

Covering The Uninsured: What Is It Worth?

An attempt to place a value on what it costs a person, and society, when health insurance is lacking.

by Wilhelmine Miller, Elizabeth Richardson Vigdor, and Willard G. Manning

ABSTRACT: One out of six Americans under age sixty-five lacks health insurance, a situation that imposes sizable hidden costs upon society. The poorer health and shorter lives of those without coverage account for most of these costs. Other impacts are manifested by Medicare and disability support payments, demands on the public health infrastructure, and losses of local health service capacity. We conclude that the estimated value of health forgone each year because of uninsurance (\$65–\$130 billion) constitutes a lower-bound estimate of economic losses resulting from the present level of uninsurance nationally.

DURING THE PAST QUARTER-CENTURY the rate of uninsurance for the U.S. population under age sixty-five has remained relatively constant, fluctuating between 15 and 18 percent. Our voluntary and predominantly employment-based approach to coverage for the nonelderly population contributes to the persistence of this large pool of uninsured people. One reason policy-makers have not acted to ensure universal coverage is that they have not appreciated the costs of the status quo.

In a series of six reports, the Institute of Medicine's (IOM's) Committee on the Consequences of Uninsurance weighed evidence about the adverse impacts of uninsurance and, when possible, estimated the monetary value of these costs for individuals, families, communities, and society overall.¹ This paper presents the economic cost analysis of the committee's June 2003 report, *Hidden Costs, Value Lost: Uninsurance in America*.

The Cost Of Uninsurance

Simply put, economic costs are the value of resources devoted to one purpose that are not then available for alternative uses—the resources' opportunity cost. The IOM committee examined the resource costs that stem from the nation's high

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rate of uninsurance from the most comprehensive perspective, that of society overall. The societal perspective theoretically includes costs borne by all members of society, including individuals, families, health care facilities, communities, and other organizations. The societal perspective includes collective losses, such as diminished health services capacity in communities with relatively high rates of uninsurance. Societal costs thus are much broader than governmental program costs or private individual and institutional expenditures.

Probably the greatest cost of the lack of health insurance is the poorer health and shorter lives of people without coverage. Conversely, the greatest benefit of universal coverage would likely be the improvements in health and longevity among those who otherwise would be uninsured. Throughout this paper, unless otherwise defined, “cost” refers to resource losses that follow from the current level of uninsurance in the United States. Worse health among the uninsured, however, is only one of several adverse outcomes of the lack of health insurance within a population. Lack of coverage also exposes people to financial risk and uncertainty. Also, it can have deleterious spillover effects across a community, contributing to the loss of certain kinds of health services, less effective control of communicable disease, and losses to the local economic base.²

The consequences of uninsurance can be categorized as costs to private entities—including individuals, families, and firms—or as spillover costs that affect society more generally (Exhibit 1). Some of these are true economic costs (such as the worse health of those lacking coverage). Others, such as higher taxes or diversion of public resources, are partially transfers among actors in the economy (for example, some of the value of uncompensated care that hospitals and physicians

EXHIBIT 1
Costs Consequent To Uninsurance

Internal or private costs (for individuals, families, and firms)	External or spillover costs
Greater morbidity and premature mortality	Diminished quality and availability of personal health services
Developmental losses for children	Diminished public health system capacity
Family financial uncertainty and stress, depletion of assets (resource and transfer costs)	Diminished population health (such as higher rates of vaccine-preventable disease)
Lost income of uninsured breadwinner in ill health	Higher taxes, budget cuts, loss of other uses for public revenues diverted to uncompensated care (primarily transfer costs, except for administrative costs)
Workplace productivity losses (absenteeism, reduced efficiency on the job)	Higher public program costs connected with worse health (Medicare, disability payments) (primarily transfer costs)
Diminished sense of social equality and self-respect	Diminished workforce productivity
	Diminished social capital; unfulfilled social norms of caring, equal opportunity, and mutual respect

SOURCE: Adapted from Institute of Medicine Committee on the Consequences of Uninsurance, *Hidden Costs, Value Lost: Uninsurance in America* (Washington: National Academies Press, 2003), 31, Figure 2.2.

provide to the uninsured) and are thus a matter of distribution rather than a cost.

