



# Health Policy Reports

The Center for Health Services Research  
The University of Tennessee

## Health Policy Reports

summarize important issues in health policy. They are written by Associates of

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## THE RELATIONSHIP BETWEEN HEALTH AND DEVELOPMENT: HEALTH AS AN ECONOMIC ENGINE

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Being healthy and having economic security are two basic goals of individuals and societies. Nobel Laureate Amartya Sen (1) has asserted that health is among the basic capabilities that gives value to human life. In the debate on the need for universal health insurance coverage in the United States, health is argued to be a constitutional right because citizens cannot achieve other guaranteed rights of life, liberty and the pursuit of happiness without health (2).

The health and economic goals are interconnected in several, complex ways. First, income levels impact health. That is, poverty is associated with poor health. Mortality rates rise progressively as income falls from \$70,000 per year to under \$15,000 per year (4). The risk of dying during a 17-year follow-up period was three times as great for those with incomes under \$15,000 than for those with incomes over \$70,000. The poor carry a greater burden of disease than do more affluent members of society for many reasons, including less access to safe housing, adequate nutrition and sanitation, as well as problems obtaining appropriate health care.

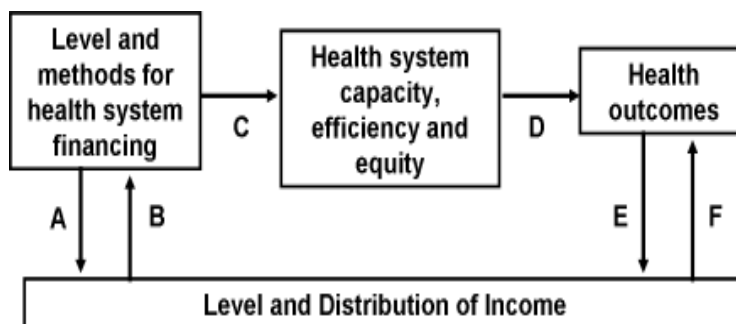
A second relation between economics and health is between the economic plane of a society and the resources that are available for health care. More affluent societies, as measured by gross domestic product (GDP) spend more on health care than do poorer societies. Based on data from the OECD countries, health economist Uwe Reinhardt and his associates (5) have estimated that an average increase in GDP per capita of \$10,000 is associated with a rise in health spending of \$996.

A third and less commonly appreciated relationship is the interlocking relationship between the health of a population and its economic productivity. The role of health as an economic engine has only recently received substantial attention. Yale University economist William Nordhaus (7) summarized the lack of attention to this path in his study of economic value of health: “It is little understood outside the priesthood of national accountants that there is no serious attempt to measure the ‘real output’ of the health-care industry.... and there are *no* attempts to account for improvements in the length of life into current measures of living standards.” He continues: “What is radical is ...the notion advanced here that we should make a serious attempt to measure the *output* of the health care sector and to *value* this output correctly.”

Attention to the role of health as a macroeconomic commodity has recently grown. The World Health Organization (WHO) recently published a report “Macroeconomics and Health: Investing in Health for Economic Development” (6) that presents a compelling case for investing in the health care infrastructure of developing countries as a prerequisite to stimulating economic development. The report concludes that, “as with the economic well-being of individual households, good population health is a critical input into poverty reduction, economic growth, and long-term economic development at the scale of whole societies.”

It is this third relationship, the role of health as an “economic engine” that we will examine in this Health Policy Report. We will seek answers to three critical questions: What is the evidence for this relationship? What are the mechanisms by which improved health stimulates economic growth? And, how much does poor health cost?

**Figure 1.**



**What Is The Evidence?**

Much of the evidence supporting the role of health as an economic engine comes from analyses of prior economic periods and studies in developing countries. Many of the economic booms of the early twentieth century, such as the rapid growth of the British economy during the industrial revolution and the economic expansions in Asia and Europe during the 1950s and 1960s, were associated with major breakthroughs in public health and disease control and in nutritional intake.

Econometric studies in developing countries provide specific evidence for the role of health in economic development. For example, countries with high infant mortality rates, a widely used measure of global health status, have slower economic development than do nations with lower infant mortality rates (6). For example, among very poor countries with per capita incomes of under \$750 per year, those with infant mortality rates of between 50 and 100 per 1000 live births had annual growth rates in per capita income of 3.7% per year, whereas countries with infant mortality rates over 150 per 1000 live births had annual income increases of only 0.1% per year.

In other studies, a 10% increase in life expectancy at birth is associated with a 0.3 to 0.4% rise in economic growth per year (6). The difference in annual economic growth between a country with a high life expectancy at birth (77 years, for example) and a country with low life expectancy (44 years, for example) may reach 1.6%.

Econometric studies have demonstrated the importance of health in predicting economic growth. Over one-half of the economic shortfalls of Africa as compared to high growth areas of East Asia are due to health and demographic variables rather than by political or policy factors (6).

### **What Are the Mechanisms?**

How does health status of a population influence economic development? The report (6) describes three major pathways by which poor health reduces economic productivity. First, disease reduces personal economic well-being. This is due to a mix of direct loss of income due to disease (including both the cost of medical care and the loss of labor-market income from an illness), the loss of future earnings due to shortened lifespan and the loss of productivity from psychological as well as physical well-being. The last component is particularly important as the prevalence of chronic rather than acute illnesses grows and as contemporary treatment that prolongs the life of patients with chronic illnesses and reduces but does not eliminate the resulting disability. Companies, thus, must contend not just with absenteeism from work because of acute illness but also with reduced functioning when at work, a concept referred to as "presenteeism."

