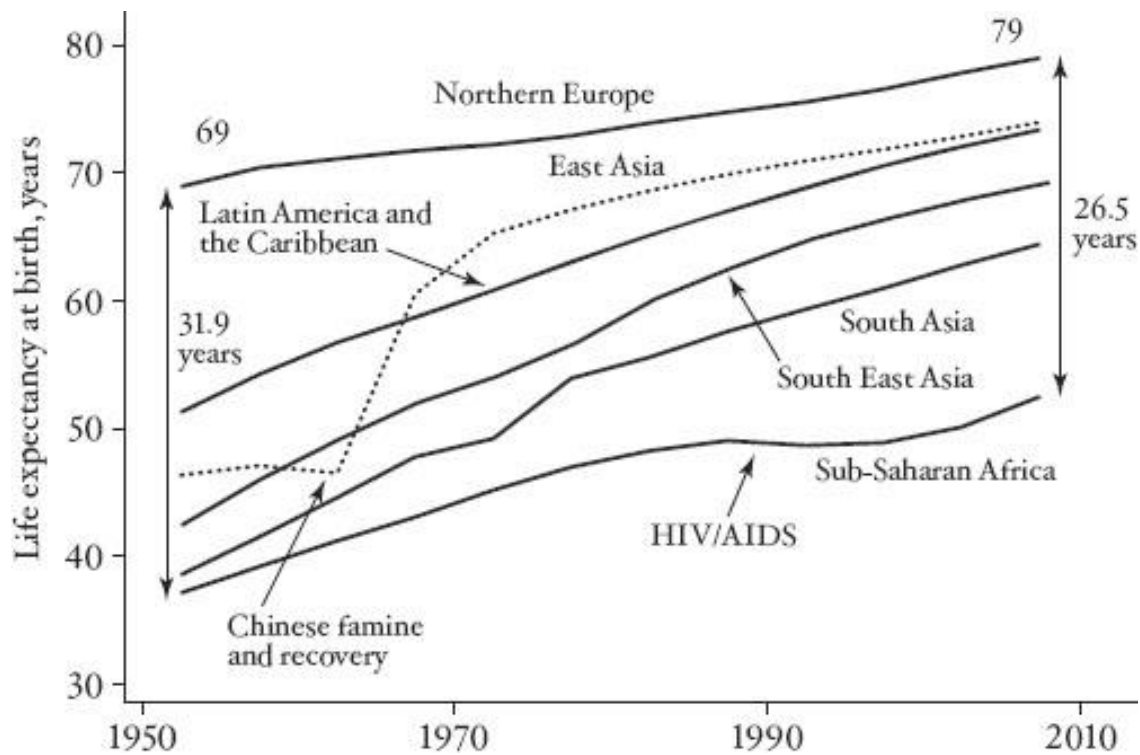


FIGURE 1 Life expectancy in regions of the world since 1950.

Africa and to a lesser extent South Asia (which extends as far north as Afghanistan) are the regions where the most remains to be done. Even before the HIV/AIDS epidemic, life expectancy in sub-Saharan Africa was growing more slowly than elsewhere, and HIV/AIDS caused a further stalling that is clearly visible in the figure. With the advent in recent years of antiretroviral therapy, and with behavioral change, the UN estimates that African life expectancy has begun to rise once again. Yet in the most affected countries most or all of the postwar progress was lost; life expectancy in Botswana—one of the best-governed and economically successful countries in Africa—rose from 48 years to 64 years and then fell back to 49 years in 2000–05, while Zimbabwe’s life expectancy—in one of the worst-governed and economically unsuccessful countries in Africa—was lower in 2005–10 than in 1950–55. Great epidemics that kill millions of people—according to WHO, HIV/AIDS had killed thirty-four million by the end of 2011—clearly

did not end after the influenza epidemic of 1918–19, nor should we be complacent about the absence of new epidemics in the future.

Although no one knows exactly how the AIDS epidemic began, the same cannot be said of the Chinese famine of 1958–61, whose origins I discussed in Chapter 1 and whose effects are clearly visible in Figure 1. As we shall see shortly, one-party rule in China can be capable of promoting public health by adopting measures that would sometimes face decisive opposition in democracies. However, when policies are disastrously wrong, there is likewise nothing to stop their implementation, even when the result is catastrophe. A contrast is often drawn between China, with its lack of democracy but effective policy implementation, and India, which is a democracy with a free press but often ineffective policies. Yet India has had no famine since its independence, although there were many under the British Raj.