In this paper we present our estimate of the value of health lost due to uninsurance; contrast that value with an estimate of the additional investment in health services that would remedy the worse health outcomes of those now uninsured; and then discuss other, mostly unquantified, economic costs. We conclude by offering some reasons for the failure of private actions to achieve the societally superior outcome of universal coverage, identifying limitations of the analysis, and drawing some policy implications.

Valuing Health Outcomes

Perhaps the greatest cost to society of a large uninsured population is the increased mortality and worse health of the uninsured. Because the value of health is not easily derived from market prices, estimating this cost is challenging. Furthermore, health is multidimensional and thus difficult to define and measure. In addition to mortality, which is easy to measure, health encompasses physical and mental well-being and functioning.

We use the concept of health capital to capture these aspects of health. Health capital is analogous to human capital, a concept used in labor economics. Human capital is “cashed out” as the present value of the income one can expect to receive over the course of one’s life as a function of one’s stock of knowledge. Having a better education allows a person to earn more in the future. Similarly, having more health makes a person happier and longer lived. Health capital is the present value of the utility resulting from a person’s expected lifetime stock of health.³

■ **Estimating health capital.** Health capital accounts for the value that people have for their lives and health beyond their future earnings. Estimating this value involves collapsing the elements of health into a quality-adjusted life expectancy and assigning this estimate a dollar value. To do this, we rate a person’s health-related quality of life (HRQL) on a scale ranging from 0 (for death) to 1 (for perfect health). Any diseases or impairments reduce this HRQL weight so it falls somewhere in the 0–1 range. A year in a health state with a particular HRQL weight is referred to as a quality-adjusted life year (QALY).⁴ For any given year in the future, the expected QALY is the sum of each probability that a person will have a particular disease profile that year multiplied by the expected HRQL from having that set of diseases. These expected QALYs are then discounted at a rate of 3 percent to their present values and summed to yield a quality-adjusted life expectancy.⁵

If there are only two possible health states, perfect health (HRQL = 1) and death (HRQL = 0), then the expected QALY for a given year in the future is simply the probability that a person is alive in that year. Summing these QALYs over all future years without discounting yields remaining life expectancy. The measure of health capital we use starts with this approach and incorporates discounting and health states other than perfect health.

To incorporate morbidity into the measure of health capital, we used data on fif-

teen chronic conditions from the National Health Interview Survey (NHIS) and the Surveillance, Epidemiology, and End Results (SEER) database. We calculated the prevalence of these conditions by age and sex. Using an ordered probit model with self-reported health as the dependent variable, we estimated QALY weights for each condition. The coefficient on the variable indicating that a person has a particular condition tells us how the presence of that condition moves one along the scale of self-reported health, holding constant demographic characteristics and other reported health conditions. These coefficients were then scaled to 0–1 to yield the QALY weights.⁶ Life expectancy, disease prevalence, and QALY weights were then combined as described above into a measure of discounted, quality-adjusted life expectancy.

For the analysis in *Hidden Costs, Value Lost*, we monetized this estimate by multiplying the quality-adjusted life expectancy by the value of a year in perfect health. A vast literature on the value of a statistical life (VSL) has developed in response to government agencies' need to evaluate the relative costs and benefits of health, safety, and environmental regulation. The value of an individual life year has received little attention, however.

■ **Valuing a life year.** How much for a year of healthy life? Values of a life year used in research and by government agencies vary widely. We use a value of \$160,000 for a year in perfect health based on a recent survey of VSL studies.⁷ This value is derived from a subset of VSL studies that use a stated willingness-to-pay methodology. This methodology uses surveys to measure a person's willingness to pay for a small reduction in the risk of death, which is then used to impute the implied value of a life. According to economic theory, willingness to pay should capture the full value a person places on his or her life, incorporating both earnings and the enjoyment of living itself.

Estimating willingness to pay is preferable to using a human capital approach, which values a life at the discounted sum of all future earnings.⁸ The human capital approach ignores the undesirability (disutility) of poor health, except for forgone earnings, and it does not factor in the value of time spent not working. Thus, human capital underestimates the benefits of health gains.

