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BULLETIN ON AGING AND HEALTH

The Value of Medicaid

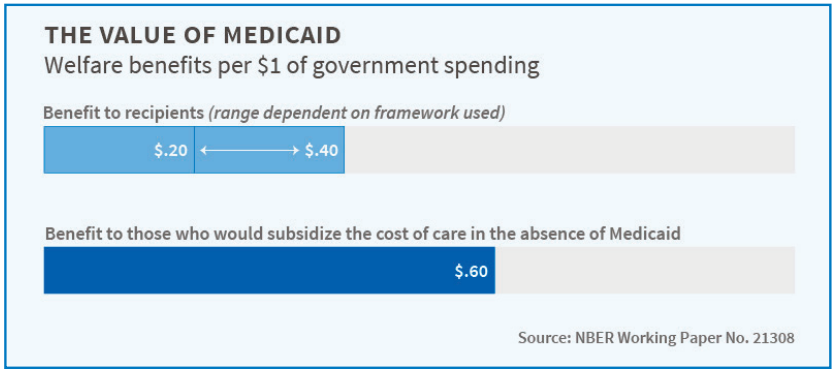
Medicaid is the largest means-tested program in the U.S., with expenditures of over $425 billion in 2011. The Oregon Health Insurance Experiment, a recent expansion of the Medicaid program in that state that occurred by random assignment, has provided some of the most compelling evidence to date on the program's effects. A series of previous studies analyzing this experiment has found that Medicaid coverage: increases health care use; improves self-reported health and mental health while having no effect on mortality or physical health; reduces the risk of large out-of-pocket medical expenditures; and has no significant effect on employment, earnings, or private health insurance coverage (for more details, see http://www.nber.org/oregon/).

Despite this recent work, however, it has not been clear how to assess the value of the Medicaid program. How do the welfare benefits of the program compare to its costs? How do the program's benefits compare to the benefits of other cash-based transfer programs?

These questions are taken up by researchers Amy Finkelstein, Nathaniel Hendren, and Erzo F. P. Luttmer in their recent paper "**The Value of Medicaid: Interpreting Results from the Oregon Health Insurance Experiment**" (**NBER Working Paper** 21308).

In the absence of a detailed framework to estimate the value of Medicaid, the program's worth has generally been assessed using an ad hoc approach. The Congressional Budget Office, for example, values Medicaid at the average government expenditure per recipient. The program's true value to recipients, however, could be either more than its cost (if individuals face difficulties buying private insurance due to market failures) or less than its cost (if administrative costs or excess use of care due to moral hazard lessen the program's worth, or if Medicaid crowds out other forms of insurance, such as uncompensated care).

In their study, the authors develop two analytical frameworks for estimating the value of Medicaid empirically. The "complete-information" approach requires the authors to specify all elements that affect an individual's well-being and the causal effect of Medicaid on each of these elements. The "optimization" approach focuses on the ways in which Medicaid affects the individual's budget set and assumes that individuals make optimal choices with regard to their budget set. Appealingly, these two approaches are essentially opposite in the type of assumptions that the authors must make in order to implement them. By comparing the results of these two alternative frameworks, the authors are less reliant on any particular assumption.



The authors begin with the question of whether Medicaid recipients would be willing to cover the government's cost of Medicaid. Their answer is a fairly robust "no." Their baseline estimates indicate that the welfare benefits to recipients per dollar of government spending are between $0.20 and $0.40, depending on the framework used. Using a variety of alternative assumptions widens the range of possible valuations from $0.15 to $0.85. All of these estimates are less than the full valuation approach used

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The NBER Bulletin on Aging and Health summarizes selected Working Papers recently produced as part of the Bureau's program of research in aging and health economics. The Bulletin is intended to make preliminary research results available to economists and others for informational purposes and to stimulate discussion of Working Papers before their final publication. The Bulletin is produced by David Wise, Area Director of Health and Aging Programs, and Courtney Coile, Bulletin Editor. To subscribe to the Bulletin, please send a message to: ahb@nber.org.

by the Congressional Budget Office.

