Chapter 17: Health Services and Quality of Life

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Collection structure revised: September 24, 2013
PDF generated: November 5, 2013
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Chapter 1

17.1 Average American's Stock of Health Is Several Multiples of Lifetime Earnings[1]

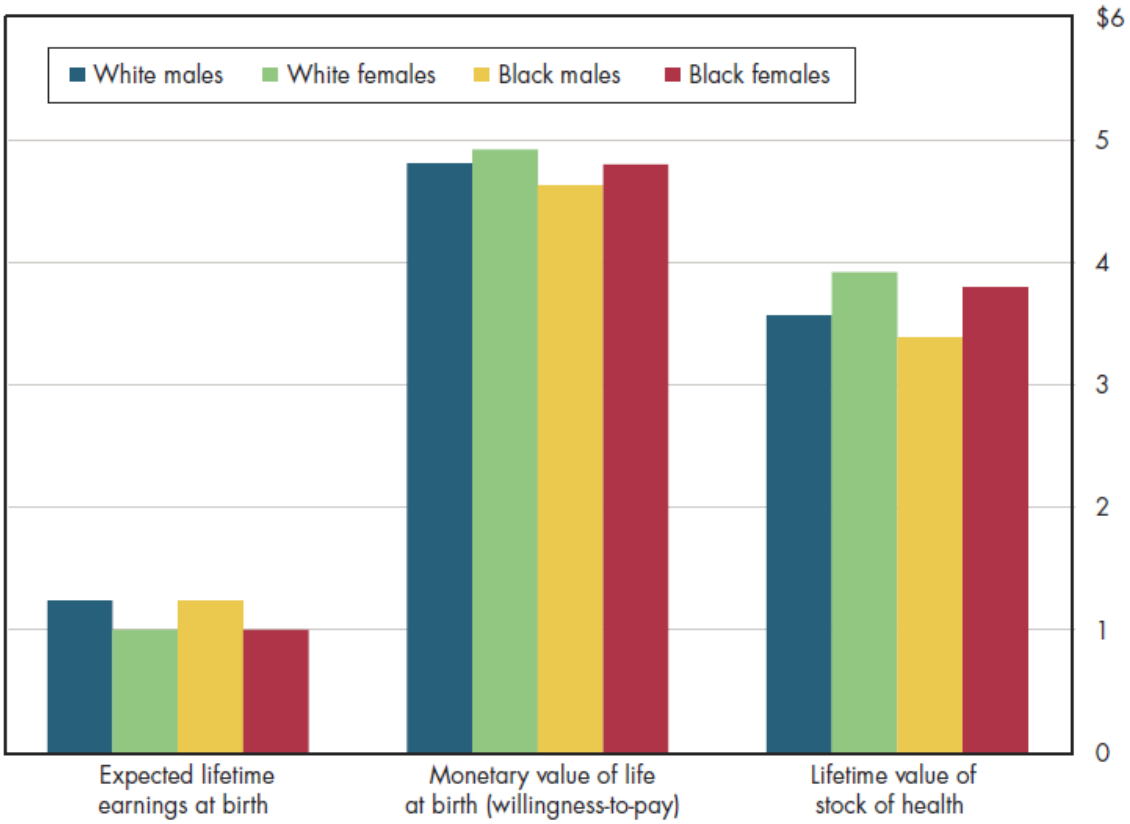
The health capital (value of their health) for average individuals in the United States is several times as large as expected lifetime earnings. This calculation converts future earnings to a present value, using a real discount rate of 3 percent. This is approximately equivalent to the inflation-adjusted rate of return paid on long-term U.S. Treasury bills. Most economists believe that this approximates the *social discount rate*, that is, the degree to which the value of a future dollar declines compared with today's dollar. A 3 percent rate implies that a dollar one year from now is worth only 97 cents in today's dollars. Another way to think about it is that 3 percent represents the amount people would have to be paid today to get back a dollar in one year.