Our value of a life year corresponds to a lifetime VSL of \$4.8 million, assuming a 3 percent discount rate and a constant value for years over the life span. This is within the range of VSL estimates reported in the literature. One comprehensive review of the VSL literature produces a range of VSL estimates clustered between \$3.8 and \$9 million.⁹ A recent meta-analysis of certain willingness-to-pay studies finds a median VSL in the United States of \$6.7 million.¹⁰ Our implied VSL is also consistent with the range of values used by government agencies.¹¹

Recent studies that have used the value of a life year to measure benefits have used a wide range of estimates. One “rule of thumb” value of a statistical life year frequently cited in studies of clinical outcomes is \$100,000; however, this is outdated and is not based on a systematic review of the literature.¹² The U.S. Environ-

mental Protection Agency (EPA) has used a value of \$172,000 per life year for people under age sixty-five and \$434,000 for people over age sixty-five in several recent analyses, and this approach has been endorsed by the Office of Management and Budget (OMB).¹³ Unlike the EPA, we use a constant value of a life year regardless of age, sex, race or ethnicity, educational attainment, or income. We do this for equity reasons and because little is known about how the value of a life year varies across individuals and over the life span.¹⁴

■ **Measuring differences in health capital.** The value of health forgone because of uninsurance is measured as the difference in health capital between the insured and the uninsured. Ideally, all differences between these groups that affect health outcomes—other than insurance status—should be factored out of the analysis. In practice, this is difficult. Unobserved factors may account for effects attributed to having or lacking health insurance. Based on its previous systematic review of outcomes studies, the IOM committee concluded that attributing an excess mortality risk of 25 percent to the uninsured population ages 1–65 was reasonable.¹⁵ An independent review of the health outcomes literature supports this assumption.¹⁶ More recent longitudinal analyses comparing mortality outcomes for insured and uninsured populations are beginning to be reported, and they should soon support better estimates of the relative mortality risks of these groups.¹⁷

It was not possible, with our cross-sectional data, to estimate the true difference in morbidity by insurance status. Thus, two sets of analyses bound the estimates. First, we assumed that there was no difference in morbidity by insurance status. The effect of insurance on health capital using this approach reflects only the mortality differential. This provides a lower bound. In the second scenario, we assumed that the entire measured difference in health was attributable to insurance status. Because some unmeasured characteristics that correlate with insurance status are likely, this estimate provides an upper bound of the possible gains in health from insuring the uninsured.

We found that the average uninsured person forgoes between \$1,645 and \$3,280 of health capital for each year without insurance coverage. These estimates vary by age and sex. In the aggregate, for roughly forty million uninsured Americans, we estimate the value of health forgone per year without coverage at \$65–\$130 billion. This range reflects our lower- and upper-bound approaches, but it still involves considerable uncertainty. However, while different assumptions could yield higher or lower estimates, the assumptions used should produce conservative estimates. For example, the analysis assumes no permanent adverse impacts to health as a result of any previous spells of uninsurance. At any given age, adverse events prior to that age do not affect future health. Thus, we do not take into account potential gains to individuals, Medicare, or subsequent private insurers from eliminating persistent health problems from the previously uninsured. We also assume that a person faces the average probability of being uninsured at a given age as it existed in 2000–2001, while rates of uninsurance are on an upward trend.

Remedying The Health Deficit Of Uninsured Americans

What would it cost to eliminate the differences in health care use between insured and uninsured people who are otherwise similar (and thus improve the health outcomes of the uninsured)? Economists Jack Hadley and John Holahan estimated the net (new) societal costs of providing uninsured Americans with the kind and amount of health care used by those with either public coverage (principally Medicaid) or private insurance.¹⁸ Their simulation of the projected health care spending if the currently uninsured U.S. population were insured produced net new annual costs in 2001 dollars of \$34 billion–\$69 billion, with public or private coverage, respectively.¹⁹ Other simulations have produced incremental cost estimates for providing the uninsured population with an “insured” level of health care that fall within this range.²⁰

These estimates assume nothing about the efficiency or appropriateness of the care used by publicly or privately insured populations; they include any excess or inappropriate use that having coverage could promote and thus represent upper bounds on the additional service costs of achieving the health benefits of coverage. Therefore, the social investment required to extend an insured level of health care to the uninsured is likely to produce gains in better health and longevity (valued at \$65–\$130 billion annually) well in excess of the incremental societal costs of increased use of services.

