



WHO ARE THE UNINSURED?

An Analysis of America's Uninsured
Population, Their Characteristics
and Their Health

June E. O'Neill
Baruch College and City
University of New York

Dave M. O'Neill
Baruch College and City
University of New York

**Employment
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The Employment Policies Institute (EPI) is a nonprofit research organization dedicated to studying public policy issues surrounding employment growth. In particular, EPI research focuses on issues that affect entry-level employment. Among other issues, EPI research has quantified the impact of new labor costs on job creation, explored the connection between entry-level employment and welfare reform, and analyzed the demographic distribution of mandated benefits. EPI sponsors nonpartisan research that is conducted by independent economists at major universities around the country.

Dr. June O'Neill is Wollman Distinguished Professor of Economics in the Wasserman Department of Economics and Finance and Director of the Center for the Study of Business and Government, Zicklin School of Business, Baruch College, City University of New York (CUNY). She is also a Research Associate of the National Bureau of Economic Research (NBER) and an American Enterprise Institute (AEI) Adjunct Scholar. She served as director of the Congressional Budget Office, 1995-1999, and chaired the Board of Scientific Counsellors of the National Center for Health Statistics, 2003-2007. Among her publications is a recent article written jointly with Dave O'Neill that compares differences between the U.S. and Canada in health status, health care and inequality of health outcomes.

Dr. Dave O'Neill is a Senior Research Associate at the Center for the Study of Business and Government and an Adjunct Professor of Economics in the Wasserman Department of Economics and Finance, Baruch College, CUNY. Before joining the Center Dr. O'Neill had a long career as an economist in both the academic and policy sectors, working at the Nathan Kline Institute for Psychiatric Research and at private policy institutes and the federal government in Washington D.C. including the U.S. Bureau of the Census and the General Accounting Office. He has published in the fields of labor economics, health and welfare policy.

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1090 Vermont Avenue, NW
Suite 800
Washington, DC 20005

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WHO ARE THE UNINSURED?

An Analysis of the Characteristics of Americans Without Health Insurance

Executive Summary

When reformers talk about our healthcare system, they repeatedly cite the number of uninsured Americans as one of the primary problems in need of a solution. In 2006, the Census Bureau estimates of the uninsured reached 47 million, representing approximately 16 percent of the population. While this number has dominated nearly all healthcare policy debates, it unfortunately remains a relatively coarse measurement and provides little substantive information about the uninsured that can be used to craft effective policy solutions. For example, it is often assumed—without any quantitative evidence—that nearly all of these uninsured individuals lack coverage because they are unable to afford it. Furthermore, the lack of health insurance is often equated with a lack of healthcare, despite the fact that individuals without coverage often receive medical services from a wide variety of sources within the healthcare system. As the country moves closer to a serious debate over healthcare reform, whether these assumptions reflect reality will make a significant difference to the policy outcome. Unless we have a better understanding of the characteristics of the uninsured

population, the solutions proposed may, in practice, be poorly targeted and ultimately ineffective.

This study attempts to increase knowledge in the field of health policy by examining some of the characteristics of those without health insurance. The authors calculate the percentage of uninsured Americans that could likely afford health coverage. Drs. June and David O'Neill of the Baruch College, City University of New York use data from a number of surveys to determine what percentage of the nearly 47 million uninsured Americans lack health insurance because they are likely unable to afford it—classifying them as “involuntarily” uninsured. They find that at least 43 percent of Americans in the 18–64 year-old age group have incomes at or above 2.5 times the poverty line, indicating they likely have the means to obtain healthcare coverage and thus may be classified as “voluntarily” uninsured.

To further examine this classification, the authors then compare the characteristics of the voluntarily and involuntarily uninsured with the characteristics of the privately insured population. The authors find the most striking differences when comparing the involuntarily uninsured to the privately insured. For example, roughly one-third

of the involuntarily uninsured are high school dropouts, compared to approximately 7 percent of the privately insured population. A disproportionately large percentage of the involuntarily uninsured are young, a third are immigrants, close to half are single without children, and close to 40 percent did not work during the year. Indeed, many of these demographic differences—which are not necessarily shared by the voluntarily uninsured—may contribute to the differences in health coverage.

A productive conversation about health policy must also separate the concept of a lack of health coverage from a lack of healthcare. Individuals without adequate health insurance still receive medical care from a variety of sources. The authors look at the utilization of certain services—in particular, screening for cancer—and find that the uninsured may indeed receive less care than those who are privately insured. However, when compared with screening rates for Canadians (who largely receive healthcare coverage through a nationalized, single-payer system), the uninsured in the United States actually compare favorably. To further determine whether lack of coverage means lack of service, the authors also report estimates of the dollar amounts of healthcare resources obtained by the uninsured in total. The estimates indicate that on a per-capita basis, the uninsured receive about 40 percent of the amount of health resources received by those with insurance. Interestingly, the involuntarily uninsured receive more than half of the total and the voluntarily uninsured less, because “safety net” providers generally distribute resources to lower income people.

After determining the characteristics of the uninsured and discovering that being uninsured does not necessarily mean an individual has no access to health services, the authors turn to the question of mortality. A lack of care is particularly troubling if it leads to differences in mortality based on insurance status. Using data from

the Health and Retirement Survey, the authors estimate differences in mortality rates for individuals based on whether they are privately insured, voluntarily uninsured, or involuntarily uninsured. Overall, they find that a lack of health insurance is not likely to be the major factor causing higher mortality rates among the uninsured. The uninsured—particularly the involuntarily uninsured—have multiple disadvantages that are associated with poor health.