There obviously is a great deal of variation across different individuals in lifetime earnings. Calculating from available evidence about earnings by age in 2005 dollars discounted back to the present, the average U.S. citizen will earn approximately $1 million or more over a lifetime. Figure 17.1 illustrates how this average varies by gender and race. Lifetime earnings represent a conservative estimate of the value of a human life. Economists have used various methods to calculate the willingness-to-pay value of a human life. For example, consider workers in risky jobs who are willing to be paid $10,000 more a year in exchange for a 1 percent increase in their risk of dying on the job in any given year. This implies that collectively, such workers are willing to be paid $1 million in exchange for one of them dying. Their willingness-to-pay value for life is said to be one million dollars. Based on this kind of real-world evidence about willingness to accept higher pay in exchange for loss of a *statistical* life, the present value of a life at birth averages almost five million dollars (there is wide variation in this number across studies). Due to differences in life expectancy, this value varies by race and gender.

[1]This content is available online at <https://hub.mili.csom.umn.edu/content/m10078/1.1/>.

17.1 The average American's stock of health is several multiples of lifetime earnings

Net present value using 3 percent discount rate (millions of 2005 dollars)



Note: Lifetime value of stock of health = willingness-to-pay value of life at birth minus expected lifetime earnings at birth.

Willingness-to-pay encompasses both the expected amount of future earnings (because these future earnings have value to the earner), as well as the intangible value of life. Thus, subtracting expected earnings from the willingness-to-pay value of a life, the result is the intangible value of each U.S. worker's stock of health when born. This is invariably much larger than lifetime earnings.

1.1 Downloads

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1.2 References

A. Author's calculations.

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[3]https://hub.mili.csom.umn.edu/content/m10078/latest/17.1DATA.ppt

B. Department of Commerce. Bureau of the Census.
C. Murphy KM and RH Topel. The Value of Health and Longevity. Journal of Political Economy 2006; 114(5):871-904.

Chapter 2

17.2 How Price of Treatments Changes over Time Depends on How Innovations Are Measured[1]

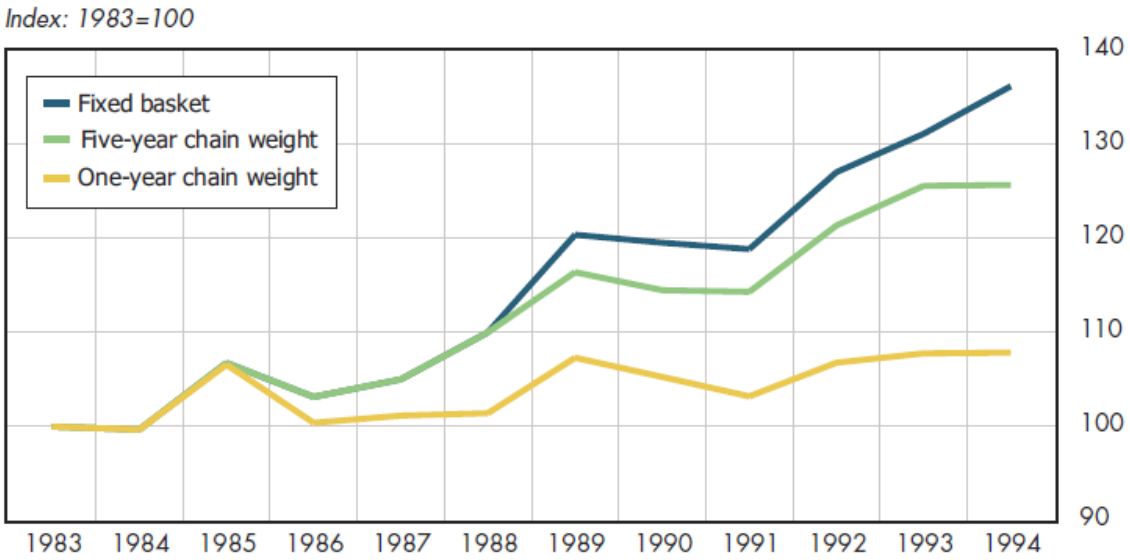
For decades, medical prices have outstripped general inflation. Price trends vary by medical service, with prices for some services rising much faster than for others. When the BLS measures prices for other commodities, it is straightforward to measure how the price of a discrete item, such as an apple, changes over time.