A key reason for the finding that recipients value Medicaid at less than the full cost of the program is that the uninsured pay only a small fraction of their medical expenditures. Put differently, if there was no Medicaid, this population would still receive some health care and would pay only a small share of its cost, likely due to the large amount of uncompensated care provided by hospitals. The authors estimate that about $0.60 of every dollar of government Medicaid spending represents a transfer to external parties who subsidize the cost of care in the absence of Medicaid.

An alternative question is whether Medicaid is a preferable form of redistribution to low-income individuals relative to the Earned Income Tax Credit (EITC), which also benefits this group. If a "benevolent social planner" needed to reduce either Medicaid or EITC expenditures by a given dollar amount, which would be the preferred option?

Here, the authors' answer is "it depends." If the planner values $1 in the hands of a Medicaid recipient less than $0.90 to $3.00 in the hands of an EITC recipient, then the planner should cut Medicaid. Of course, the Medicaid population is arguably more economically disadvantaged than the EITC population and may also be in worse health, which could lead the planner to place more value on transfers to this group and rationalize a willingness to make more costly transfers. The wide range depends largely on the assumptions of who ultimately bears the cost of uncompensated care, highlighting the importance of future work in this direction.

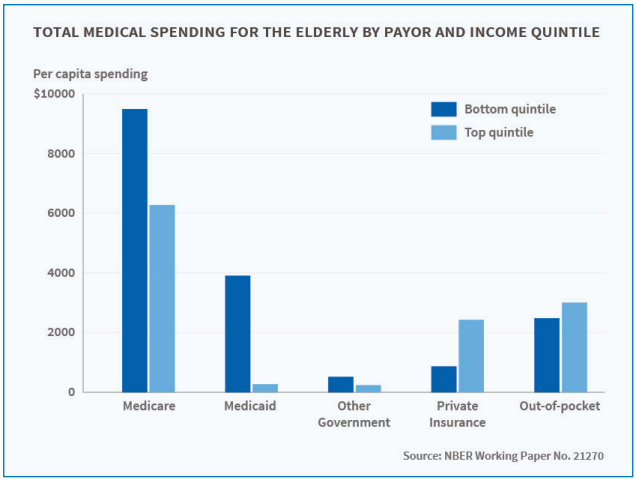
The authors conclude, "our paper illustrates the possibilities—but also the challenges—in doing welfare analysis even with a rich set of causal program effects. Behavioral responses are not prices and do not reveal willingness to pay without additional assumptions. We provide a range of potential pathways to welfare estimates under various assumptions, and offer a range of estimates that analysts can consider, rather than the common defaults of zero valuation or valuation at government cost."

The authors acknowledge financial support from the National Institute of Aging under grants RC2AG036631 and R01AG0345151 (Finkelstein) and the NBER Health and Aging Fellowship, under the National Institute of Aging grant T32-AG000186 (Hendren).

Medical Spending of the Elderly

While the rate of growth of health care spending in the U.S. has been lower over the past decade than in previous decades, health care costs remain a concern for policy makers and the public. Health care spending on the elderly is of particular interest, due to the rising share of the population in this group and the fact that per capita health care spending for the elderly is substantially higher than for the population as a whole.

In **"Medical Spending of the U.S. Elderly"** (NBER Working Paper 21270), researchers Mariacristina De Nardi, Eric French, John Bailey Jones, and Jeremy McCauley explore the medical spending of Americans aged 65 and older. The authors make use of data from the 1996 to 2010 waves of the Medicare Current Beneficiary Survey (MCBS). The MCBS links administrative Medicare records to survey information from households, providing high-quality data on Medicare payments as well as spending by other payors; respondents are followed for up to three years, providing a longitudinal view of spending.