Designing effective health policy requires full information about the composition of the uninsured, including an assessment about whether long-held assumptions are supported by evidence. This includes understanding the factors contributing to a lack of insurance and information about the true consequences of that lack of coverage, particularly the effect on the uninsured population’s utilization of health services and the effect on mortality. This study shows that a large fraction of the uninsured could likely afford health coverage. In addition, it shows that the involuntarily uninsured are demonstrably different from the privately insured. Finally, the authors show that while the uninsured use fewer health services, they still receive a large amount of care, and there is little discernable difference in mortality based on insurance status.

As we begin to engage in this important debate, priority should be placed on policy solutions that have the best chance of being effective. Policies that focus, at least at first, on providing coverage and services to the involuntarily uninsured—the truly at-risk—will accomplish the most and take us much further in improving the overall health of the nation.

Kristen Lopez Eastlick
Senior Research Director
Employment Policies Institute

The Involuntarily and Voluntarily Uninsured: Characteristics, Healthcare, and Health Status

Each year the Census Bureau reports its estimate of the total number of adults and children in the U.S. who lacked health insurance coverage during the previous calendar year.¹ The number of Americans reported as uninsured in 2006 was 47 million, which was close to 16 percent of the U.S. population (Table 1). This number has come to have a large impact on the debate over healthcare reform in the United States. However, there is a great deal of confusion about the significance of the uninsured numbers.

Many people believe that the number of uninsured signifies that almost 50 million Americans are without healthcare simply because they cannot afford a health insurance policy and as a consequence, suffer from poor health, and premature death.² However this line of reasoning is based on a distorted characterization of the facts. Although it is important that we be concerned about the provision of resources to those who are too

poor to afford medical care, policy action to address the problem should be guided by informed discussion of this complex issue.

More careful analysis of the statistics on the uninsured shows that many uninsured individuals and families appear to have enough disposable income to purchase health insurance, yet choose not to do so, and instead self-insure. We call this group the “voluntarily uninsured” and find that they account for 43 percent of the uninsured population. The remaining group—the “involuntarily uninsured”—makes up only 57 percent of the Census count of the uninsured. A second important point is that while the uninsured receive fewer medical services than those with private insurance, they nonetheless receive significant amounts of healthcare from a variety of sources—government programs, private charitable groups, care donated by physicians and hospitals, and care paid for by out-of-pocket expenditures. Third, although the involuntarily uninsured by some estimates appear to have a significantly shorter life expectancy than those who are privately insured or voluntarily uninsured, it is difficult to establish cause and effect. We find that

TABLE 1. Number and Percent Uninsured in 2006

	Population (000's)	Uninsured (000's)	% Uninsured
All Ages	296,824	46,995	15.8
Ages <65	260,789	46,453	17.8
Ages 18–64	186,688	37,792	20.2

Note: The data source is the Current Population Survey (CPS) microdata files. Insurance status is reported for the prior calendar year (2006) in the March 2007 CPS.

¹ The health insurance question is part of the annual March Current Population Survey (CPS). Most research has concluded that although the CPS intends to count the number of persons who were uninsured at all times during the previous year, many survey respondents instead report their insurance status at the time of the March interview. This results in a larger number of uninsured. See below for further discussion.

² The Institute of Medicine (2003) has promulgated an estimate that lack of insurance in the United States causes 18,000 preventable deaths each year based on a study by Franks et al. (1993). Families USA, in a series of reports called “Dying for Coverage”, uses the IOM estimates to show the number of people in each state who die because of lack of insurance. As we show below, the Franks result has a large margin of uncertainty. Moreover, the IOM conclusion is contravened by studies showing that the higher observed mortality of the uninsured is in large part attributable to their socioeconomic disadvantages.

differences in mortality according to insurance status are to a large extent explained by factors other than health insurance coverage—such as education, socioeconomic status, and health-related habits like smoking.

In this paper, we analyze data from a number of surveys to measure three aspects of the uninsured problem—the relative numbers and characteristics of those who are voluntarily and involuntarily uninsured; the amounts and types of medical services they obtain; and the size of the differential in health outcomes associated with lack of insurance. Our results have implications for a number of issues related to the formulation of policies that would extend coverage to the uninsured and to the costs of those policies. One is that it is primarily the involuntarily uninsured that would require a net addition to government spending to attain acceptable levels of health services. Moreover, because the involuntarily insured already utilize publicly funded medical resources, the cost of extending insurance coverage to them is likely to add less to public expenditures than the total cost of the coverage. Thus, our estimates of the number of uninsured who are involuntarily uninsured, and the cost of the health services they are likely to receive, are important ingredients for estimating the net cost of insurance reform—i.e., the additional amount of resources that would be required to provide medical services to those who currently lack access due to their low incomes.³

The recognition that some of the uninsured are voluntarily uninsured also informs the debate about mandating coverage for all uninsured people, as opposed to focusing only on coverage for the involuntarily uninsured. Man-

dating coverage for those who choose to self-insure and can afford it enlarges the government's role beyond what is necessary and forces an expenditure on an unwilling group. (However, one could argue that it would be reasonable to require the voluntarily uninsured to purchase low-cost catastrophic insurance in view of externalities to the public when accidents or other unexpected health emergencies lead to unusually high medical expenditures.) Finally, our findings on how the health status and health outcomes of the involuntarily uninsured compare with those of the insured have implications for the pace at which reforms should be implemented and how radical they need to be.

Estimates Of The Number Of Involuntarily Uninsured

Estimates of the involuntarily uninsured necessarily depend on a judgment about the level of family or individual income consistent with ability to pay. The concept of need, however, is not easy to determine because it can be influenced by a large number of factors, and it is difficult to assign weights to each in order to compile a single index of need.⁴

Like the poverty threshold, an index of ability to pay for health insurance is bound to differ with the eye of the beholder. We base our estimates of the voluntarily and involuntarily uninsured on family income expressed as a multiple of the poverty rate and choose a single level for each family type, based on the reasoning explained below. We accept some arbitrariness in exchange for simplicity, an important policy consideration. Yet we find

³ Note that we have not addressed the question of the effect that a government subsidy for the involuntarily uninsured would have on those who currently have private insurance yet have incomes that would qualify them for such a subsidy. Covering all persons who qualify by reason of income (and family size) would involve a transfer from private to public financing, but would not require a net addition to total health resources.