This task is much more difficult in health care. The price of a hospital room, for example, does not include the much larger costs of actually occupying a bed. Moreover, even if the price could be precisely calculated, a hospital stay today is a dramatically different product than it was 50 or even 30 years ago. Unless the BLS can account for changes in technology and quality of care, the measured price of hospital care will give an exaggerated picture of how "pure" prices are rising over time.

Even if that task could be performed perfectly, such prices do not represent what is important: How much is the cost of treatment increasing? Even if we knew all the services needed for treatment, the answer depends on whether we assume that bundle of services is fixed over time or can be adjusted to account for actual changes in medical practice (figure 17.2a). Prescription drugs are another good example. Increases in the price of a particular drug are reasonably straightforward to measure. However, the average cost of the "blue pill" is not a good indicator of how much more patients have to pay for treatment for two major reasons. First, if a drug goes off-patent, generic competitors will appear with lower prices. Even for brand names for which there is not yet a generic substitute, there can be competitor drugs similar enough in function whose prices might be rising much more slowly. This could result in many patients switching to those alternatives if prices of the blue pill got too high.

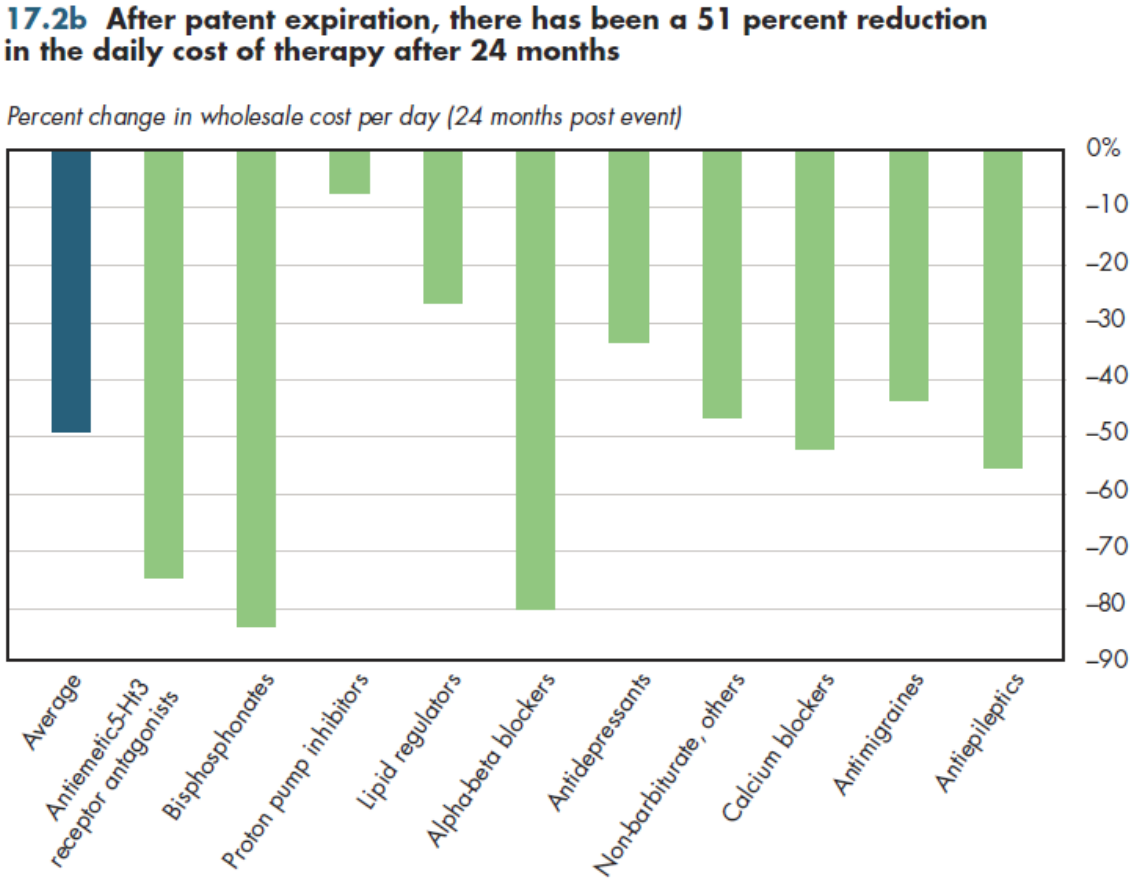
[1]This content is available online at <https://hub.mili.csom.umn.edu/content/m10079/1.1/>.