The financing of health care for the elderly is complex. Virtually all people over age 65 are eligible for Medicare, which provides insurance for hospital stays, doctor visits, and since 2006, prescription drugs. There can be substantial copayments for services covered by Medicare, which may be paid by a supplemental private "Medigap" insurance plan or out-of-pocket by the beneficiary. Nursing home expenses are a significant concern for the elderly, with costs on the order of $77,000 to $88,000 a year in 2014. Relatively few older individuals have long-term care insurance, so most of these costs are paid either out-of-pocket or by Medicaid for those who have exhausted their own financial resources.

The authors begin by reporting the share of medical expenditures financed by different payors. The government pays for two-thirds of health care spending by the elderly, with Medicare accounting for 55 percent, Medicaid for 10 percent, and other government programs for 3 percent. Medicaid funds a larger share of expenses for women than for men (12 percent vs. 6 percent), as older women are more likely to have nursing home stays. Nearly 20 percent of the medical spending of the elderly is financed out-of-pocket, while 13 percent is covered by private insurance.

Medical spending by the elderly is highly concentrated. Individuals in the top 5 percent of the distribution of total expenditures spend about $98,000 per year, nearly seven times the overall average of $14,000 and accounting for 35 percent of all medical spending. Out-of-pocket expenditures are even more skewed, with almost half of expenditures made by the top 5 percent of spenders. As the authors note, "even with public and private insurance, out-of-pocket medical expenditure risk is significant."

Turning to the question of how expenses vary with gender and income, the authors find that total spending by all payors is on average about $1,100 per year more for women than men. This difference is due to higher expenditures on nursing homes for women—excluding these costs, average total annual spending is about

$500 less for women. By income, those in the bottom income quintile spend about $5,000 more per year than those in the top quintile. Again, nursing home expenditures are key—excluding these, those in the bottom quintile spend only $1,000 more per year. The financing of health care varies also dramatically by income. In the bottom quintile, Medicare pays $9,500 a year and Medicaid $3,900, while private insurance covers just $900 and out-of-pocket spending is $2,500. In the top quintile, Medicare pays $6,300 and Medicaid only $300, while private insurance pays $2,400 and out-of-pocket spending is $3,000.

Another important issue is the persistence of medical spending over time—are this year's low and high spenders likely to have similar expenses in future years? The authors find that the answer is yes. Those in the top quintile of spending in one year, for example, have a 54 percent chance of being in the top quintile in the next year and a 48 percent chance of being in the top quintile in two years. The chances that an individual in the lowest quintile of spending will remain a low spender one or two years later are 62 and 58 percent, respectively.

Finally, the authors document that medical spending more than doubles between ages 70 and 90 and ask how much of this increase can be explained by large medical expenditures right before death. They find that medical spending in the last year of life is $59,000, accounting for 16.8 percent of spending by those over age 65 and 6.7 percent of spending at all ages. Medical spending in the three years before death accounts for 13.4 percent of aggregate medical spending. The authors conclude "while end-of-life spending is high in the United States, it hardly explains all of why medical spending in the U.S. is so much higher than in other countries."

De Nardi acknowledges support from the ERC (grant 614328) and from the ESRC through the Centre for Macroeconomics. French acknowledges support from a grant from the Michigan Retirement Research Center.