⁴ Bundorf and Pauly (2006) investigate the “affordability” of coverage based on an array of factors. Using different definitions of affordability, they find that insurance could be viewed as affordable for between one-quarter and three-quarters of the uninsured, depending on the definition selected.

that our distinction between the involuntary and voluntary groups is highly useful in analysis of health behavior and health outcomes.

Despite the subjectivity involved, as one looks up and down the income distribution, there are clearly some income situations that would not cause controversy if classified as income at which health insurance is affordable. For example, a \$10,000 health insurance policy would represent only 6.7 percent of the income of a married couple with no dependent children and a family income of \$150,000 a year. It is likely that uninsured couples without children at such high income levels are voluntarily uninsured, as the purchase of health insurance would not require them to seriously cut back their spending on necessities such as food and housing. At the other end of the spectrum, a \$10,000 insurance policy would represent 40 percent of the income of a couple with children and a family income of \$25,000; a \$6,000 policy would be almost a quarter of their income. Most would conclude that the uninsured in those situations are involuntarily uninsured.

It becomes more of a challenge to distinguish the involuntary from the voluntary when we consider the 23.7 million uninsured persons who are in households with incomes between \$25,000 and \$75,000 who make up 50.5 percent of the uninsured. In this range, it is obviously more difficult to determine a reasonable standard for “ability-to-pay”—i.e. the dollar amount of income an individual or family unit must have in order to afford a given policy premium. In the remainder of this section, we present our estimates of ability-to-pay threshold incomes and then provide our estimates of the number of involuntarily and voluntarily uninsured. We present estimates for the U.S. as a whole and for individual states. We also present estimates from different surveys and for different points in time. After presenting cross-tabulations of Current Population Survey (CPS) data on

the personal characteristics of individuals by their insurance status, we use regression analysis to estimate the net effects of each of the personal characteristics—and the premium cost of health insurance—on the probability that an individual is insured.

Ability-to-Pay Thresholds

Our basic approach to determining who among the uninsured are involuntary or voluntary is to observe the proportion of individuals at various income levels who obtained coverage from private insurers or were uninsured (where income level is measured as multiples of the poverty line for each family type). We assume that the greater the proportion who obtain private coverage at a given income level, the more likely it is that those at the same income level who remain uninsured are voluntarily uninsured. Since those who obtain public insurance of some kind (such as Medicaid, Medicare, or Tri-Care) do not face the problem of ability to pay, including them in the analysis would obscure the relationship we are trying to measure—namely, the level of income at which it becomes too difficult to purchase insurance. We therefore exclude the publicly insured from this part of our analysis.

The premise that guides our thinking is that there is an underlying distribution of individuals/family units ranked by their preferences for health insurance coverage, and this distribution depends on health status, risk aversion, and other personal characteristics. We also assume that when income rises, people at a given level of taste or preference for insurance will likely spend more on health coverage. (In other words, health insurance is what economists call a “normal good.”) However, those with a relatively low taste for health insurance may not increase their purchase of insurance very much, if at all, as income rises. Thus, we can observe a small proportion of higher income individuals who remain uninsured, and they will be individuals who place the lowest value

TABLE 2. Percent with Private Insurance by Family Income Expressed as a Multiple of the Poverty Threshold, Persons Ages 18–64, 2006

	<i>< 1.25 × pov. level</i>	<i>1.25–2.5 × pov. level</i>	<i>2.5–3.75 × pov. level</i>	<i>≥ 3.75 × pov. level</i>
Total population excluding those with public insurance (000's)	16,619	27,803	28,885	89,202
<i>Privately insured as percent of total population excluding publicly insured</i>	35.6	60.8	79.2	88.6
MEMO:				
Total population (in 000's)	25,093	33,883	32,256	95,456
Uninsured	10,708	10,885	6,008	10,191
With public insurance	8,474	6,080	3,371	6,254
With private insurance	5,910	16,918	22,876	79,011

Note: The poverty level multiples are based on the ratios of total family income by family type divided by the relevant poverty threshold for that family type as estimated by the Census Bureau. Public insurance includes Medicare, Medicaid, CHAMPUS, VA, and other military health-care. The data source is the Current Population Survey (CPS) microdata files, March 2007.

on healthcare. At the other end of the income distribution are those who have relatively low incomes, yet purchase health insurance. This group likely assigns a high value to health insurance, either because they have poor perceived health or are highly risk averse. At the lowest income levels, of those remaining uninsured, there will be a number of persons who value insurance but simply cannot afford it. This is the underlying conceptual model that has guided our assignment of the numbers of voluntarily and involuntarily uninsured.

Table 2 shows the distribution in 2006 of uninsured and insured individuals by income, expressed as a multiple of the poverty level. The poverty threshold differs by family type and size, so the number of individuals at each multiple of the poverty level depends on both their income level and their distribution by family type and size. The percentage of all individuals (excluding those with public coverage) who obtain private coverage rises to 89 percent for those in families with incomes equal to or greater than 3.75 times their poverty threshold and to 79 percent for those with incomes between 2.5 and

3.75 times their poverty threshold. In view of the large percentages covered at those levels, we consider uninsured units with incomes above 2.5 times the poverty threshold to be voluntarily uninsured. Among families with incomes below 2.5 times the poverty level, the percentage obtaining private insurance drops to 61 percent for those with incomes between 1.25 and 2.5 their poverty thresholds and then falls even more sharply to 36 percent for those with incomes less than 1.25 times their poverty thresholds.