In spite of the great setbacks from HIV/AIDS and the Chinese famine, Figure 1 shows that life chances are *better* than half a century ago in most of the world. But how good (or bad) is today's situation, and what remains to be done? A useful way to understand today's mortality is to look at deaths around the world—what people are dying from in countries at different levels of economic development—and try to understand which of these deaths might be avoided given what we know. If people are dying of the exotic and incurable “tropical” diseases that often appear in scare stories in the media, we need new cures and new medicines. If, in contrast, people are dying of the same old diseases that have long vanished from rich countries, we need to ask why people are still dying of things we know how to prevent. As we shall see, while there is certainly a need for new and better treatments, the major problem lies in the fact that too many of the world's children continue to die from what should be readily preventable diseases.

Table 1 gives the facts about global mortality in 2008 from WHO. These numbers involve a lot of estimation and should not be treated as accurate in detail, but the broad picture that they convey is reliable enough. The second column shows deaths for the world as a whole, the third for



low-income countries, and the fourth for high-income countries. The division of the world by income comes from the World Bank, which divides the world into four categories: low income, lower middle income, upper middle income, and high income. Here I have shown only the top and bottom groups so as to focus on the inequalities in mortality between the richest and poorest. To give some idea of the countries involved, of the thirty-five low-income countries, twenty-seven are in Africa; the other eight are Afghanistan, Bangladesh, Cambodia, Haiti, Myanmar (Burma), Nepal, North Korea, and Tajikistan. India is no longer classed as a low-income country. There are seventy high-income countries, including most of the countries of Europe, North America, and Australasia; Japan; and a number of small oil-producing countries and a handful of island states.

TABLE 1

Global mortality in 2008, and in the poorest and richest countries

	World	Low-income	High-income
<i>Percentages of deaths (percentages of population)</i>			
Ages 0–4	14.6 (9)	35.0 (15)	0.9 (6)
Ages 60 and above	55.5 (11)	27.0 (6)	83.8 (21)
Cancer	13.3	5.1	26.5
Cardiovascular disease	30.5	15.8	36.5
<i>Millions of deaths</i>			
Respiratory infections	3.53	1.07	0.35
Perinatal deaths	1.78	0.73	0.02
Diarrheal disease	2.60	0.80	0.04
HIV/AIDS	2.46	0.76	0.02
Tuberculosis	1.34	0.40	0.01
Malaria	0.82	0.48	0.00
Childhood diseases	0.45	0.12	0.00
Nutritional deficiencies	0.42	0.17	0.02
Maternal mortality	0.36	0.16	0.00
From all causes	56.89	9.07	9.29
Total population	6,737	826	1,077

SOURCE: World Health Organization, Global Health Observatory Data Repository, downloaded February 3, 2013.

NOTES: Cardiovascular disease includes stroke. Respiratory infections are mostly lower respiratory infections (*lower* refers to infections below the vocal chords, including pneumonia, bronchitis, and influenza, which can also affect the upper respiratory tract). Perinatal deaths are deaths of children at birth or immediately thereafter and include deaths associated with babies being premature and of low birth weight, babies who die during birth, and babies who die from infections immediately after birth. Childhood diseases are whooping cough, diphtheria, polio,

measles, and tetanus. About two-thirds of deaths from nutritional deficiencies are due to deficiency of protein or energy, and one-third are due to anemia.

The top part of the table shows how deaths divide up between children and the elderly, as well as the fractions that come from two of the leading noninfectious killers, cancer and cardiovascular disease. Deaths from cardiovascular disease include deaths attributable to diseases of the heart and of the veins, and so include strokes as well as heart attacks. The second column does the division for the world as a whole, the third and fourth for the low- and high-income countries. The bottom of the table shows raw counts in millions of deaths, focusing on the major killers in the low-income countries.