Borrowing from 401(k)s

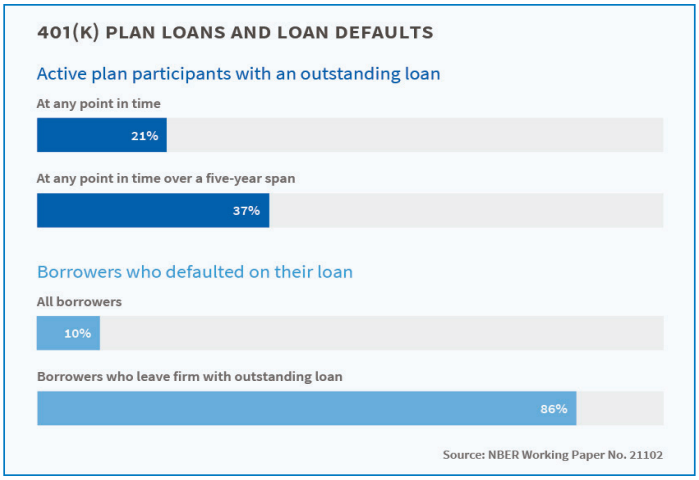
Defined contribution (DC) pension plans such as 401(k)s are intended as a vehicle for retirement savings. Yet there are ways for participants to access these tax-deferred accounts prior to retirement. Individuals who have left their employers may withdraw funds from their accounts before age 59 ½, but then they must pay taxes on the withdrawn amount plus a 10 percent penalty. In addition, many employers allow active workers still on the job to borrow from their 401(k) plans.

The potential effects of allowing loans on retirement savings are complex. On the one hand, people may save more in their workplace-based accounts if they are more liquid. On the other hand, if the loans are not repaid and the worker terminates employment, the defaulted loan may result in a permanently smaller retirement nest egg. Relatively few previous studies have explored 401(k) borrowing.

In **"Borrowing from the Future: 401(k) Plan Loans and Loan Defaults"** (NBER Working Paper 21102), researchers Timothy (Jun) Lu, Olivia Mitchell, Stephen Utkus, and Jean Young explore how employer loan policy affects 401(k) plan participant behavior and consequent default outcomes.

Borrowing from 401(k) plans is governed by U.S. Treasury regulations. Active workers may borrow up to half of their account balances, with the maximum loan capped at $50,000, and they also must agree to repay the loan with interest, usually through payroll deduction. In addition, employers may impose their own requirements on plan loans, including whether loans are permitted at all, the number of loans allowed, whether loans must be for some minimum amount, and the interest rate that borrowers must pay. About 90 percent of active contributors have access to loans.

The authors use a rich administrative dataset for DC plan participants covering nearly 900 plans and more than 900,000 participants over a five-year period. In their data, 1.4 percent of eligible participants take out a new loan in any given month, on average. The average amount borrowed with a new loan is about $7,800, while the average total amount borrowed (across all loans) is about $10,000. Most plans charge an interest rate equal to the Prime Rate plus one percent. About 40 percent of plans (covering just over half of the participants studied) permit workers to take out two or more loans at once.



How many participants take advantage of the opportunity to borrow from their retirement accounts? Roughly 20 percent of active participants have an outstanding loan in any given month. This amount remains roughly constant over time, indicating that the loan origination rate is approximately offset by the rate of loan repayments or defaults. Over the five years of their study, however, nearly 40 percent of participants are borrowers. Thus, "many different participants eventually borrow from their retirement accounts over a longer time horizon."

The authors also explore which workers are more likely to take out loans. They find that the probability of borrowing is higher for participants who earn lower incomes, have fewer non-retirement financial assets, and have lower account balances, suggesting that credit constraints play a role. Participants ages 35 to 44 are more likely to borrow than their younger or older peers, as are those with longer job tenure. This pattern may reflect offsetting changes in the ability and need to borrow as participants age. Loan amounts display the same hump-shape pattern with age, but those who have higher income and more retirement or other assets borrow more, conditional on taking out a loan.

In terms of how plan loan policies might affect the use of loans, the authors note that if a "buffer-stock model" governs borrowing behavior, participants will be more likely to borrow but will take smaller loans when the plan allows multiple loans. The theoretical effect of the interest rate on borrowing is less clear, since a higher interest rate makes the loan costlier to the participant but ultimately leads to higher account balances.