Given the relatively low percentages covered at income levels below 2.5 times the poverty line, we assume that all individuals and families without private health insurance at those levels are involuntarily uninsured. Therefore, all persons and households without insurance and at incomes greater than 2.5 times their poverty line are assumed to be voluntarily uninsured.

Table 3 shows how our estimates of the percent of the uninsured would vary depending on the income level used to delineate two groups. The results are shown at

TABLE 3. Differences in the Percent of the Uninsured Classified as Involuntarily Uninsured Under Alternative Income Cut-off Points, Persons by Family Type, Ages 18–64, 2006

	Total Pop. (000's)	% Uninsured	Total Uninsured (000's)	Percent of total uninsured classified as involuntarily uninsured at different income cut-offs		
				<2.0 × pov. level	<2.5 × pov. level	<3.0 × pov. level
Not Married Without Children	63,776	28.9	18,429	43.6	52.9	60.2
Not Married With Children	21,462	29.7	6,364	59.0	67.4	73.0
Married Without Children	48,077	11.4	5,487	31.4	39.9	50.1
Married With Children	53,373	14.1	7,512	57.7	71.3	79.7
Total	186,688	20.2	37,792	47.2	57.1	64.8

Note: The poverty level multiples are based on the ratios of total family income by family type divided by the relevant poverty threshold for that family type as estimated by the Census Bureau. The data source is the CPS microdata files, March 2007.

three different income levels expressed as multiples of the poverty threshold and the numbers are disaggregated by family type. At an income level of less than two times the poverty line (where a person is considered to be involuntarily uninsured), the involuntarily uninsured make up 47 percent of the total uninsured. At a level of less than three times the poverty line, 65 percent of the total uninsured would be classified as involuntarily uninsured.

At the intermediate cut-off of less than 2.5 times the poverty level—the one we ultimately select for our analysis—the involuntarily uninsured are 57 percent of the total uninsured. However, even assuming that only those with incomes exceeding 3 times the poverty line are voluntarily uninsured (a relatively conservative estimate of ability-to-pay), the involuntarily uninsured would be only 65 percent of the “official” number of uninsured persons.

The most common number used to measure the uninsured refers to the entire population including those ages

65 and over, almost all of whom are covered by Medicare as well as children under the age of 18. (Differences by age group in the number and percent uninsured are shown in Table 1.) We restrict our analysis to the population ages 18–64, adults who can be viewed as making health insurance coverage decisions.

As a broad check on the validity of our numbers, we have also estimated the number uninsured and their distribution by voluntary and involuntary status using two other major surveys that measure the uninsured and some of their characteristics—the Medical Expenditure Panel Survey (MEPS) and the National Health Interview Survey (NHIS). Questions on health insurance coverage vary in concept across surveys and these conceptual differences can lead to wide differences in survey estimates of the number of uninsured.

A major conceptual difference in definitions is the time period over which a person’s insurance status is measured. Three time periods are commonly used. One refers to those who are uninsured for a full year, another to the

person's status at the time of the interview (called "point in time" measure), and a third measures whether an individual has ever been without health insurance during a particular year. Because of the relatively high turnover in insurance status, the "ever uninsured" question results in the largest estimates of the number of uninsured. The most stringent definition leading to the smallest estimates is "full-year uninsured."

The MEPS is a panel survey that interviews individuals several times during the year and asks about their insurance status at the time of the interview and for each month in the past 3–5 months. The MEPS data can be combined to produce all three measures. In 2003, estimates of the uninsured based on MEPS indicated 33.7 million uninsured full-year, 48.1 million uninsured at a point in time, and 62.9 million uninsured at any time during the year (ASPE, September, 2005). The NHIS also collects data that enables estimates under the three definitions but interviews less frequently during the year than MEPS.

Every March the CPS asks only one question on insurance status, and attempts to uncover those uninsured for a full year over the previous calendar year. However, an answer to the CPS question requires recall over the prior 13 to 15 months. Studies comparing estimates of the uninsured from the CPS and other surveys have concluded that it is likely that some respondents, perhaps confused by the long recall period, report their current insurance status, producing an estimate that is closer to the point-in-time concept.⁵

In Table 4, we compare results from the three surveys on the number of uninsured ages 18–64 and on the division of the uninsured into the involuntary and voluntary categories. The NHIS and CPS estimates of the total uninsured are quite similar even though the CPS is intended to show full-year uninsured, and the NHIS, the uninsured at a point in time. The CPS estimates are also larger than MEPS, which is a better measured full-year uninsured estimate. The similarity of the CPS with the NHIS and that they share differences with the MEPS estimates appear to confirm the view that the CPS estimates are closer to a point-in-time estimate.

TABLE 4. Comparison of Different Survey Estimates of the Number Insured and Uninsured by Voluntary/Involuntary Status (Ages 18-64)

	Method of Estimate	Number Uninsured			Uninsured a Percent of Total Population			Percent Distribution of the Uninsured	
		Total	Involun.	Volun.	Total	Involun.	Volun.	Involun.	Volun.
Current Population Survey (CPS) 2006	Full year ¹⁾ (retrospective question)	37.8 million	21.6 million	16.2 million	20.3	11.6	8.7	57.1	42.9
National Health Interview (NHIS) 2006	Point in time	36.5 million	21.6 million	14.9 million	20.0	11.9	8.2	59.2	40.8
Medical Expenditure Panel (MEPS) 2005	Full year ²⁾ (panel data)	31.3 million	16.6 million	14.6 million	17.0	9.0	7.9	53.1	46.9

¹⁾ The CPS question is retrospective and refers to those who reported in March 2007 they had no health insurance at any time in the prior calendar year. But many may report health insurance status at the time of the March survey. See discussion in text.

²⁾ MEPS is a panel survey. The full-year uninsured refer to people who reported no insurance for each of the 12 months.

Note: See Table 3 for definition of involuntarily and voluntarily uninsured. Authors' estimates using the microfiles of stated surveys.