Second, poor health has life cycle consequences. Early childhood or even in utero diseases reduce both cognitive and physical capabilities later in life, both of which reduce economic productivity. These effects are due to direct biological consequences of disease as well as to lower educational attainment. Sick children miss school and commonly drop out. Thus, childhood illness results in the dual burden of limited education and limited native ability.

These effects of poor health on personal economic capacity may be intergenerational, that is, the poor health of one generation may affect the economic productivity of subsequent generations. The illness of a parent may abort the education of a child and may reduce parental guidance and support.

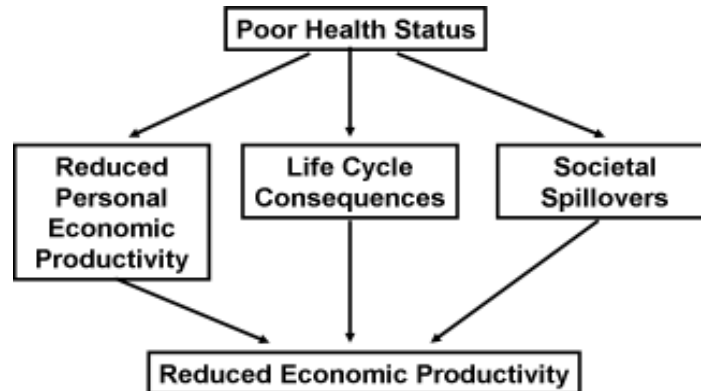
Another remarkable relation is that between child health and fertility rates. The evidence indicates that poor families compensate for children's deaths by having large numbers of children. The fertility rates in countries with high infant mortality rates may be five times or greater than rates in countries with low infant mortality rates. Thus, poor child health leads to large families with low "parental investment" per child.

And third, poor health in a population produces general societal consequences that reduce economic growth beyond the direct effects on individual workers. Poor health in an area reduces external investment and tourism. The workforce is affected as employee turnover and skilled workers leave the area because of fear.

Similarly, illness in a society diverts communal resources to health care and away from other needs. A greater proportion of overall expenditures are directed to health care while overall tax revenues are reduced due to lower personal economic productivity. Social programs become fully occupied caring for the sick rather than attending to other social programs such as education.

Thus, there are a myriad of mechanisms through which poor health in a community can impede economic development. Some are direct, others are indirect. Some are short-term while others may last for generations.

Figure 2.



### How Much Does Poor Health Cost?

Economists have attempted to estimate the financial consequences of health status on the economy (6). It has been estimated that each year of life lost to premature death leads to an economic loss equal to three times the annual earnings. Accordingly, the death of someone at age 20 years results in an economic loss of 100 times the person's annual earnings (5). Some economists place the monetary value of a prevented fatality as high as \$13.5 million (7).

These calculations may be applied to estimate the financial impacts of specific diseases. If we apply these values to estimate the economic impact of AIDS in sub-Saharan Africa, the impact of the AIDS pandemic is equivalent to 35% of GNP in that region of the world.

Nordhaus has applied econometric modeling to estimate the overall economic value of improved health status (7). Using a "simple model", the decline in mortality observed in the United States from 1975 through 1995 had an economic value of \$5,980 per person over this period. Since the average per capita consumption over this period was \$14,700, the economic value of improvements in survival was equal to approximately 40% of total consumption. He concluded that "the major result that comes through using all techniques is that the (economic) value of improvements in life expectancy ... is about as large as the value of all other consumption goods and services put together" so that "the economic value of increases in longevity in the last hundred years is about as large as the value of measured growth in non-health goods and services ... The medical revolution over the last century appears to qualify, at least from an economic point of view, for Samuel Johnson's accolade as 'the greatest benefit to mankind.'"

### What Do These Data Mean?

These findings provide compelling evidence that health is, indeed, a potent economic force or engine. While many of the empirical studies relating improved health to economic growth were based in third world nations, the conclusions are equally valid in this country. Indeed, many of the underserved regions of the United States, such as the Lower Mississippi River Delta and Appalachia, share many health characteristics with the poor, undeveloped nations, including high infant and maternal mortality rates and high prevalences of preventable conditions such as infectious diseases.

If we view health care costs – the inputs into the health care system — as an economic measure, we should also measure the outcomes or products of the system in economic terms. Based on data from Nordhaus' study for the decade from 1980 to 1990, the increase in health expenditures related to life prolongation was approximately \$600 per person and the increase in health-related income was between \$2,300 and \$3,100. The net result is that investment in health is what Nordhaus calls a "good investment."

A second implication relates to the support of health as a critical portion of our economic and business infrastructure. For companies, communities and nations, investments in health can have dramatic consequences on the profitability and economic development. At the level of a single company, investments in the health of the workforce can lead to substantial returns to the bottom line, just as investment in new information systems and advanced production technology can. Companies may engage in activities such as efforts to promote healthful personal behaviors such as stopping smoking and increasing exercise and the use of effective preventive healthcare services such as blood pressure and cholesterol screenings among employees. Because the impacts of health on productivity extend to upcoming generations of workers, extending these efforts to the community at large can yield substantial returns in the future. An unhealthy workforce is a nonproductive workforce.

Likewise, efforts to promote economic development in communities and regions need to assess and improve the health of the community as well as other core systems such as transportation. Economic growth is dependent upon many factors, including effective policies and institutions (such as governance,

Likewise, efforts to promote economic development in communities and regions need to assess and improve the health of the community as well as other core systems such as transportation. Economic growth is dependent upon many factors, including effective policies and institutions (such as governance, economic policy and public systems) as well as human resources and technology. Health has a critical role in economic development by impacting all parts of the equation – directly on human resources and indirectly on public systems and public policies. As Nordhaus has demonstrated, improvements in health have contributed as much to the overall improvement in life style as have all other advances combined.

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