The top of the table shows in parentheses the percentages of the populations in each age group; the bottom of the table shows the population totals for each region. Note that most of the population of the world lives in the middle-income countries that are not shown here. The other key fact, in the top of the table, is that the low-income countries are much *younger* than the high-income countries. People have more children in poorer countries, and when populations are growing, each generation is larger than the previous one and the population is young. In some of the rich countries, baby boomers from the postwar years are now aging, which adds to the size of the 60-plus group. There are more than twice as many people aged 0–4 as people 60 and above in the low-income countries; in the high-income countries, there are more than three times as many elderly as children. Even if the risks were the same in poor and rich countries, there would be more deaths of children in the former, and more deaths of the elderly in the latter.

Infants and children account for 15 percent of all of the deaths in the world, while people aged 60 and over account for more than half. Yet that is not what happens in either poor countries or rich countries. In the poor countries, more than a third of deaths are of children under 5, and less than a third are of the elderly. In the rich countries, where the deaths of children are rare, more than 80 percent of deaths are of people 60 or older, and the vast majority of newborn children live to be

old. In part, these differences are explained by the much larger fractions of old people in the rich countries, but not entirely—child deaths in relation to child populations are much higher in the low-income countries. The contrast between rich and poor comes from the epidemiological transition, according to which death itself “ages” as countries develop. The switch from death in childhood to death in old age also comes with a switch in the causes of death, from infectious disease to chronic disease. The fraction of people dying of cancer, stroke, and heart disease triples from low-income to high-income countries. In general, old people die of chronic disease, children of infectious disease.

The major killers in poor countries are largely the same diseases that used to kill children in the now-rich countries—lower respiratory infections, diarrhea, tuberculosis, and what WHO calls “childhood diseases”: whooping cough, diphtheria, polio, measles, and tetanus; between them, these four categories still cause nearly eight million deaths a year. Other important causes of death are malaria and HIV/AIDS (for which treatment is still far from perfect), deaths at or near birth (perinatal deaths), deaths of mothers associated with childbirth, and deaths from nutritional inadequacies, of which the two most important are deaths from protein or energy insufficiency (not having enough to eat) and deaths from anemia (which comes from a diet that does not supply enough iron, often associated with vegetarianism). Apart from pneumonia, which causes 350 thousand deaths a year among the elderly in rich countries, essentially *no one* dies of any of these causes in rich countries, where better public health measures have greatly reduced the risk of children dying from diarrhea, pneumonia, and tuberculosis. Malaria is not a risk in rich countries, though it was in some countries until shortly after World War II; in poor countries, it mainly causes death among children. Antiretroviral drugs and changes in sexual behavior have greatly reduced deaths from HIV/AIDS. Near-universal immunization of children has largely eliminated the “childhood disease” category, and ante- and postnatal care have reduced perinatal and maternal mortality to very low levels. Few people in rich countries die from lack of food, and while anemia

is not unknown, there are no large populations in the rich world that lack vital micronutrients such as iron.

So we have a puzzle. Why should children die in poor countries when they would not die if they had been born in rich countries? What is it that prevents the knowledge that is freely available and effective in the rich world from saving the lives of millions of people who die in the poor world? The most obvious candidate is poverty. Indeed the very classification I have adopted, between low- and high-income countries, suggests that income is what matters. Just as in the historical context, we think of diarrhea, respiratory disease, tuberculosis, and undernutrition as “diseases of poverty,” as we think of cancer, heart disease, and stroke as “diseases of affluence.” As was the case in the eighteenth and nineteenth centuries, income certainly must play a role; people who have money typically can get as much food as they need, and economic growth helps provide the funds that are needed for vector control, for sanitation and water treatment, and for clinics and hospitals. Even so, the poverty and income story is at best incomplete, and focusing too much on income may mislead us about both *what* needs to be done and *who* should do it.

As always, much can be learned from looking at what happened in China and India. The World Bank no longer counts them as low-income countries, but as lower-middle- (India) and upper-middle- (China) income countries. Both have grown rapidly in recent years, yet they were among the poorest countries in the world in the 1950s. **More than a third of the world’s population lives in one or the other, so that understanding what happened there is important by any measure.** Figure 2 looks at economic growth and infant mortality in the two countries over the past fifty-five years. National income, or more precisely GDP per capita, is plotted on the right-hand vertical axis; once again I have used a log scale, on which a constant rate of growth would show up as a straight line. In fact, for both countries, growth has been *accelerating* over time, particularly—and spectacularly—for China. For India too, after forty years of anemic economic growth, there was acceleration after 1990, particularly at the very end of the period. Both countries instituted

economic reforms that are credited with raising growth rates, China after 1970, when farm prices were raised and farmers were encouraged to grow and sell more, and India after 1990, when many of the old rules and regulations of the “license Raj” were scrapped.