⁵ See ASPE, Sept. 2005; U.S. Bureau of the Census, 2007; Congressional Budget Office (CBO) May, 2003.

The CPS and NHIS estimates of the involuntarily uninsured are also quite similar. The income data in MEPS are much less detailed than the CPS or NHIS data, and therefore, the estimates of the involuntarily uninsured are more difficult to compare in detail with the CPS. However, we can conclude from these results that the CPS, despite definitional differences, is reasonably valid for describing the insured and uninsured as well the voluntarily and involuntarily uninsured in the U.S. We rely on the CPS for much of our analysis because of its large sample size and superior data on income, employment, education, and various demographic characteristics.

Changes in the Percent Uninsured over Time and Across the U.S. States

Over the years 1994 to 2006, the total number of uninsured as a percentage of the population 18–64 declined slightly from 18.5 percent in 1994 to 17.9 percent in

2000 and then increased to 20.3 percent in 2006 (Table 5). The involuntarily uninsured as a percentage of the total population similarly declined from 11.1 percent in 1994 to 9.8 percent in 2000 and then rose again, but only back to 11.6 percent. Thus, while both series moved in the same direction between 1994 and 2006, the involuntarily uninsured increased more slowly than the total uninsured, and consequently, made up a smaller proportion of the uninsured in 2006 than in 1994.

Table 6 shows the variation across states in the percentage of the total population that we estimate to be involuntarily uninsured, the percentage voluntarily insured, and the total percentage uninsured. The variation in the total percent uninsured is quite large, ranging from 30.1 percent in Texas to only 11.2 percent in Minnesota. Expressed as a ratio, Texas has 2.7 times the percentage of uninsured as Minnesota. The variation in the per-

TABLE 5. Number of Insured and Uninsured by Voluntary/Involuntary Status and by Type of Family: 1994–2006, Ages 18–64

	Insured (in '000)	Uninsured (in '000)			Uninsured as % of Total Population		
		Total	Involun.	Volun.	Total	Involun.	Volun.
1994: Total	129,978	29,425	17,687	11,738	18.5	11.1	7.4
Not Married Without Children	35,367	13,641	7,398	6,243	27.8	15.1	12.7
Not Married With Children	14,085	4,398	2,990	1,408	23.8	18.2	7.6
Married Without Children	36,622	4,792	2,259	2,533	11.6	5.5	6.1
Married With Children	43,904	6,593	5,039	1,554	13.1	10.0	3.1
2000: Total	141,841	30,935	16,992	13,943	17.9	9.8	8.1
Not Married Without Children	42,443	14,202	7,250	6,952	25.1	12.8	12.3
Not Married With Children	14,376	5,222	3,351	1,871	26.7	17.1	9.6
Married Without Children	38,942	5,239	1,990	3,249	11.9	4.5	7.4
Married With Children	46,080	6,272	4,401	1,871	12.0	8.4	3.6
2006: Total	148,128	37,792	21,593	16,199	20.3	11.6	8.7
Not Married Without Children	45,216	18,430	9,757	8,673	29.0	15.3	13.6
Not Married With Children	15,066	6,364	4,287	2,077	29.7	20.0	9.7
Married Without Children	42,441	5,487	2,190	3,297	11.5	4.6	6.9
Married With Children	45,404	7,513	5,360	2,153	14.2	10.1	4.1

Note: For the definition of involuntarily and voluntarily uninsured, see text.

Source: Current Population Survey (CPS) March 1995, 2001, and 2007.

TABLE 6. The Insured and Uninsured by Voluntary/Involuntary Status by State of Residence, Ages 18–64

	Uninsured as % of Total Pop.			Insured <i>(in '000)</i>	Uninsured <i>(in '000)</i>		
	Total ¹⁾	Involun. ¹⁾	Volun. ¹⁾		Total	Involun.	Volun.
By State ²⁾							
Texas	30.1	18.4	11.7	9,816	4,228	2,590	1,638
New Mexico	29.8	20.0	9.8	817	347	233	114
Louisiana	28.8	16.4	12.3	1,830	739	422	316
Florida	27.3	15.8	11.5	8,045	3,015	1,747	1,268
Arkansas	26.4	17.7	8.8	1,266	455	304	151
Arizona	26.0	15.9	10.1	2,892	1,014	619	394
Oklahoma	26.0	18.3	7.7	1,541	540	380	160
Mississippi	25.0	18.3	6.7	1,343	447	327	120
California	24.0	12.7	11.3	17,308	5,463	2,889	2,574
Nevada	23.6	14.0	9.5	1,194	368	219	148
Oregon	23.0	12.8	10.2	1,828	547	305	242
North Carolina	22.7	14.1	8.6	4,304	1,263	785	477
Georgia	22.0	12.9	9.1	4,720	1,330	779	551
Alaska	21.5	11.2	10.3	328	90	47	43
Alabama	21.3	15.3	6.0	2,223	600	431	169
Montana	21.2	14.9	6.4	471	127	89	38
Utah	21.1	12.6	8.4	1,201	321	192	128
South Carolina	21.1	11.2	9.9	2,092	559	297	262
Colorado	20.7	11.0	9.7	2,457	641	341	300
Kentucky	20.4	13.3	7.1	2,082	535	348	187
Wyoming	20.3	10.3	9.7	255	65	33	31
Tennessee	19.8	11.8	8.0	2,884	711	424	287
Idaho	19.6	11.7	7.9	715	174	104	70
New Jersey	18.9	9.3	9.7	4,416	1,032	506	526
New York	18.9	10.2	8.7	9,737	2,267	1,225	1,042
Illinois	18.1	9.5	8.6	6,545	1,447	761	686
Maryland	17.8	8.7	9.1	2,920	632	308	324
West Virginia	17.8	10.7	7.0	973	210	127	83
Missouri	17.7	10.5	7.2	2,982	640	379	260
Kansas	17.0	11.0	6.0	1,371	280	181	99
Virginia	16.7	9.3	7.4	4,020	808	450	358
Washington	15.6	8.1	7.5	3,415	633	328	305
South Dakota	15.6	10.5	5.1	394	73	49	24
Nebraska	15.6	9.5	6.1	926	171	104	67
North Dakota	15.3	9.7	5.6	333	60	38	22
Indiana	15.2	8.8	6.4	3,427	616	356	260
New Hampshire	15.1	7.1	8.0	715	127	60	67
Delaware	14.8	7.7	7.1	454	79	41	38