17.2a The price of heart attack treatment increased from less than 10 percent to more than 35 percent, depending on how prices are measured



Note: The fixed basket price index is calculated assuming the bundle of services needed for treatment is unchanged over time. The chain-weighted price indexes allow the bundle to change at specified intervals based on actual practice patterns.

When the price of treatment is taken into account, for example, the cost per day to treat depression or high cholesterol, rising drug prices (that is, the price of blue pills) can easily co-exist with falling costs for treatment (figure 17.2b). For social welfare, knowing how the price of various medical treatments is changing is a far better indicator than knowing how the price of individual components of a given treatment is changing. In a highly innovative medical system, new competing treatments appear all the time as do changes in the mix of resources required for a given treatment. Systematic price measurement of treatments is in its infancy.



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2.2 References

A. Berndt ER and M Aitken. A Different Perspective: The AARP Sponsored Schon- delmeyer-Purvis Studies. In Scaring Seniors: The AARP Drug-Price Reports. American Enterprise Institute. Washington DC. 2010.

B. Cutler DM, M McClellan, JP Newhouse and D Remler. Pricing Heart Attack Treatments. Medical Care Output and Productivity. National Bureau of Economic Research. http://www.nber.org/chapters/c7634.pdf (accessed August 9, 2010).

[2]https://hub.mili.csom.umn.edu/content/m10079/latest/17.2aIMG.ppt
[3]https://hub.mili.csom.umn.edu/content/m10079/latest/17.2aDATA.ppt
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[5]https://hub.mili.csom.umn.edu/content/m10079/latest/17.2bDATA.ppt