Infant mortality rates have fallen as China and India have become richer. The patterns are very similar for child mortality (the 0–4 group), so I do not show them here. The decline in China was halted by the famine, during which as many as a third of the birth cohort died (the figure shows five-year averages, so the effect is much smaller), but the famine aside, the general pattern is of rapid decline until about 1970, followed by much slower decline after 1970. This is precisely the opposite of what we would expect if the fall in infant deaths had been driven by economic growth, which would be the case if the death of babies were a direct consequence of poverty. What happened in China is no mystery. When the authorities decided to focus on growth, resources were switched to making money and away from everything else, including public health and health care. Even the people who were responsible for keeping mosquitoes under control were turned into farmers to join the dash for growth. In the early years, the Communist Party paid a great deal of attention to public health—*Away with All Pests* is the memorable title of an account of a British doctor working in China in the 1950s and 1960s<sup>4</sup>—but that focus was lost after the reforms. None of this means that the reforms were bad; the economic growth after the reforms raised millions of people out of poverty and gave them a better life. What it does show is that the growth does not bring any *automatic* improvement in the health component of wellbeing. In China, it was policy that mattered: in effect, the authorities decided to trade off one aspect of wellbeing for another.

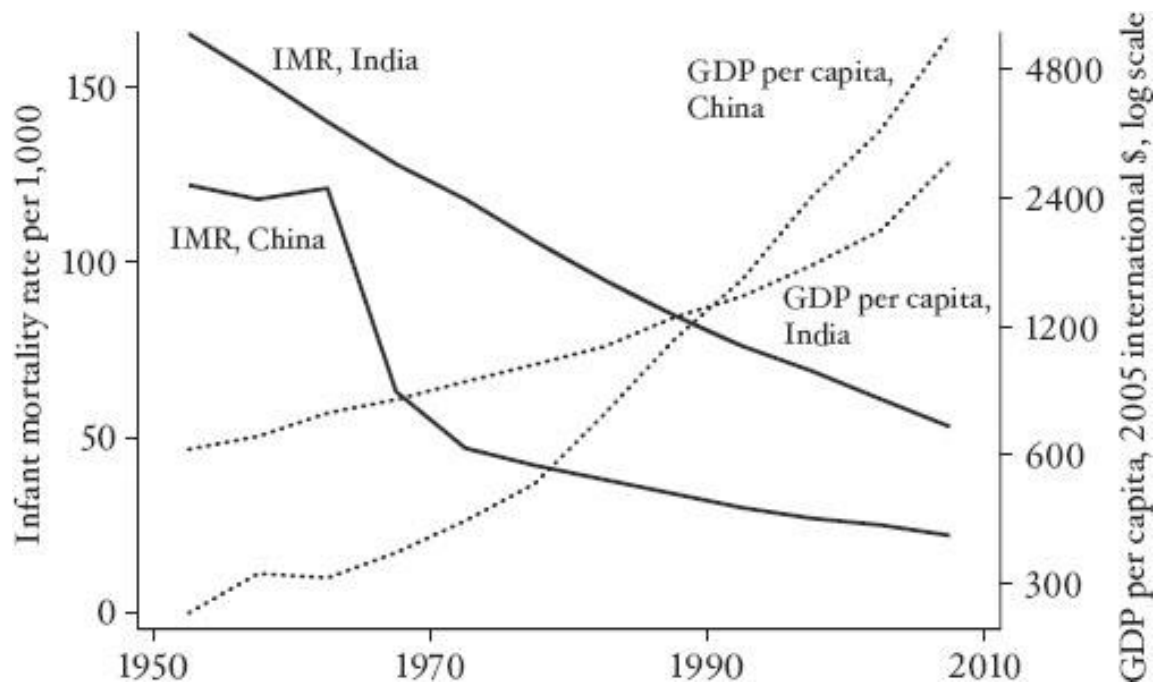


FIGURE 2 Infant mortality and economic growth in China and India.