	Uninsured as % of Total Pop.			Insured (in '000)	Uninsured (in '000)		
	Total ¹⁾	Involun. ¹⁾	Volun. ¹⁾		Total	Involun.	Volun.
By State ²⁾							
Michigan	14.7	8.8	5.9	5,336	918	552	367
Iowa	14.4	8.8	5.6	1,550	261	160	102
D. C.	13.8	7.9	5.9	337	54	31	23
Ohio	13.8	7.8	6.0	6,123	981	554	426
Massachusetts	13.6	6.4	7.3	3,479	548	256	293
Pennsylvania	12.9	6.9	5.9	6,781	1,000	540	460
Vermont	12.8	5.6	7.0	360	53	23	29
Connecticut	12.5	5.9	6.6	1,904	272	129	143
Maine	12.2	7.2	5.0	739	103	61	42
Wisconsin	11.8	7.1	4.7	3,114	415	249	167
Rhode Island	11.7	6.2	5.4	603	80	42	37
Hawaii	11.6	5.9	5.7	677	89	45	44
Minnesota	11.2	5.6	5.6	2,883	365	183	182
	20.3	11.6	8.7	148,126	37,787	21,643	16,144

¹⁾ The sum may not add to the total due to rounding.

²⁾ Note: Ranked by percent uninsured of total population from the highest to lowest.

Note: Involuntarily uninsured are those with family income less than 2.5 times the poverty threshold for their family type. The data source is the Current Population Survey microdata files, March 2007.

centage of those involuntarily uninsured ranges from 20.0 percent in New Mexico to 5.6 percent in Vermont and Minnesota. Thus, New Mexico has 3.6 times the percentage of those involuntarily uninsured as the two lowest States.

Differences in state per capita income, measured by state Gross Domestic Product (GDP) (not shown in Table 6) help explain the variation in insurance coverage. A simple regression of the percent of the population ages 18–64 either insured or voluntarily uninsured on state GDP shows that for every \$10,000 increase in state per-capita GDP, the percent either insured or voluntarily uninsured increases by about 7 percent (a statistically significant result). States like Texas and New Mexico, where the percent involuntarily uninsured is relatively high (and therefore the percent insured or voluntarily uninsured is low) would face a distinct challenge in achieving 100 percent coverage. Such a challenge would not be faced by states with high insurance coverage rates like Vermont and the other New England states, or Minnesota.

These results suggest that policies for extending public coverage to the uninsured should take into account interstate differences in both the percentage that are involuntarily uninsured and in state per capita income.

Summary on Determining the Number of Involuntarily Uninsured

We estimate that about 16 million of the population ages 18–64 reported as uninsured in 2006 are voluntarily uninsured in the sense that their incomes are high enough to enable them to afford a health insurance policy. That leaves 22 million who are involuntarily uninsured—that is, their incomes are below 2.5 times the poverty level, an income level at which the purchase of insurance would require considerable personal sacrifice. Thus, although 20 percent of the population ages 18–64 is uninsured, only 12 percent of the population and 57 percent of the uninsured are involuntarily uninsured. These are important distinctions because those who choose not to be insured are surely not in the same position as those who

TABLE 7. Personal Characteristics by Insurance Status, Ages 18–64, March CPS 2007

	Total	Privately Insured	Uninsured		
			Total	Volun.	Involun.
Total Pop. (in '000)	162,508	124,716	37,792	16,199	21,593
Total Pop. (% distribution)	100.0%	76.7%	23.3%	10.0%	13.3%
Gender (%)					
Male		49.0	54.8	61.5	49.8
Female		51.0	45.2	38.6	50.2
Age (%)					
18–34		32.7	50.4	48.7	51.7
35–44		24.3	21.2	19.6	22.4
45–64		43.0	28.4	31.7	25.9
Education (%)					
HS dropout		7.1	27.4	20.4	32.7
HS grad.		27.2	37.1	36.2	37.8
Some college		30.5	23.8	27.0	21.4
College grad. or higher		35.2	11.6	16.3	8.1
Race/Ethnicity (%)					
White, non-Hispanic		74.2	47.2	53.7	42.4
Black, non-Hispanic		9.7	14.9	12.7	16.6
Other race, non-Hispanic		6.7	6.8	7.3	6.4
Hispanic		9.5	31.1	26.3	34.7
Immigrant status (%)					
Native born		87.5	70.0	74.0	67.1
Foreign born, citizen		6.1	6.0	6.8	5.3
Foreign born, non-citizen		6.4	24.0	19.2	27.7
Foreign born by year came to the U.S. (100%)					
Before 1990		48.1	29.0	34.1	26.0
1990–99		30.8	35.7	35.3	35.9
2000–07		21.2	35.3	30.5	38.1
Marital and child status (%)					
Married, no children		29.3	14.5	20.4	10.1
Married with children		32.7	19.9	13.3	24.8
Not married, with children		8.4	16.8	12.8	19.9
Not married, no children		29.6	48.8	53.5	45.2
Employment Status in 2006					
Never worked		13.5	29.9	19.5	37.8
Wage and salary workers, worked all year		68.6	45.8	52.9	40.5
Wage and salary workers, worked part year		9.8	13.7	12.9	14.3
Self-employed workers, worked all year,		7.1	8.6	12.7	5.6
Self-employed workers, worked part year		1.1	1.9	2.0	1.9

	Total	Privately Insured	Uninsured		
			Total	Volun.	Involun.
Family Income in 2006 (%)					
Family income <20,000		6.1	32.8	0.0	57.5
Family income 20,000–40,000		15.3	29.8	20.5	36.8
Family income 40,000–70,000		26.9	21.3	42.0	5.8
Family income >70,000		51.7	16.1	37.4	0.0

Note: Voluntarily uninsured are those with family income equal to or exceeding than 2.5 times the poverty threshold for their family type. Involuntarily uninsured are those with family income less than 2.5 times the poverty threshold for their family type. All calculations are weighted. The demographic variables are reported as of March 2007. Employment status, income, and insurance status are reported for the prior calendar year (2006).