Chapter 3

17.3 Technology Has Been An Important Driver of Health Spending[1]

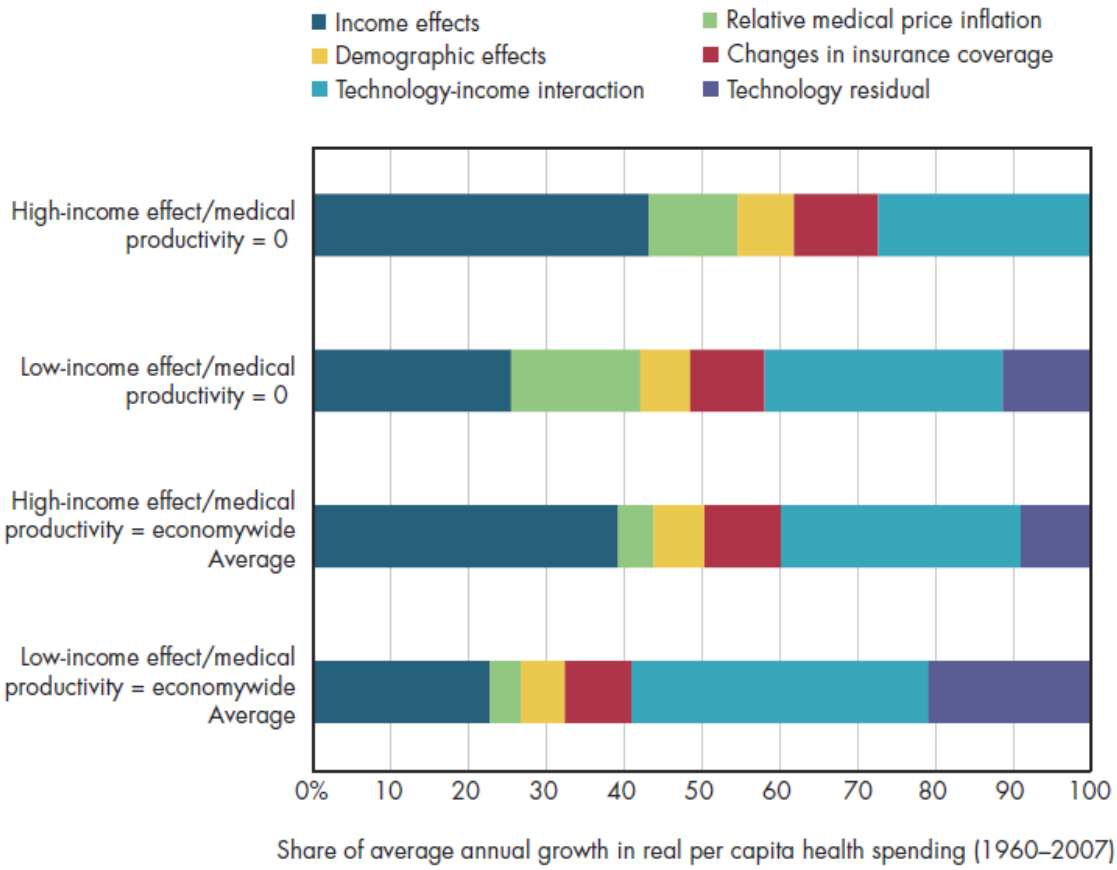
Technology accounts for as much as 25 percent to 60 percent of the rise in real per capita health spending from 1960 to 2007. It is impossible to be more precise about technology's role because it is not feasible to measure price changes accurately enough to distinguish between pure price changes and changes in the quality of the health care good or service being sold. This makes it difficult to determine how much of rising health costs is due to actual changes in output versus higher prices. Economists have resorted to trying to bound this uncertainty using different assumptions. For example, if there are zero changes in productivity, then it is easy to calculate changes in output based on measuring changes in inputs.

Another important factor driving health spending is that as incomes increase, the inclination to use health care appears to increase. This greater demand occurs not only in terms of the use of health services but also in terms of the quality of care. Experts disagree on how much increase in demand for medical services can be expected for every $1,000 increase in per capita income.

Figure 17.3 shows the impact of various assumptions about these issues. Using high-impact assumptions about rising incomes and demand for health care and conservative assumptions about productivity growth, that is, zero, the estimated magnitude of the role of technology in driving health spending is the smallest. Using the opposite assumptions about income and productivity growth (that is, that productivity grows in step with productivity trends in the general economy), the role of technology appears much larger.

[1]This content is available online at <https://hub.mili.csom.umn.edu/content/m10080/1.1/>.

17.3 Technology and other factors might account for 25 to 60 percent of the increase in real per capita health spending from 1960–2007



Under any of these assumptions, rising medical prices account for only approximately 3 percent to 15 percent of rising real per capita health spending. Despite the aging of the U.S. population, demographic factors likewise account for only 3 to 6 percent of rising health costs. In contrast, expanded insurance coverage accounts for a relatively larger share of the change in real per capita health spending than either of these other two factors. Some experts assign a far larger role to health insurance due to ample evidence that it drives decisions to acquire and use new technology.

3.1 Downloads

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3.2 References

A. Smith S, JP Newhouse and MS Freeland. Income, Insurance, And Technology: Why Does Health Spending Outpace Economic Growth? Health Affairs 2009; 28(5):1276-84.