In India, as always, events were slower and less spectacular. Growth was slower than in China, and the uptick after the reforms less pronounced; India's per capita income used to be higher than China's, but by the early 2000s was less than half of China's. (As we shall see in Part II, these comparisons are subject to *lots* of uncertainty.) Yet India's decline in infant mortality has been remarkably steady—not at all responsive to changes in the rate of growth—and the absolute decline, from 165 out of every 1,000 babies dying in the early 1950s to 53 in 2005–10, is actually *larger* in absolute numbers than the decline in China, from 122 to 22. While it is still more dangerous to be born in India than in China, India's health performance is not obviously inferior to China's, in spite of the very large differences in economic growth. India's success was also achieved without the coercion and loss of freedom associated with the Chinese one-child policy; indeed, as noted by the economists Jean Drèze and Amartya Sen, regions in South India are now doing substantially better than China.<sup>5</sup>

China and India are “only” two countries, and there is no reason why what is true there will also be true elsewhere, so that economic growth may still be the key to health improvements in Africa, or in countries that are much poorer than China and India are today. Yet there is very little evidence that countries that grow more rapidly have had faster declines in infant or child mortality. Figure 3 shows how little relationship there is between how quickly infant mortality has declined and how fast the economy has grown. In order to give the growth story a fair tryout, I look here only at longer-term changes. Rapid growth over a year or two might not do much to bring about the improvements upon which child health depends; for example, a boom in the price of a commodity export might bring in a lot of money for a few people or for the government, but it would have little effect on general prosperity. However, if growth persists for a few decades, its effects should surely show up—if they are really there. The availability of data limits what can be done, but the figure shows growth and mortality decline over spans that are always at least fifteen years long—on average forty-two years long—beginning in some cases as early as 1950 and ending after 2005. The vertical axis shows the annual *decline* in the infant mortality rate, so that bigger is better. Since the infant mortality rate is measured in deaths per thousand, a number like 2 (for India, for example) means that over the years for which I have data (fifty-five years), India’s infant mortality rate has fallen by 2 times 55, or 110 deaths per 1,000 births. I have included the rich countries in the picture, but, since they already had low rates of infant mortality, they had small declines over the period, and all cluster at the bottom near the center, so that excluding them would not have made much of a difference to the pattern.