Source: The CPS microdata files, March 2007.

might place a high value on insurance coverage but cannot afford to buy it.

One observation of particular policy relevance is that the percent of the population that is either covered or voluntarily uninsured varies considerably across states. Moreover, the cross-state variation is strongly related to state per capita income.

Personal Characteristics by Insurance Status and their Impact on the Probability of Being Uninsured

How do the demographic and economic characteristics of individuals differ between the insured and the uninsured and between the involuntarily and voluntarily uninsured? How do those factors interact to determine an individual's insurance status? We use data from the CPS to compare the demographic and socioeconomic characteristics of people in different insurance categories. We then use regression analysis to examine the effect of personal, social, and economic characteristics on the probability that a person is covered by private health insurance. We have also added data on insurance premium costs by state obtained from the Kaiser Family Founda-

tion with the CPS data to examine the effect of insurance costs on the decision of firms to provide benefits and of individuals to purchase private insurance in the individual's market.⁶

Table 7 provides data on the characteristics of individuals ages 18–64 classified by insurance status: privately insured, total uninsured, voluntarily uninsured, and involuntarily uninsured. (We exclude those with public insurance such as Medicaid and Medicare because the focus here is on the acquisition of private insurance.) The characteristics examined include gender, age, marital/family status, schooling attainment, income, employment status, racial and ethnic group, and immigrant status.

Among the differences in characteristics, we note that compared to those with private insurance, the uninsured are more likely to be male (55 percent versus 49 percent) and under the age of 35 (50 percent versus 33 percent); they are much more likely to be unmarried and have no children (49 percent versus 29 percent). Compared to the privately insured, the uninsured are also almost four times as likely to be high school dropouts, more than three times as likely to be Hispanic, and close to four times as likely to be foreign-born non-citizens. Their

⁶ The assumption that all individuals in a state face the same premium cost is not likely to be true, but the cross-state variation is likely to capture much of the variation across individuals. It would be extremely difficult to obtain insurance costs for all localities and types of families.

incomes are substantially lower and a larger percentage never worked during the year or worked only part of the year.

The involuntarily uninsured differ in some significant ways from the voluntarily uninsured. They are more likely to be Hispanic and to be foreign-born non-citizens and their educational level is considerably lower. One-third of the involuntarily uninsured are high school dropouts compared to 20 percent of the voluntarily uninsured and the involuntarily uninsured are almost twice as likely as the voluntarily uninsured to have never worked during the year. About 15 percent of the voluntarily uninsured were self-employed, a much larger proportion than the involuntarily uninsured or privately insured.

The pattern of differences in characteristics by insurance status are roughly similar for women and men, but with some exceptions. (See Appendix Tables A and B for characteristics tabulated separately by sex.) A much larger percentage of women than men never worked during the year, and the difference is particularly large among the involuntarily uninsured (48 percent of involuntarily uninsured women never worked compared to 27 percent of men in this category). In addition, a much larger percentage of uninsured men than women are single and have no children, while uninsured women are more likely to be unmarried with children.

What Table 7 does not consider are the possible inter-correlations between the different characteristics. Consequently, the net effects of the characteristics can differ from the observed gross associations shown in Table 7. The gross association between immigrant status and coverage might change significantly if educa-

tional attainment were held constant, since education affects coverage and it is correlated with immigrant status. To examine these net effects, we turn to multiple regression analysis.

Our regression results are reported in Table 8. The dependent variable is a binary indicator variable: 1=insured and 0=uninsured.⁷ We conduct separate regressions for two different family types: “Married with Children” and “Not Married, No Children.” We do this in part because family status can affect the decision to purchase insurance, even among individuals with the same education, income, and other characteristics. It is also the case that premium costs differ significantly for single and married couples, making it statistically difficult to conduct and interpret results for regressions combining the two types of families in a single regression.

The basic data source for these regressions is the micro-data file of the March 2007 CPS with the exception of the insurance premium data, which we obtained from the Kaiser Family Foundation.⁸ The premium cost is the average premium in the individual’s state of residence for an employer-based premium, measured separately for a single individual with no children and for families with children. The March CPS measures demographic characteristics at the time of the March survey. However, insurance status and income are measured for the prior calendar year—2006. Therefore we use premium costs for 2006. We measure employment experience over the course of the prior calendar year because employer-based health insurance is the major source of private insurance. We interact self-employment status with work experience because of the obvious difference in the individual’s role in the purchase decision.

⁷The results shown here are based on only least squares (OLS) methodology. We also ran the same regression specifications using a logit model, which produced very similar results.

⁸Kaiser bases their premium cost data on individual state averages tabulated from MEPS. We assume that premium costs relevant for the individuals in our data will be highly correlated with the state average for their state of residence and that costs for privately purchased insurance will be highly correlated with costs of employer premiums across states.

