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# NBER NATIONAL BUREAU OF ECONOMIC RESEARCH

## BULLETIN ON AGING AND HEALTH

### Covering the Uninsured

The U.S. is the only wealthy industrialized nation that does not guarantee universal health care for its citizens. Currently 47 million Americans, or 18 percent of the non-elderly population, lack health insurance. The problem of the uninsured has been a major concern for policy makers for years and is back in the spotlight this year due to the presidential election and a recent major health care reform in Massachusetts.

In “Covering the Uninsured in the U.S.” (NBER Working Paper 13758) researcher **Jonathan Gruber** reviews the lessons of economic research regarding the uninsured and conducts simulations to show the effects of several popular reform proposals to increase access to care.

Gruber begins by noting that most non-elderly Americans receive health insurance through their employer. The reasons for this include risk pooling (insurers like groups of employees because they offer a predictable distribution of medical risk, unlike people buying individual insurance policies who may be doing so because they are already sick), administrative costs (these are lower in a group because fixed costs are spread over more members), and the tax subsidy (insurance premiums paid by the firm are exempt from individual income taxation).

In answer to the question “who are the uninsured?” Gruber notes that they tend to be lower income, yet not all the uninsured are poor. Seventy percent are in families with a head who is a full-time, full-year worker and either is not offered

insurance at work or does not take it up.

Standard economic models predict that under certain conditions, people should want to fully insure themselves against medical risk. So how can we explain the widespread failure to insure? One explanation is that insurance is actuarially unfair, meaning that expected benefits are less than premiums. This can occur because of adverse selection — buyers in the individual insurance market are more likely to be sick, so insurers set premiums at the level necessary to cover their costs, making insurance a bad deal for healthy people — or because of administrative costs, which average 12 percent of premiums in the U.S.

A second possible explanation for the failure to insure is that hospitals essentially provide free catastrophic care, since they are required by law to treat individuals who arrive in an emergent state regardless of ability to pay and often fail to collect payment for these services. Hospitals spend \$30 billion per year on such uncompensated care, but evidence is mixed as to whether the provision of uncompensated care deters insurance purchase.

Perhaps the most frequently given explanation is the high cost of health insurance. Evidence has linked higher insurance premiums with a rise in the number of uninsured, yet the mechanism by which this occurs is not clear. If premiums are rising because the cost of treating illness is rising, people should be even more interested in insuring themselves against the risk of medical expenditures. It may be that individuals value insurance

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but lack the ability to borrow against future income to pay for it, that individuals have time inconsistency problems and overvalue premium costs today relative to future medical expenditure risk, or that government regulations force insurers to cover services that individuals value at less than cost.

From the puzzle of the uninsured, Gruber turns to another puzzle — most insured people have more generous insurance than what would be optimal. Moral hazard — the idea that having insurance increases the probability people use medical care and the amount they use — means that the optimal insurance plan includes

significant cost-sharing in order to balance the gains from insurance with the costs of moral hazard. Gruber lists some possible reasons for overinsurance, including the tax subsidy to employer-provided insurance, regulatory requirements, psychological motives (people prefer not to associate financial transactions with medical care even if they must pay more up front), and the offset hypothesis (skipping primary care visits will lead to higher expenditures later).

Gruber concludes “there are a variety of hypotheses for why so many individuals are uninsured, but no clear sense that this set of explanations can account for 47 million individuals. Moreover, an equally important and related mystery is why insurance is so much more generous for most individuals than would be suggested by optimal insurance theory.” Gruber calls for the development of a unified theory that can explain both the large number of uninsured and overinsurance among the insured.

Gruber also asks why we should care about the uninsured. One reason is externalities, costs that insured people bear as a result of uninsurance. These include physical externalities from communicable diseases (uninsured people may spread disease to others) and financial externalities from uncompensated care. However, these costs are too small to provide a major rationale for universal coverage. A second reason is “job lock”—workers may be afraid to change jobs for fear of losing their health insurance, which can lead to a mismatch between workers and jobs and lower U.S. productivity. Other reasons include paternalism (people may not realize the value of insurance) and redistribution (many of the uninsured are low-income).