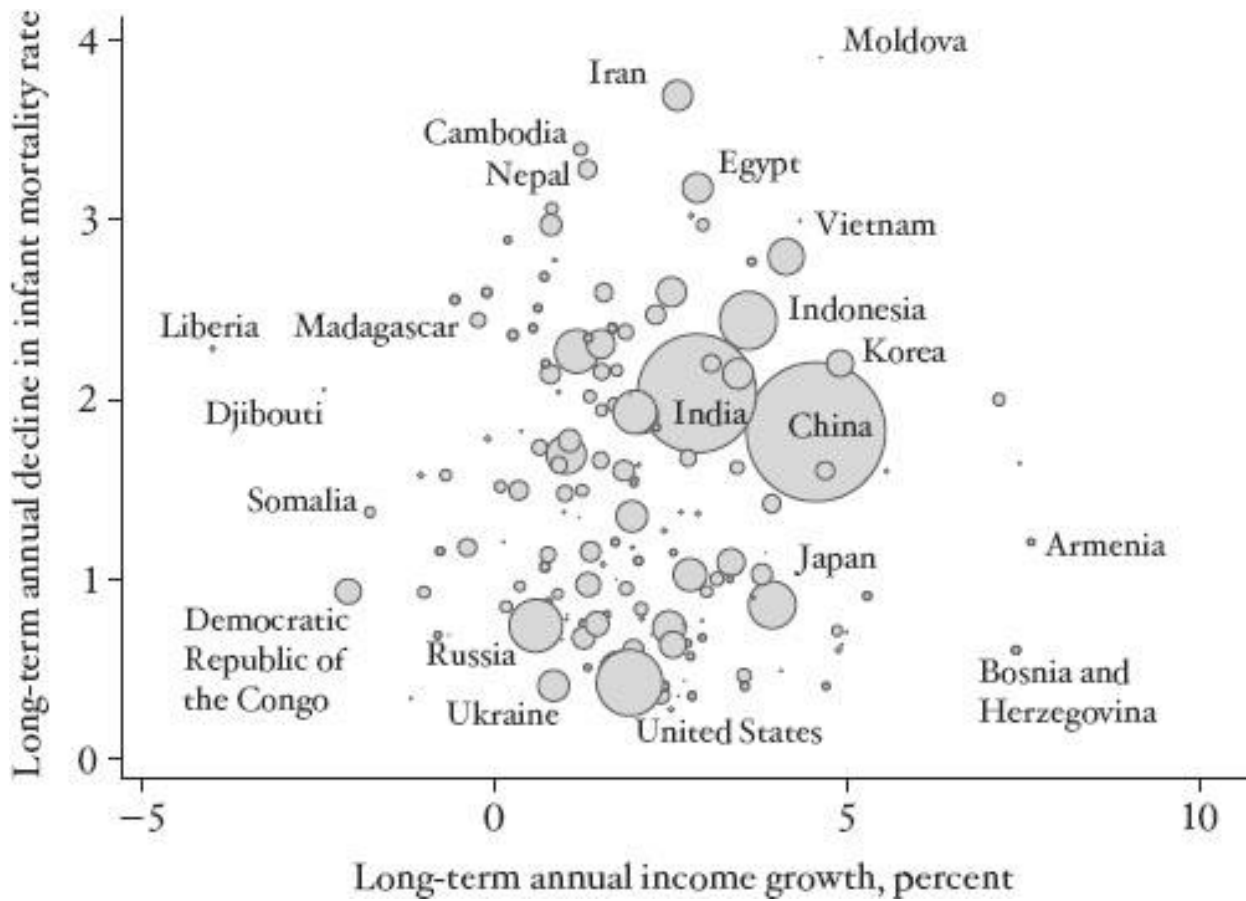


FIGURE 3 Infant mortality and economic growth around the world since 1950.

The figure gives the impression of a positive relationship, but that is because I have followed my usual practice of plotting circles whose area is proportional to population. In this case, there are three big countries, China, India, and Indonesia, that have grown relatively quickly and that have had faster than average rates of mortality decline. However, to check the idea that it is growth that reduces mortality, we should not take population size into account. The question that we are asking is, “Do faster-growing countries have faster rates of decline of infant mortality?” In this respect each country is a separate experiment, and there is no reason to treat different experiments differently. When we look at the picture in that way, and give each country the same weight, there is no relationship at all. At least in the historical record, faster-growing countries did

not improve their infant mortality rates at faster rates. The picture shows many examples. Haiti, whose economy actually shrank from 1960 to 2009, had a very respectable rate of infant mortality decline, faster than the rates in China or India. For the sixteen economies that got smaller, the average annual rate of mortality decline was 1.5 per year, slightly better than the rate for all 177 countries in the picture. It is certainly possible for infant mortality to fall even when there is no economic growth at all.

That there should be *no* relationship at all between growth and saving lives is surprising. We know from the historical evidence that other things—like disease control—are as or more important but, even so, it is hard to believe that money does not help at all. And indeed, there is reason to think that Figure 3 may be misleading, because it ignores feedback from the decline in income mortality to the rate of economic growth. When children who would otherwise have died are saved, the population grows, and this may cause income per head to fall, or at least to grow less rapidly than it would have without the life-saving innovations. Eventually, these newly saved children will grow to be productive adults, and there is no reason to suppose, nor any evidence, that larger populations are inevitably poorer populations. Even so, in the first years of lower child mortality, the newly saved people are children, whose contribution to the economy mostly lies ahead of them, so that for a while lower child mortality might reduce each person's share of national income. This effect will work in a direction opposite to any effect of higher per capita income on child mortality and may even cancel it out, giving the lack of correlation in Figure 3.