[2]https://hub.mili.csom.umn.edu/content/m10080/latest/17.3IMG.ppt
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Chapter 4

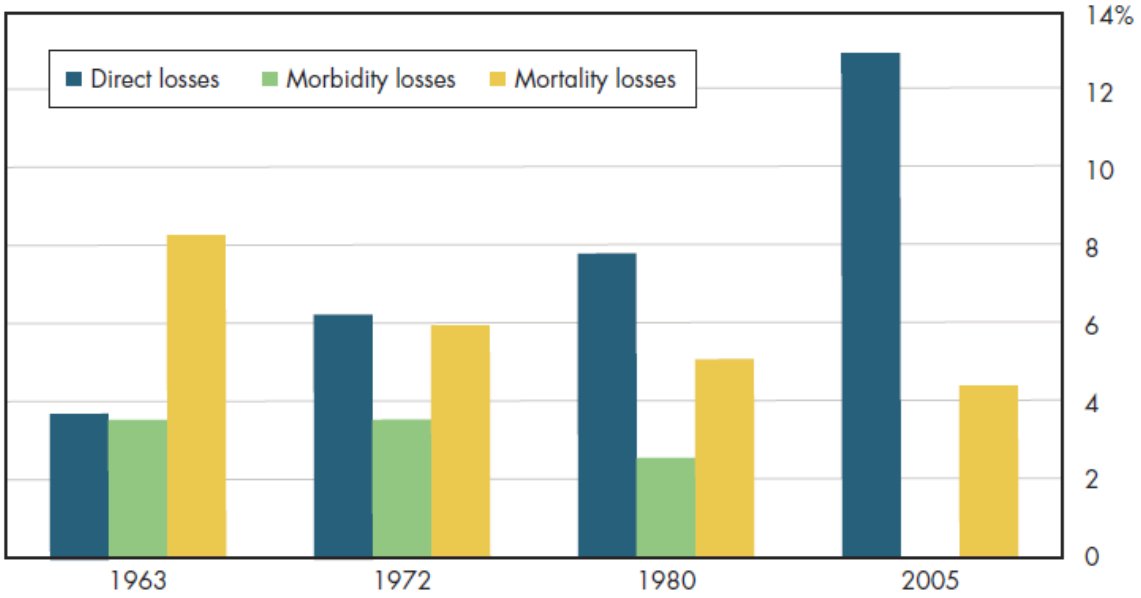
17.4 Whether Social Burden of Illness Has Increased or Decreased Depends on How It was Measured[1]

Despite all the medical progress made during the past 50 years, the economic burden of illness appears to be increasing from a cost-of-illness perspective. The aggregate economic burden of illness consists of three components. The first are direct costs, that is, all of NHE, because in one way or another, these expenditures aim to prevent or ameliorate the effects of poor health. Under a broad definition of the health system, non-medical expenditures such as highway barriers could be included if their principal purposes are to save lives. However, the data shown in figures 17.4a and 17.4b are restricted to NHE.

[1]This content is available online at <https://hub.mili.csom.umn.edu/content/m10081/1.1/>.

17.4a The economic burden of illness has increased since 1963, even though the loss related to premature death and morbidity has declined

Economic burden of illness as a percentage of GDP



Notes: Direct losses = NHE. Morbidity losses = lost earnings due to illness. Mortality losses = lost earnings due to premature death.