The authors find that if the plan sponsor allows employees to take out multiple loans, the probability that participants take out a new loan rises by 2.7 percentage points, or nearly twice the mean rate of 1.4 percent. Permitting multiple loans lowers the size of the new loan by about 20 percent. These findings are consistent with the buffer stock model. By contrast, borrowing behavior is unaffected by the interest rate. Permitting multiple loans particularly induces young and low-income participants to borrow more.

As the study spans the period before and during the recent financial crisis, the authors examine whether borrowing changed during the crisis. They find that participants were about 40 percent less likely to take out new loans during the crisis. Since loans are often tied to home improvements, it could be that the drop in the housing market led to a lower demand for loans for this purpose.

The authors also look at loan default behavior. They find that, while 9 out of 10 loans are repaid, defaults are very common among those terminating employment with loans outstanding—indeed, 86 percent of such participants default. Default behavior is relatively similar across plan and participant characteristics. This leads the authors to "conclude that other unobserved factors may be driving pension loan defaults. These could include financial illiteracy, discounting, or lack of self-control. In our context, this could mean that many employees taking loans were simply unaware of the consequences of job termination for their 401(k) loan."

Finally, the authors estimate that the aggregate outflow from defaulting 401(k) loans is on the order of $6 billion per year, an amount that is much smaller than the leakage from people cashing out their retirement accounts after leaving their employers. The authors conclude that their findings "underscore the fact that DC retirement accounts are intended mainly for old-age financial security, although they do offer pre-retirement liquidity to meet current consumption needs."

At least one author has disclosed a financial relationship of potential relevance for this research. Further information is available online at http://www.nber.org/papers/w21102.ack.

NBER Profile: *Robert Clark*

Robert Clark is the Stephen Zelnak Professor of Economics and Management, Innovation, and Entrepreneurship, Poole College of Management, North Carolina State University. He is also a Research Associate with the NBER's Aging program. Professor Clark is a member of the Pension Research Council at the Wharton School of the University of Pennsylvania and is a fellow of the Employee Benefit Research Institute and the TIAA-CREF Institute. Clark earned a Ph.D. and masters in economics from Duke University and a B.A. from Millsaps College.

In the past five years, Dr. Clark has organized four NBER conferences examining state and local pension and retiree health plans. These conferences have focused on the labor market effects of public retirement plans, the measurement of liabilities, and the impact of pension reforms across the country. Clark has conducted research examining retirement decisions, the choice between defined benefit and defined contribution plans, the impact of pension conversions to defined contribution and cash balance plans, and government regulation of pensions. In addition, Clark has been examining the role of supplementary retirement saving plans in the public sector. In other research, he has examined employer-provided financial literacy programs and how these workplace events affect retirement decisions. Another long standing interest has been the evolution of retirement systems in Japan and how population aging has affected the Japanese economy.

In his free time, Clark enjoys hiking in the mountains, especially in Grand

Teton National Park where he spends most of the summer at his home near the park. In the winter, he attends many university basketball games. He also enjoys a daily run around the North Carolina State University campus.

Abstracts of Selected Recent NBER Working Papers

WP 21050

Joseph Doyle, John Graves, Jonathan Gruber

Uncovering Waste in U.S. Healthcare

There is widespread agreement that the U,S, healthcare system wastes as much as 5% of GDP, yet little consensus on what care is actually unproductive. This partly arises because of the endogeneity of patient choice of treatment location. This paper uses the effective random assignment of patients to ambulance companies to generate comparisons across similar patients treated at different hospitals. We find that assignment to hospitals whose patients receive large amounts of care over the three months following a health emergency do not have meaningfully better survival outcomes compared to hospitals whose patients receive less. Outcomes are related to different types of treatment intensity, however: patients assigned to hospitals with high levels of inpatient spending are more likely to survive to one year, while those assigned to hospitals with high levels of outpatient spending are less likely to do so. This adverse effect of outpatient spending is predominately driven by spending at skilled nursing facilities (SNF) following hospitalization. These results offer a new type of quality measure for hospitals based on utilization of SNFs. We find that patients quasi-randomized to hospitals with high rates of SNF discharge have poorer outcomes, as well as higher downstream spending once conditioning on initial hospital spending.