Yet the evidence does not support this line of argument. It is true that the countries whose infant mortality rates fell most rapidly are also the countries whose populations rose most rapidly. Rich countries, whose infant mortality rates were already low, saw little decline in infant mortality and experienced low population growth. Poor countries saw much more rapid declines in infant mortality, and their population growth was more rapid. But *within* the poor countries, or within Africa, Asia, and Latin America, there is no relation at all between the decline in infant mortality

and the rate of population growth, either because other factors were important or because over forty years fertility rates had time to adjust. As we can see in Figure 3, there is no relation between growth and mortality decline, even in the poor countries, and this absence cannot be explained by any obscuring effect of mortality decline on population growth.

If poverty is not the reason why so many children die in poor countries, and if economic growth does not automatically eliminate those deaths, why do they continue, even when most of them are preventable given current medical and scientific knowledge?

It is helpful to turn again to the causes of death listed in Table 1, and to think about how each might be dealt with, because different causes of death call for different solutions. For tuberculosis, malaria, diarrhea, and lower respiratory infections, the environment would need to be different. There would need to be better pest control, better water, and better sanitation, all of which require collective action, organized by central or local government. What might be called the physician-patient health-care system cannot do much about these problems. They are problems of public health, not private health care, even though health care can sometimes alleviate the consequences. Better living standards must surely help too, although, as we have seen from the data, this does not seem to be enough by itself.

Deaths from childhood diseases, from perinatal and maternal conditions, and from hunger could all be prevented by better ante- and postnatal care: giving a mother advice before and after the birth of her child, having health facilities available to deal with emergencies and complications, and having clinics and nurses that monitor young children to check that their immunizations are up to date, to ensure that they are growing as they should, and to advise parents. Children are particularly at risk in poor countries after weaning, when they switch from a relatively rich, complete, and safe diet—breast milk—to a diet that may be insufficient, unvaried, and unsafe. Educated mothers can do a lot by themselves, but doctors, nurses, and clinics can help children and their mothers get through this risky time. For these causes of death, therefore, the

physician-patient health-care system is important. Yet many countries spend very little on their health-care systems, and it is close to impossible for a health service to do much good on the \$100 per person that is typical for sub-Saharan Africa, a figure that includes private as well as public expenditures. For example, the World Bank calculates for 2010 that, in 2005 price-adjusted dollars, Zambia spends \$90 a head, Senegal \$108, Nigeria \$124, and Mozambique only \$49. In comparison, Britain spends \$3,470 and the United States \$8,362.

Why do the governments of poor countries spend so little when their citizens are in such poor health? Why do citizens in need not turn to private health care when the government is missing in action? And what about the foreign assistance that has been so important in improving some dimensions of international health?

Unfortunately, governments do not always act to improve the health or wellbeing of their citizens. Even in democracies, politicians and governments have a good deal of leeway to pursue their own ends, and there are often sharp political disagreements about what needs to be done to improve health, even when there is agreement on the need to do so. But many countries around the world are not democratic, and more broadly, many governments are not bound to act in the interest of their populations, whether by circumstance—for example the need to persuade citizens to let them raise revenue—or by effective constitutional rules or constraints. This is clearly true in dictatorial or military regimes, or in countries where repressive governments use the armed forces or secret police to control the population. In other cases, governments are well funded by the sale of natural resources—minerals and oil are notorious in this regard—so they have no need to collect revenue from the population. Since he who pays the piper usually calls the tune, governments can use such revenues to maintain a system of cronies and patronage that has little interest in popular health or wellbeing. In extreme cases, particularly in Africa, foreign aid has been significant enough to act in this way too, providing governments with resources but undermining their incentives to spend them in the right way. Even with the best will in the world, it has been difficult

for donors to stop this from happening, a topic on which I will have more to say in the last chapter.

Governments do not bear all of the blame. In some places, people do not seem to understand that their health could be better—another place where education might help—or that the government might have the tools to help it improve. In Africa, the Gallup World Poll regularly asks people on what issues their governments should focus. Health concerns are not high on the list, and they appear long after anything to do with poverty reduction or providing jobs; governments that emphasize job creation, even useless jobs in a bloated civil service, may actually be doing what their constituents prefer. In our work in the Udaipur district of Rajasthan, we found that people knew they were very poor, but even though they suffered from a wide range of preventable sicknesses—what the economist and activist Jean Drèze calls “an ocean of sickness”—they thought their health was just fine. It is easy to tell that there are many people richer than you, but much harder to see that they have better health, or that their children are less likely to die; such things are not publicly visible in the way of wealth, housing, or consumer goods.