Other Costs Of Uninsurance

In addition to economic losses resulting from the worse health of the uninsured, uninsurance has several other effects that have not been well documented and are difficult to quantify. We review these briefly below.

■ **Financial risk and uncertainty.** Lack of coverage increases the unpredictability of medical expenses and the potential for financial catastrophe, including bankruptcy. The social stigma and psychological stresses of medical indigency, health care debt, and bill collection efforts are themselves burdensome.²¹ Financial planning is problematic for families with uninsured members, who face uncertain but potentially great liability for future medical expenses. Even for the majority of Americans who have coverage, maintaining it is not a sure thing, and the prospect of losing it can cause anxiety.

Overall, the uninsured spend much less on health care than comparable people with coverage spend. However, uninsured individuals and families pay a larger share of their health care expenses (excluding premium payments) out of pocket than those who have coverage, and uninsured families are more likely than insured families to have high out-of-pocket expenses as a proportion of family income.²²

Despite the financial burden imposed by lack of coverage, the estimated value of the financial risk protection that health insurance would have for currently uninsured people is surprisingly low. This follows from the fact that the uninsured pay for just 7 percent of the cost of any hospital services they use.²³ This pure insurance

value of coverage, the risk premium, is calculated as a function of the reduction in the variability of expected expenditures that having coverage achieves. Because incurred expenses for hospital and other high-cost care for the most part go unpaid by uninsured patients, the variance in actual out-of-pocket health spending within the uninsured population is low. These incurred but unpaid bills are absorbed as bad debt or count as charity care, and they are financed largely by the federal, state, and local governments through institutional operating subsidies.²⁴ A working group of the IOM committee estimated that the annual value of the risk premium for the currently uninsured population is \$40–\$80 per capita, or roughly \$1.6–\$3.2 billion for forty million uninsured people.²⁵

■ **Spillover costs.** We have not been able to assign dollar values to the spillover costs or measure the distributional impact (that is, transfer costs) of the current rates of uninsurance. The information needed to determine the impact of uninsurance on public expenditures, on the commercial economies of communities, and on the U.S. social and political climate has not been collected. Other spillover effects include diversion of public health resources, reduced availability of primary and specialty health care services, and diminished economic vitality.²⁶

Three areas of public spending—Medicare, disability income and medical care support, and criminal justice—bear some degree of excess costs because of the less appropriate care and worse health of the uninsured.

Medicare. Medicare ensures virtually universal coverage of the population age sixty-five and older. Little research to date has looked at how use of Medicare benefits might differ between previously insured and previously uninsured beneficiaries. Some researchers hypothesize that previously uninsured beneficiaries are sicker and thus use services more intensively once they are enrolled in Medicare than do those who have been continuously insured.²⁷

Disability. To the extent that the lack of coverage contributes to the development of disabling health conditions and claims for disability income support, some of the cost of disability determination, benefits administration, and the behavioral responses to taxes financing the payments can be attributed to uninsurance.

Mental illness. Adults with severe mental illnesses (such as schizophrenia or bipolar disorder) are uninsured at a rate comparable to that of all adults under age sixty-five: 20 percent. Those who lack coverage are less likely to receive appropriate, ongoing treatment. Untreated people with these mental illnesses are more likely to manifest behavior that lands them in jail or prison.²⁸ Incarcerating people with psychotic symptoms is costly and therapeutically inappropriate. Perversely, however, someone with a severe mental illness is more likely to receive specialized mental health services once he or she comes in contact with the criminal justice system than before.²⁹ Continuous coverage for people with severe mental illness, by increasing the likelihood of appropriate treatment, could reduce justice system costs and provide greater public order and safety.

Why Haven't Private Choices Eliminated Uninsurance?

If universal coverage offers superior economic value, why has our society not achieved it? If having health insurance improves health and extends life, and if productivity increases as a result, why are not all businesses willing to purchase—or why does not every employee demand—health insurance? Importantly, our analysis divorces the value of health insurance for the uninsured, measured as gains in health capital, from people's ability to pay for coverage out of their incomes. This choice reflects the IOM committee's ethical judgment that healthy years of life should be valued equally for all members of society. Building equity into the calculation of benefits from coverage also implies the need for a collective solution.