Finally, Gruber develops a micro-simulation model to estimate the effects of various reforms to increase coverage. The model uses data from the Current Population Survey and data on health insurance premiums. The model first calculates how the reforms would change the price of different kinds of insurance, then runs these through a detailed set of behavioral assumptions (based on the best available evidence) to predict their effect on the behavior of individuals and firms.

Gruber considers two modest reforms to increase access—expanding Medicaid to cover low-income adults and introducing tax credits for the purchase of non-group insurance (also limited to low-to-moderate income families). To make meaningful comparisons, the reforms are designed to have similar coverage impacts, reducing the number of uninsured by either 5 or 10 million persons.

The Medicaid simulations show that the cost per newly insured person would be about \$5,000, that most of the benefit would go to very low-income individuals, and that there would be relatively little crowd-out (dropping of private insurance to enroll in Medicaid), particularly with the smaller reform. The tax credit simulations show that a higher fraction of those using the credit would be previously insured and that many workers would lose their insurance due to firms dropping their coverage. This policy is more expensive, costing about \$8,000 per newly insured person, and more of the benefits go to people higher up the income distribution.

Gruber also simulates the effect of more fundamental reforms. These reforms include features like premium subsidies for low-income individuals, new pooling

mechanisms, and individual mandates, but maintain private insurance as a centerpiece of the health care system. He finds that absent a mandate, only about half the uninsured would obtain coverage, although this reform compares favorably to tax credits in that it covers many more people at only slightly higher cost. With a mandate, nearly everyone is covered at relatively low cost to the government per newly insured person, but this is achieved by forcing individuals to spend money on insurance that they would prefer to spend elsewhere. Finally, he considers funding health insurance expansions by removing the tax subsidy to health insurance. He finds that this would generate more than enough revenue, but would be a “net loser” for more than half of families.

Gruber closes by noting that his study largely ignores the other major problem plaguing the U.S. health care system, rapidly rising costs. He notes that most cost control measures currently being discussed, like electronic medical records, will lower costs very little if at all. Effective control of health care costs will involve denying coverage for care that does little for health but that consumers now want. He concludes “until we are understand more fully which health care spending is justified and which is not, we are not prepared to take on the American public on cost control. The fundamental insight of this round of reform is therefore not to hold the attainable goal (universal coverage) hostage to the (currently) unattainable goal, fundamental health care cost control.”

*Gruber gratefully acknowledges funding from the Kaiser Family Foundation.*

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## Does Medicare Save Lives?

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Medicare expenditures topped \$400 billion in 2006, accounting for roughly one-fifth of total health care spending in the U.S. Despite average expenditures of nearly \$9,500 per beneficiary, there is very little evidence that Medicare improves health. Mortality rates and self-reported

measures of health display no sharp break at age 65, the age of Medicare eligibility, and there is no evidence that the introduction of Medicare in 1965 affected aggregate mortality rates.

In “**Does Medicare Save Lives?**” (NBER Working Paper 13668), research-

ers **David Card**, **Carlos Dobkin**, and **Nicole Maestas** revisit the health effects of Medicare.

Like previous studies, the authors’ basic approach is to compare the health outcomes of patients treated just before and after their 65<sup>th</sup> birthday. In general,

this approach is subject to the concern that some patients may delay treatment until they reach age 65 to take advantage of their access to Medicare at that age. Since healthier patients can more easily delay treatment, differences in health outcomes for patients treated before and after age 65 may be due in part to differences in their underlying health status and not solely to the effect of Medicare.

The authors surmount this problem by focusing on a subset of patients who are admitted through the emergency room (ER) for relatively severe conditions that require immediate hospitalization. These conditions are defined as those with similar ER admissions rates on weekdays and weekends. The authors show that there is no jump in admissions for these conditions at age 65, suggesting that the underlying health status of patients treated for these conditions just before and after age 65 is likely to be quite similar. A second advantage of their focus on patients with relatively severe conditions is that these patients are sick enough that the provision of extra health care services through Medicare could plausibly affect their short run mortality.