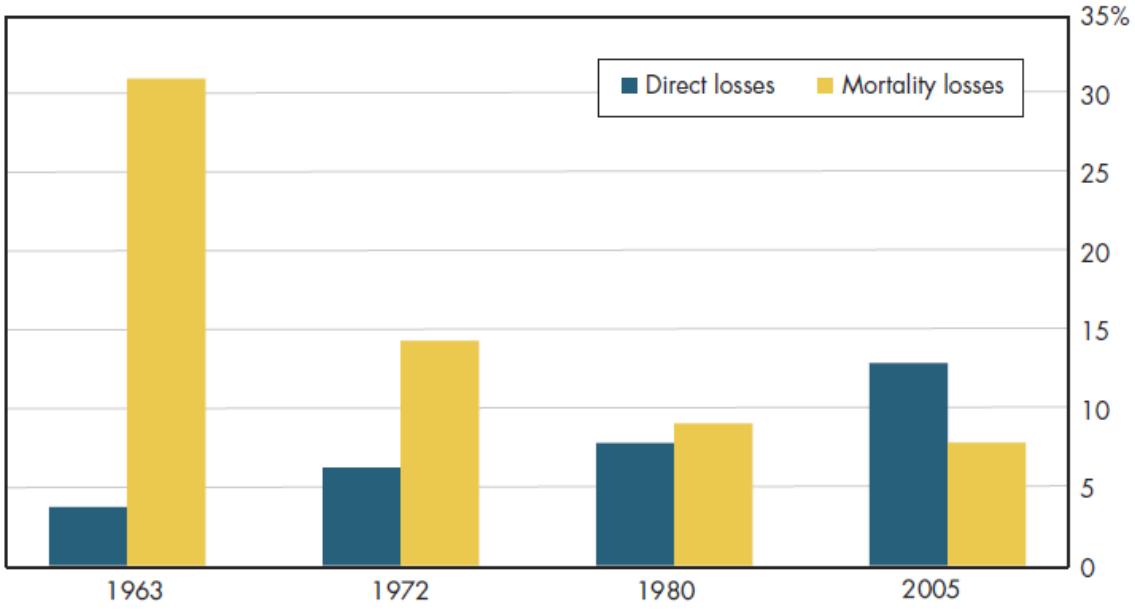
The second component is morbidity losses. In figure 17.4a, these are measured in terms of productivity losses, that is, lost income attributable to workers who are sick. The final component is mortality losses. These also consist of productivity losses except that they are from premature death rather than illness. For simplicity, rather than convert all these dollar amounts to a current-year equivalent, the burdens are expressed as a percentage of GDP. Direct costs—the focus of much of this book—have risen quite rapidly since 1963.

During the same period, mortality losses declined steadily. By 2007, they were just over half of the 1963 level. Morbidity losses did not decline as steeply as mortality losses but did decline between 1963 and 1980. Unfortunately, there are no 2005 data for this measure. However, the rise in direct costs was so rapid between 1980 and 2005 that an unequivocal conclusion is that the aggregate social burden of illness in the United States has increased over the past 50 years. That is, even assuming that morbidity losses had been eradicated by 2005, the sum of direct costs and mortality losses exceeds the total for all three components of the social burden of illness. This increasing economic burden can be attributed solely to increasing health spending in the United States.

However, when the intangible value of human life is taken into account, this conclusion is reversed (figure 17.4b). That is, the value of mortality gains has more than offset the increase in health spending. No good way exists to estimate morbidity losses over time using this approach, but because morbidity was declining as a percent of GDP in terms of lost output, the same would be true were these improvements in health valued in willingness-to-pay terms.

17.4b In willingness-to-pay terms, the social burden of illness has declined since 1963, even though medical spending has increased

Social burden of illness as a percentage of GDP



Notes: Direct losses = NHE. Mortality losses = willingness-to-pay value of premature death.

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4.2 References

A. Author's calculations.
B. Department of Commerce. Bureau of Economic Analysis.
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E. Rice DP, TA Hodgson and A Kopstein. The Economic Costs of Illness: A Replication and Update. Health Care Financing Review 1985; (1):61-80.
F. U.S. Health Policy Gateway. Key Questions: How large is the cost-of-illness in the U.S.? http://ushealthpolicygateway.wordpress.com/payer-trade-groups/ burden-of-illness/cost-of-illness-coi/cost-of-illness/ (accessed August 11, 2010).

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[4]https://hub.mili.csom.umn.edu/content/m10081/latest/17.4bIMG.ppt
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