WP 21160

Saurabh Bhargava, George Loewenstein, Justin Sydnor

Do Individuals Make Sensible Health Insurance Decisions? Evidence from a Menu with Dominated Options

The recent expansion of health-plan choice has been touted as increasing competition and enabling people to choose plans that fit their needs. This study provides new evidence challenging these proposed benefits of expanded health-insurance choice. We examine health-insurance decisions of employees at a large U.S. firm where a new plan menu included a large share of financially dominated options. This menu offers a unique litmus test for evaluating choice quality since standard risk preferences and beliefs about one's health cannot rationalize enrollment into the dominated plans. We find that a majority of employees — and in particular, older workers, women, and low earners — chose dominated options, resulting in substantial excess spending. Most employees would have fared better had they instead been enrolled in the single actuarially-best plan. In follow-up hypothetical-choice experiments, we observe similar choices despite far simpler menus. We find these choices reflect a severe deficit in health insurance literacy and naïve considerations of health risk and price, rather than a sensible comparison of plan value. Our results challenge the standard practice of inferring risk attitudes and assessing welfare from insurance choices, and raise doubts whether recent health reforms will deliver their promised benefits.

WP 21168

John Beshears, James Choi, Joshua Hurwitz, David Laibson, Brigitte Madrian

Liquidity in Retirement Savings Systems: An International Comparison

What is the socially optimal level of liquidity in a retirement savings system? Liquid retirement savings are desirable because liquidity enables agents to flexibly respond to pre-retirement events that raise the marginal utility of consumption. On the other hand, pre-retirement liquidity is undesirable when it leads to under-saving arising from, for example, planning mistakes or self-control problems. This paper compares the liquidity that six developed economies have built into their employer-based defined contribution (DC) retirement savings systems. We find that all of them, with the sole exception of the United States, have made their DC systems overwhelmingly illiquid before age 55.

WP 21184

Michael Geruso, Dean Spears

Neighborhood Sanitation and Infant Mortality

Ending open defecation in the developing world has gained significant policy attention recently, motivated by the idea that private demand for latrines lies below the social optimum. We investigate the mortality externalities of poor sanitation by exploiting differences in latrine demand between Muslim and Hindu households in India: Muslims, despite being poorer, are 25 percentage points more likely than Hindus to use latrines or toilets. Instrumenting for local sanitation with the religious composition of neighborhoods, we estimate large infant mortality externalities. Our findings are informative of the external harm generated by the one billion people today who practice open defecation.

WP 21218

Janet Currie, W. Bentley MacLeod, Jessica Van Parys

Physician Practice Style and Patient Health Outcomes: The Case of Heart Attacks

When a patient arrives at the Emergency Room with acute myocardial infarction (AMI), doctors must quickly decide whether the patient should be treated with clot-busting drugs, or with invasive surgery. Using Florida data on all such patients from 1992–2011, we decompose physician practice style into two components: The physician's probability of conducting invasive surgery on the average patient, and the responsiveness of the physician's choice of procedure to the patient's condition. We show that practice style is persistent over time and that physicians whose responsiveness deviates significantly from the norm in teaching hospitals have significantly worse patient outcomes, including a 7% higher probability of death in hospitals among the patients who are least appropriate for the procedure. Our results suggest that a reallocation of invasive procedures from less appropriate to more appropriate patients could improve patient outcomes without increasing costs. Developing protocols to identify more and less appropriate patients could be a first step towards realizing this improvement.