For their analysis, the authors use a very large dataset of hospital records for patients discharged from California hospitals between 1992 and 2002. The authors first identify the most common conditions that result in “non-deferrable” admissions (those with similar week-

day and weekend admission rates). These conditions include chronic bronchitis with emphysema (common among smokers and ex-smokers), respiratory failure, and acute myocardial infarction (heart attack).

Next, the authors document that there are significant changes in insurance status at age 65 for patients admitted with non-deferrable conditions. The fraction of patients with no insurance falls by about 10 percentage points when patients turn 65, while the fraction with Medicare as their primary insurer rises by nearly 50 percentage points. Thus, patients have much different insurance coverage just after age 65 than just before.

The authors then turn to examine whether there are distinct changes in health care services at age 65. They find that the average length of stay jumps by 0.4 days or 5 percent, while the average number of procedures performed rises by 0.1 or 4 percent. There is an even larger increase in the latter for “procedure intensive” diagnoses like acute myocardial infarction, where patients are more likely to receive important diagnostic procedures like cardiac catheterization after age 65. The authors also find increases in hospital list charges and the likelihood of transfer to other care units in the hospital at age 65.

Finally, the authors look at their key outcome of interest, mortality rates. They estimate that Medicare eligibility is associ-

ated with a 20 percent reduction in 7-day mortality, a 9 percent reduction in 28-day mortality, and a 3–4 percent reduction in 1-year mortality, relative to mortality rates among 64 year olds with similar conditions at admission. As the authors note, “the fact that the effect emerges within 7 days and persists for two years suggests that the extra services or changes in the quality of services provided to Medicare-eligible admittees have an immediate life-saving effect, and lead to a significant gain in the duration of life.”

The authors point out that the estimated effect of Medicare on mortality is too large to be driven solely by the drop in the number of people without insurance at age 65. Rather, their findings suggest that there is also an “insurance generosity” channel—patients insured through Medicare (who may also have supplemental insurance) receive more services or a more timely delivery of services than typical insured 64-year-old patients. Finally, the authors note that the estimated reductions in mortality are achieved with only a modest (4 percent) increase in hospital list charges. While a full cost-benefit analysis of Medicare is beyond the scope of the current analysis, the authors note that with respect to covering expenses associated with non-deferrable conditions, the cost-benefit analysis appears to be “very favorable.”

*This research was supported by a grant from the National Institute on Aging.*

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## Poverty and Health in Developing Countries

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In recent years, global health issues have received a great deal of attention and funding from charitable foundations and governments around the world. Much of the attention has been focused on specific diseases, such as AIDS and malaria, which present grave challenges to many developing countries.

More generally, what is known about the health of people in developing countries, particularly the very poor? Researchers have long been aware of large disparities in health outcomes by income and other measures of socioeconomic status in the U.S. and other developed coun-

tries. Do these disparities exist in developing countries as well? If so, programs to alleviate poverty could have beneficial effects on health.

In “**Aging and Death Under a Dollar a Day**” (NBER Working Paper 13683), researchers **Abhijit Banerjee** and **Esther Duflo** examine the relationship between income and adult mortality in developing countries. The authors use micro data from 15 different countries, drawn primarily from the World Bank’s Living Standard Measurement Surveys and the RAND Corporation’s Family Life Surveys. Their key question

of interest is whether the poor—which they define as those with daily per capita expenditures (DPCE) of less than \$1 or \$2 a day—and the non-poor have different mortality rates in old age.

The authors’ first approach to explore whether the poor have excess mortality in adulthood is to construct age pyramids by income level to see if the number of poor older people in the population is unusually low. While the authors find evidence that it is in many of the countries they study, they also point out that differences by income level in fertility rates and family structure make

it difficult to interpret the results of this exercise.