In Africa, where men and microbes coevolved, the fact that they are both still around is another way of saying that sickness has been man’s companion throughout African history. More broadly, and as we have seen in Chapter 2, the escape from sickness and early death happened only recently *anywhere* in the world, and many people may still not understand that such an escape is possible, or that good health care might be a route to freedom. The Gallup World Poll regularly finds that the fraction of people who are satisfied with their health is much the same in poor countries as in rich countries, in spite of huge differences in objective health conditions. There are many countries in the world where people have great confidence in their health-care and medical system, in spite of poor outcomes and low spending. Americans, by contrast, have very low confidence in their health-care system, in spite of all the money that they spend; in one study, the United States ranked 88th out of 120 countries, worse than Cuba, India, and Vietnam and only three places ahead of Sierra Leone.<sup>6</sup>

A great scandal of government health care in many countries is that medical workers—nurses and doctors—are frequently absent from work. In Rajasthan, only about half of the small clinics were open at all when we made random checks, and while the larger ones were open, many of the health workers were not there. The World Bank has carried out surveys on absenteeism, and it turns out that in many countries—although certainly not all—absenteeism is a huge problem in both health care and education.<sup>7</sup> In some cases, these workers are not paid very much. It is as if there were an implicit contract between the workers and their employers; the government pretends to pay them, and they pretend to show up for work. But low wages are not always the reason. When people expect little of their health service, it is easy for absenteeism to flourish. In Rajasthan, it was hard to get people even to admit that a particular nurse had not shown up for weeks, and for many, this level of service is what they expect of the public system. But not everywhere. The Indian state of Kerala is famous for its grass-roots political activism, and for the robust protests that follow the failure of a clinic to be open. In Kerala, absenteeism is rare, and people expect their clinics to serve them. If we knew how to move Rajasthani attitudes closer to Keralan attitudes, a large part of the problem would be solved.

Private physicians often do a flourishing trade in poor countries, and their services often help make up for the deficiencies of state-provided (or not provided) health care. But the private sector has problems of its own. In particular, knowing what you need when you are sick is a problem for anyone who is not a trained physician. Buying health care is not like buying food when you are hungry; it is more like taking your car to the repair shop. The people who are better informed are the very people who are providing the care, and they have incentives and interests of their own. In the private sector, providers make more money if they provide more care or more profitable care; they also have incentives to give people what people think they want, whether or not they actually need it. In India, private practitioners routinely give people the antibiotics that they demand, often by injection, leaving them as satisfied consumers and feeling (temporarily)

better. Intravenous drips are another favored item, and they are heavily advertised by health-care providers in India, just as complete body scans or PSA tests for prostate cancer are relentlessly marketed in the United States. Public doctors in public clinics and hospitals in India typically will not give antibiotic shots or intravenous drips on demand—a good thing—but they also do not have time to carry out tests to find out what a patient might actually need—not such a good thing. So the choice between a public and a private doctor is a matter of chance, though you are likely to *feel* better treated—at least in the short run—when you visit a private doctor.

All of this would be less of a problem if public-sector health care were trustworthy, or if private-sector health care were properly regulated. The problem in many countries is that neither condition applies. Indeed, even in the world's richest countries, the provision and regulation of health care is one of the most difficult, contentious, and politically charged functions of government. Most of the private “physicians” visited by the people we talked to in Rajasthan were not qualified doctors but quacks of one kind or another—what in Rajasthan are slightly referred to as “Bengali doctors.” Several “doctors” had not even graduated from high school. The lack of government capacity lies behind the failures of *both* private and public health care. The government is capable neither of delivering health care itself nor of providing the regulation, licensing, and policing that is required for an effective and safe private health-care system.

Money is a problem too, and it is probably true that India (and many countries in Africa) could not run a better health-care system without spending a great deal more than is currently spent. However, it is also easy to imagine a much more expensive system that is no better, in which absentee doctors get paid even more for not showing up for work. Without an educated population and without government capacity—an effective administrative structure, cadres of educated bureaucrats, a statistical system, and a well-defined and enforced legal framework—it is difficult or impossible for countries to provide a proper health-care system.