As for individuals and family decisionmakers, employees may prefer higher wages over health coverage. The trade-off between wages and benefits is most stark for workers with low incomes: More than 40 percent of full-time workers who earn less than \$10,000 annually are uninsured, whereas just 5 percent of those earning more than \$50,000 remain uninsured.³⁰ In addition, not everyone anticipates financial benefits from having health insurance, and some then forgo the spreading of risk that insurance provides.

From the employer perspective, high job turnover rates may discourage employers' investments in their employees' health. Nearly 20 percent of employees were on the job for less than a year in 1996.³¹ Long-duration employment has been declining more rapidly for less educated workers, the group at greatest risk of being uninsured and of becoming unemployed and thus losing coverage. Employers may also underinvest in the health of their employees if part of the benefit occurs as changes in morbidity and mortality after retirement. Those benefits and cost reductions accrue to the individual and to Medicare, but not to the firm.

The costs and benefits of health insurance are so fragmented and variable that even within the class of employers or that of workers, the net benefit of coverage that occurs in the aggregate may not be realized by the subgroup. To the extent that private (individual or employer) gains are less than private costs, this contributes to underinvestment by both employer and employee. Similarly, the individual may not be willing to invest in health insurance because he or she may not be aware of its expected benefits to health.

Limitations Of This Analysis

Although this analysis of the economic costs of uninsurance takes a broader view of costs related to the lack of coverage, it provides only part of the picture needed for delineating the implications of any policy alternative that achieves universal coverage. Some parts of the picture still need to be filled in.

First, evaluating the economic cost impacts from the point of view of society reveals little about the distributive effects of universal health insurance coverage relative to the status quo. We do know that those who would otherwise be uninsured would be the primary beneficiaries of their own improved health and that

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this improved health and longevity has substantial economic value. The incidence of new economic costs attributable to greater use of health care by the previously uninsured, as well as the shifts in financing affecting current sponsors of uncompensated care, cannot be projected in the absence of a specific proposal.

Second, this analysis does not encompass all aspects of health care finance that affect systemwide costs. It does not consider public subsidies to health insurance coverage (the deductibility of health insurance premium payments from income taxes), which amount to \$120–\$160 billion annually.³² Neither does it address the administrative and allocative inefficiencies of current financing mechanisms.³³

Third, our results depend on several strong underlying assumptions and choices, such as the discount rate, the value of a healthy life year, and the construction of the QALY weights. Further, the observed difference in health outcomes between the insured and uninsured may be affected by unmeasured differences between these groups that will not change when the uninsured gain coverage.³⁴

Finally, we have relatively crude measures of uninsurance and of its effects on health. For example, we do not know how length of time without coverage or how sporadic coverage affects health. While information about patterns of coverage and periods of uninsurance is improving, rarely is it related to information about health outcomes.³⁵

Policy Implications

This analysis of the societal costs of uninsurance is a first attempt to take a comprehensive look at the opportunity costs of our nation’s patchwork, voluntaristic approach to health insurance that leaves so many without coverage. While sizable gaps in information remain to be filled, the initial effort of the IOM committee recommends a structure and scope for subsequent economic analyses. Researchers and policymakers are coming late to calculating the human and financial costliness of business as usual in health coverage policy. Our ignorance is as much a result of not asking the right questions as it is of the inadequacy of data and of the available explanatory models for health and productivity outcomes.

The political implications of endemic uninsurance in the United States are elusive but vital to our strength and well-being as a nation. Because uninsured people are less likely than those with coverage to receive effective and appropriate health care, the resulting gap between the health outcomes of people who have coverage and those who do not exacerbates disparities in health status across society.³⁶ These disparities, and the difficulties that those who lack health insurance have in obtaining appropriate and respectful care, undermine deeply rooted ideals of equality of opportunity and equality of respect in the U.S. political culture.

Policymakers at all levels of government are understandably concerned with reconciling program spending with revenues collected. Federal policymakers in particular, however, should supplement their customary budgetary view to take in the full picture of the societal costs and benefits of alternative national coverage scenarios. This broader perspective will demonstrate that an investment in universal coverage is very much worth making.