As an alternative, the authors use information on whether the parents of adults sampled in the surveys are alive. As these parents would likely be over age 50 (if they are alive), this data can be used to see how the population of those aged 50 and above changes across the income spectrum. The authors find that the probability that parents are alive is similar for those with DPCE of less than \$4 and rises with income thereafter. The effects can be very large—for example, pooling rural households in all countries, the probability that the mother is alive is 36 percentage points higher if the family has a DPCE of \$6 to \$10 versus a DPCE of \$1 to \$2. The effects for fathers and urban households are smaller but also significant.

The third approach the authors employ is to use panel data to compare mortality in later waves of the survey by poverty status at the first wave. The data to conduct such an analysis exist only for Indonesia, Vietnam, and India. Once again, the results are striking—in rural areas, adults over 50 living on less than \$1 or \$2 a day are at least three times as likely to die over the next five to seven years than those living on \$6 to \$10 a day.

Finally, the authors explore the relationship between morbidity and income. Here, the findings are more mixed—health deteriorates more rapidly with age for the poor than the non-poor in rural India, but this is not the case in rural Indonesia.

Overall, the results indicate that the poor have a lower chance of survival than

those who are somewhat more well-off. The direction of causality is not immediately obvious—adults could be poor because they are in poor health (and subsequently end up dying), or being poor could make them more likely to die. As the authors point out, however, most old people in developing countries live with other younger adults, a fact that weakens the case for the causality to run solely from the health of the old person to the poverty status of the household. The authors conclude “on balance, we are tempted to interpret the evidence accumulated in this paper as revealing, at least in part, that poverty does kill.”

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## NBER Profile: Jeffrey Brown

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Jeffrey Brown is an Associate Director of the NBER Retirement Research Center and a member of the NBER's programs in Aging and Public Economics.

Brown is the William G. Karnes Professor in the Department of Finance at the University of Illinois at Urbana-Champaign, where he also serves as the Director of the Center for Business and Public Policy in the College of Business. Professor Brown is one of the seven members of the Social Security Advisory Board, a position to which he was appointed by President Bush and confirmed by the U.S. Senate. He has also been recently nominated by President Bush to become a Public Trustee of the Social Security and Medicare Trust Funds.

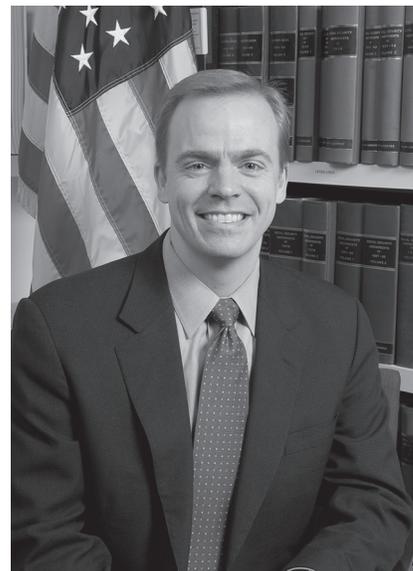
Professor Brown is a member of the National Academy of Social Insurance and a Fellow of the TIAA-CREF Research Institute, the China Center for Social Security and Insurance Research at Beijing University, Netspar, and the Employee Benefits Research Institute.

Prior to joining the Illinois faculty,

Brown was an Assistant Professor of Public Policy at the John F. Kennedy School of Government at Harvard University. During 2001–2002, he served as Senior Economist at the Council of Economic Advisors, where he focused primarily on Social Security, pension reform, and terrorism risk insurance. During 2001 he also served on the staff of the President's Commission to Strengthen Social Security. He has also served as a consultant, expert witness, or expert panelist for the Executive Office of the President, the U.S. General Accounting Office, the U.S. Treasury, and the World Bank.

Professor Brown holds a Ph.D. in economics from the Massachusetts Institute of Technology, a Master of Public Policy degree from Harvard University, and a B.A. from Miami University.

Professor Brown's research interests are primarily focused on public and private insurance markets, including Social Security, private pensions, annuities, life insurance, long-term care insurance, and terrorism risk insurance. His



research has also branched into areas ranging from the influence of executive compensation on firm dividend policy to the influence of community effects on stock market participation.