Additional NBER Working Papers on Health and Aging

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WP 21240

Prashant Bharadwaj, Mallesh Pai, Agne Suziedelyte

Mental Health Stigma

Comparing self-reports to administrative data records on diagnosis and prescription drug use, we find that survey respondents under-report mental health conditions 36% of the time when asked about diagnosis and about 20% of the time when asked about prescription drug use. Survey respondents are significantly less likely to under-report other conditions such as diabetes or hypertension. This behavior is consistent with a model in which mental health illnesses are stigmatized and agents have incentives to hide such traits from others. We show that differential under-reporting of depression is correlated with age, gender, and ethnicity and that these characteristics also predict a lower probability of mental health treatment, suggesting that stigma can play an important role in determining health-seeking behavior.

WP 21275

Jason Lindo, Analisa Packham

How Much Can Expanding Access to Long-Acting Reversible Contraceptives Reduce Teen Birth Rate?

Despite a near-continuous decline over the past 20 years, the teen birth rate in the United States continues to be higher than that of other developed countries. Given that over three- quarters of teen births are unintended at conception and that over a third of unplanned births are to women using contraception, many have advocated for promoting the use of long-acting reversible contraceptives (LARCs), which are more effective at preventing pregnancy than more commonly used contraceptives. In order to speak to the degree to which increasing access to LARCs can reduce teen birth rates, this paper analyzes the first large-scale policy intervention to promote and improve access to LARCs in the United States: Colorado's Family Planning Initiative. We estimate its effects using a difference-in-differences approach, comparing the changes in teen birth rates in Colorado counties with Title X clinics (which received funding) to the changes observed in other U.S. counties with Title X clinics. The results of this analysis indicate that the $23 million program reduced the teen birth rate by approximately 5% in the four years following its implementation, providing support for the notion that increasing access to LARCs is a mechanism through which policy can reduce teenage childbearing.

WP 21290

Craig Garthwaite, Tal Gross, Matthew Notowidigdo

Hospitals as Insurers of Last Resort.

American hospitals are required to provide emergency medical care to the uninsured. We use previously confidential hospital financial data to study the resulting uncompensated care, medical care for which no payment is received. We use both panel-data methods and case studies from state-wide Medicaid disenrollments and find that the uncompensated care costs of hospitals increase in response to the size of the uninsured population. The results suggest that each additional uninsured person costs local hospitals $900 each year in uncompensated care. Similarly, the closure of a nearby hospital increases the uncompensated care costs of remaining hospitals. Increases in the uninsured population also lower hospital profit margins, which suggests that hospitals cannot simply pass along all increased costs onto privately insured patients. For-profit hospitals are less affected by these factors, suggesting that non-profit hospitals serve a unique role as part of the social insurance system.

WP 21326

Aspen Gorry, Devon Gorry, Sita Slavov

Does Retirement Improve Health and Life Satisfaction?

We utilize panel data from the Health and Retirement Study to investigate the impact of retirement on physical and mental health, life satisfaction, and health care utilization. Because poor health can induce retirement, we instrument for retirement using eligibility for Social Security and employer sponsored pensions and coverage by the Social Security earnings test. We find strong evidence that retirement improves both health and life satisfaction. While the impact on life satisfaction occurs within the first 4 years of retirement, many of the improvements in health show up 4 or more years later, consistent with the view that health is a stock that evolves slowly. We find little evidence that retirement influences health care utilization.

WP 21361

Pablo Celhay, Paul Gertler, Paula Giovagnoli, Christel Vermeersch

Long-Run Effects of Temporary Medical Care Productivity

The adoption of new clinical practice patterns by medical care providers is often challenging, even when they are believed to be both efficacious and profitable. This paper uses a randomized field experiment to examine the effects of temporary financial incentives paid to medical care clinics for the initiation of prenatal care in the first trimester of pregnancy. The rate of early initiation of prenatal care was 34% higher in the treatment group than in the control group while the incentives were being paid, and this effect persisted at least 24 months or more after the incentives ended. These results are consistent with a model where the incentives enable providers to address the fixed costs of overcoming organizational inertia in innovation, and suggest that temporary incentives may be effective at motivating improvements in long run provider performance at a substantially lower cost than permanent incentives.

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