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NOTES

1. Members of the Institute of Medicine (IOM) Committee included cochairs Mary Sue Coleman and Arthur Kellermann, Ronald M. Andersen, John Z. Ayanian, Robert Blendon, Sheila P. Davis, George Eads, Sandra Hernández, Willard G. Manning, James J. Mongan (chair of the Subcommittee on Societal Costs of Uninsured Populations), Christopher Queram, Shoshanna Sofaer, Stephen J. Trejo, Reed V. Tuckson, Edward H. Wagner, and Lawrence Wallack. Additional members of the Subcommittee on Societal Costs were Norman Daniels, Sherry Glied, Jack Hadley, Ruby P. Hearn, Emmett Keeler, Jack Needleman, and Gordon Trapnell. Reports in the series are *Coverage Matters: Insurance and Health Care* (Washington: National Academies Press, 2001); *Care without Coverage: Too Little, Too Late* (Washington: National Academies Press, 2002); *Health Insurance Is a Family Matter* (Washington: National Academies Press, 2002); *A Shared Destiny: Community Effects of Uninsurance* (Washington: National Academies Press, 2003); *Hidden Costs, Value Lost: Uninsurance in America* (Washington: National Academies Press, 2003); and *Insuring America's Health: Principles and Recommendations* (Washington: National Academies Press, 2004).
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12. The arbitrariness of this benchmark value is discussed in G. Tolley, D. Kenkel, and R. Fabian, eds., *Valuing Health for Policy: An Economic Approach* (Chicago: University of Chicago Press, 1994).
13. Memorandum of John D. Graham, administrator, Office of Information and Regulatory Affairs, Office of Management and Budget, to the President's Management Council, "Benefit-Cost Methods and Lifesaving Rules" (30 May 2003), www.whitehouse.gov/omb/inforeg/pmc_benefit_cost_memo.pdf (18 March 2004);

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14. The OMB acknowledges this in Graham, memorandum.
 15. IOM, *Care without Coverage*; and IOM, *Health Insurance Is a Family Matter*.
 16. J. Hadley, "Sicker and Poorer: The Consequences of Being Uninsured: A Review of the Research on the Relationship between Health Insurance, Medical Care Use, Health, Work, and Income," *Medical Care Research and Review* 60 (Supplement 2, 2003): 3S–75S.
 17. See R. Kronick, "Commentary," *Medical Care Research and Review* 60 (Supplement 2, 2003): 100S–122S. We interpret the author's results as confirmation of the IOM committee's assumptions.
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 19. We acknowledge that any program that would cover the uninsured could very well increase governmental outlays by more than \$69 billion because of shifts in costs among payers.
 20. See S.H. Long and M.S. Marquis, "The Uninsured 'Access Gap' and the Cost of Universal Coverage," *Health Affairs* 13, no. 2 (1994): 211–220; and G.E. Miller, J.S. Bantlin and J.F. Moeller, *Covering the Uninsured: Estimates of the Impact on Total Health Expenditures for 2002* (Rockville, Md.: Agency for Healthcare Research and Quality, 2003).
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 22. IOM, *Hidden Costs, Value Lost*.
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 24. See J. Hadley and J. Holahan, "How Much Medical Care Do the Uninsured Use, and Who Pays for It?" *Health Affairs*, 12 February 2003, content.healthaffairs.org/cgi/content/abstract/hlthaff.w3.66 (13 February 2003).
 25. Calculations were made by Sherry Glied, Columbia University, from merged Medical Expenditure Panel Survey (MEPS) files for 1996–1998 prepared by Jack Hadley, Urban Institute.
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 27. See IOM, *Care without Coverage*, for documentation of this phenomenon with Medicare end-stage renal disease (ESRD) beneficiaries.
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 33. For example, administrative workers now account for 27 percent of the U.S. health care labor force. Current financing arrangements also include deadweight loss from distortions in incentives. S. Woolhandler, T. Campbell, and D.U. Himmelstein, "Costs of Health Care Administration in the United States and Canada," *New England Journal of Medicine* 349, no. 8 (2003): 768–775.
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