When not engaged in economic and policy pursuits, Brown enjoys spending time with his wife, Lisa, and their three children.

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## Abstracts of Selected Recent NBER Working Papers

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**WP 13599**

**W. Kip Viscusi and Joni Hersch**

### **The Mortality Cost to Smokers**

This article estimates the mortality cost of smoking based on the first labor market estimates of the value of statistical life by smoking status. Using these values in conjunction with the increase in the mortality risk over the life cycle due to smoking, the value of statistical life by age and gender, and information on the number of packs smoked over the life cycle, produces an estimate of the private mortality cost of smoking of \$222 per pack for men and \$94 per pack for women in 2006 dollars, based on a 3 percent discount rate. At discount rates of 15 percent or more, the cost decreases to under \$25 per pack.

**WP 13600**

**John Cawley and Feng Liu**

### **Maternal Employment and Childhood Obesity: A Search for Mechanisms in Time Use Data**

Recent research has found that maternal employment is associated with an increased risk of childhood obesity. This paper explores mechanisms for that correlation. We estimate models of instrumental variables using a unique dataset, the American Time Use Survey, that measure the effect of maternal employment on the mother's allocation of time to activities related to child diet and physical activity. We find that employed women spend significantly less time cooking, eating with their children, and playing with their children, and are more likely to purchase prepared foods. We find suggestive evidence that these decreases in time are only partly offset by husbands and partners. These findings offer plausible mechanisms for the association of maternal employment with childhood obesity.

**WP 13610**

**Emily Oster**

### **Routes of Infection: Exports and HIV Incidence in Sub-Saharan Africa**

I generate new data on HIV incidence and prevalence in Africa based on inference from mortality rates. I use these data to relate economic activity (specifically, exports) to new HIV infections in Africa and argue there is a significant and large positive relationship between the two: a doubling of exports leads to as much as a quadrupling in new HIV infections. This relationship is consistent with a model of the epidemic in which truckers and other migrants have higher rates of risky behavior, and their numbers increase in periods with greater exports. I present evidence suggesting that the relationship between exports and HIV is causal and works, at least in part, through increased transit. The result has important policy implications, suggesting (for example) that there is significant value in prevention focused on these transit oriented groups. I apply this result to study the case of Uganda, and argue that a decline in exports in the early 1990s in that country appears to explain between 30% and 60% of the decline in HIV infections. This suggests that the success of the Ugandan anti-HIV education campaign, which encouraged changes in sexual behavior, has been overstated.

**WP 13627**

**Florian Heiss, Daniel McFadden, and Joachim Winter**

### **Mind the Gap! Consumer Perceptions and Choices of Medicare Part D Prescription Drug Plans**

Medicare Part D provides prescription drug coverage through Medicare approved plans offered by private insurance companies and HMOs. In this paper, we study the role of current prescription drug use and health risks, related expectations, and subjective

factors in the demand for prescription drug insurance. To characterize rational behavior in the complex Part D environment, we develop an intertemporal optimization model of enrollment decisions. We generally find that seniors' choices respond to the incentives provided by their own health status and the market environment as predicted by the optimization model. The proportion of individuals who do not attain the optimal choice is small, but the margin for error is also small since enrollment is transparently optimal for most eligible seniors. Further, there is also evidence that seniors over-react to some salient features of the choice situation, do not take full account of the future benefit and cost consequences of their decisions, or the expected net benefits and risk properties of alternative plans.

**WP 13656**

**James Choi, David Laibson, and Brigitte Madrian**

### **The Flypaper Effect in Individual Investor Asset Allocation**

We document a flypaper effect in asset allocation: securities received in kind "stick where they hit." We study a firm that twice changed the rules governing the securities in which its 401(k) matching contributions were initially invested. Both of these rule changes were economically neutral: employees were always free to immediately reallocate their match account balances. However, we find that most employees neither reallocate their match balances, nor offset employer-initiated changes in the match allocation by adjusting the allocation of their own contributions. Consequently, these rule changes caused dramatic shifts in participants' 401(k) portfolio risk. After examining several alternative explanations for this flypaper effect, we conclude that it is largely due to a combination of passivity and mental accounting.

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WP 13664

**Awash Teklehaimanot, Gordon McCord,  
Jeffrey Sachs**  
**Scaling Up Malaria Control in Africa: An  
Economic and Epidemiological Assess-  
ment**

This paper estimates the number of people at risk of contracting malaria in Africa using GIS methods and the disease's epidemiologic characteristics. It then estimates yearly costs of covering the population at risk with the package of interventions (differing by level of malaria endemicity and differing for rural and urban populations) for malaria as recommended by the UN Millennium Project. These projected costs are calculated assuming a ramp-up of coverage to full coverage by 2008, and then projected out through 2015 to give a year-by-year cost of meeting the Millennium Development Goal for reducing the burden of malaria by 75%. We conclude that the cost of comprehensive malaria control for Africa is US\$3.0 billion per year on average, or around US\$4.02 per African at risk.

WP 13693

**Todd Sinai and Nicholas Souleles**  
**Net Worth and Housing Equity in  
Retirement**

This paper documents the trends in the life-cycle profiles of net worth and housing equity between 1983 and 2004. The net worth of older households significantly increased during the housing boom of recent years. However, net worth grew by more than housing equity, in part because other assets also appreciated at the same time. Moreover, the younger elderly offset rising house prices by increasing their housing debt, and used some of the proceeds to invest in other assets.

We also consider how much of their housing equity older households can actually tap, using reverse mortgages. This fraction is lower at younger ages, such that young retirees can consume less than half of their housing equity. These results imply that "consumable" net worth is smaller than standard calculations of net worth.

WP 13730

**John Romley and Dana Goldman**  
**How Costly is Hospital Quality? A Re-  
vealed-Preference Approach**

One of the most important and vexing issues in health care concerns the cost to improve quality. Unfortunately, quality is difficult to measure and potentially confounded with productivity. Rather than relying on clinical or process measures, we infer quality at hospitals in greater Los Angeles from the revealed preference of pneumonia patients. We then decompose the joint contribution of quality and unobserved productivity to hospital costs, relying on heterogeneous tastes among patients for plausibly exogenous quality variation. We find that more productive hospitals provide higher quality, demonstrating that the cost of quality improvement is substantially understated by methods that do not take into account productivity differences. After accounting for these differences, we find that a quality improvement from the 25th percentile to the 75th percentile would increase costs at the average hospital by nearly fifty percent. Improvements in traditional metrics of hospital quality such as risk-adjusted mortality are more modest, indicating that other factors such as amenities are an important driver of both hospital costs and patient choices.

WP 13746

**David Cutler, Amy Finkelstein, and Kath-  
leen McGarry**  
**Preference Heterogeneity and Insurance  
Markets: Explaining a Puzzle of Insurance**

Standard theories of insurance, dating from Rothschild and Stiglitz (1976), stress the role of adverse selection in explaining the decision to purchase insurance. In these models, higher risk people buy full or near-full insurance, while lower risk people buy less complete coverage, if they buy at all. While this prediction appears to hold in some real world insurance markets, in many others, it is the lower risk individuals who have more insurance coverage. If the standard model is extended to allow individuals to vary in their risk tolerance as well as their risk type, this could explain why the relationship between insurance coverage and risk occurrence can be of any sign, even if the standard asymmetric information effects also exist. We present empirical evidence in five difference insurance markets in the United States that is consistent with this potential role for risk tolerance. Specifically, we show that individuals who engage in risky behavior or who do not engage in risk reducing behavior are systematically less likely to hold life insurance, acute private health insurance, annuities, long-term care insurance, and Medigap. Moreover, we show that the sign of this preference effect differs across markets, tending to induce lower risk individuals to purchase insurance in some of these markets, but higher risk individuals to purchase insurance in others. These findings suggest that preference heterogeneity may be important in explaining the differential patterns of insurance coverage in various insurance markets.

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