Table 8 displays the mean characteristics and partial regression coefficients for each family type. The regression model is the same for each group and contains the personal characteristics measures listed as well as the variable specifying the average health premium cost by family type in the individual's state of residence. In addition, we include a state indicator variable for each state. These state fixed-effect variables are intended to reflect the otherwise unmeasured factors that could vary across states and affect insurance coverage such as the provision of public health services.

In examining the means of the variables used in the regression equations, one can see that the annual insurance premiums are considerably higher for couples with children—a mean of \$11,300 compared to \$4,100. Not surprisingly, singles without children are younger—fifty percent are younger than 35 years of age compared to 27 percent of the married group. They also have less education and lower incomes.

Turning now to the regression results, we find that those who are not married/no children are less likely to have insurance than those who are married with children (68 percent compared to 86 percent). They are also considerably more responsive to a change in premium cost than those who are married with children. Thus, a \$1,000 increase in the premium cost reduces the probability that the not-married/no-children individual has health insurance by 0.32. Estimated at the mean, that would imply an elasticity of demand close to -2 . In contrast, a \$1,000 increase in the premium cost reduces the probability that a married individual with children has insurance by only 0.027, a highly inelastic response (-0.38) calculated at the mean. The difference in price sensitivity by family type is perhaps explained by the concern of parents

for the healthcare needs of their children. The relatively young ages of the single individuals, who tend to have fewer health problems, may also play a role.

With respect to personal characteristics, we find that among those who are unmarried and have no children, women are more likely to have insurance than men (an increase of 6 percentage points). This result is consistent with that of other research that has found women to be more risk averse than men.⁹ Among those who are married with children, there is no significant difference by gender, which is to be expected given that spouses are likely to be jointly covered. Reaching ages 55–64, when health problems became more prominent is positively and significantly associated with increased insurance coverage among the not-married/no-children group, but not among those married with children. However, only 3 percent of the married-with-children group is in the 55–64-year-old age group.

Race has little effect on insurance among the married-with-children group. However, among the not-married/no-children group, the black non-Hispanic population is less likely than white non-Hispanics to have private insurance (a 5 percentage point difference). Much stronger differences appear between Hispanics and other ethnic groups. Thus, the probability of having private insurance is 13 percentage points lower among Hispanics who are not married and without children than it is for corresponding non-Hispanic whites. Among those married with children, there is a 10 percentage point differential.

Employment, as expected, also has significant effects on the probability of having private insurance, and again the effect is much greater among the not-married/no-children group. The self-employed have much lower rates of

⁹ The literature on gender differences in risk aversion is large and growing and refers to an array of behaviors. For example, studies find that women are more likely to use seatbelts than men (Waldron, McCloskey, & Earle, 2005); men are more likely to run yellow lights than women (Konecni, Ebbesen, & Konecni, 1976). In an extensive meta analysis, Byrnes, Miller, and Schaffer (1999) find substantial evidence that men are more likely to take risks than women. Also see Harris, Jenkins, and Glaser, 2006.

TABLE 8. Regression Estimates of the Effect of Personal Characteristics and the Cost of Private Insurance on the Probability a Person Has Private Insurance, Ages 18–64

	Mean		Married with children		Not married no children	
	<i>Married with children</i>	<i>Not married no children</i>	<i>Coef.</i>	<i>T-stat</i>	<i>Coef.</i>	<i>T-stat</i>
Female	0.493	0.456	0.003	0.82	0.056	11.21
Age Group						
<i>(18–34)*</i>	(0.273)	(0.502)				
35–54	0.694	0.358	0.022	6.17	0.021	3.83
55–64	0.033	0.140	0.011	1.27	0.069	9.04
Race/Ethnicity						
<i>(White, non-Hispanic)*</i>	(0.713)	(0.586)				
Hispanic	0.161	0.172	-0.103	-17.89	-0.127	-15.47
Black, non-Hispanic	0.056	0.150	-0.014	-2.03	-0.048	-6.36
Other race, non-Hispanic	0.071	0.092	0.007	0.95	-0.037	-3.69
Employment Status in 2006						
<i>(Never worked)*</i>	0.144	(0.158)				
Wage and salary workers, worked all year	0.652	0.645	0.059	12.04	0.188	25.49
Wage and salary workers, worked part year	0.092	0.133	0.031	4.89	0.097	10.54
Self-employed workers, worked all year	0.099	0.052	-0.038	-5.75	-0.041	-3.20
Self-employed workers, worked part year	0.014	0.012	-0.013	-0.99	-0.081	-3.52
Education						
<i>(Less than high school)*</i>	(0.095)	(0.134)				
High school	0.265	0.304	0.113	18.05	0.047	5.65
Some college grad. or higher	0.266	0.306	0.155	23.92	0.139	16.46
College grad. or more	0.375	0.255	0.183	28.18	0.207	23.13
Family income in 2006						
<i>(Family income <20,000)*</i>	(0.036)	(0.219)				
Family income 20,000–40,000	0.118	0.286	0.196	21.48	0.182	24.95
Family income 40,000–70,000	0.268	0.249	0.394	44.79	0.262	34.38
Family income >70,000	0.578	0.247	0.445	50.30	0.299	39.10
Immigrant Status						
<i>(Native born)*</i>	(0.807)	(0.847)				
Foreign born citizen by year came to the U.S.						
Before 1990	0.050	0.031	-0.006	-0.84	-0.003	-0.19
1990–99	0.019	0.013	-0.036	-3.13	-0.049	-2.27
2000–06	0.003	0.002	-0.044	-1.60	-0.066	-1.25
Foreign born non-citizen by year came to the U.S.						
Before 1990	0.030	0.021	-0.104	-10.68	-0.112	-6.34
1990–99	0.052	0.033	-0.145	-18.39	-0.159	-10.88
2000–06	0.039	0.053	-0.137	-15.85	-0.161	-13.20

	Mean		Married with children		Not married no children	
	<i>Married with children</i>	<i>Not married no children</i>	<i>Coef.</i>	<i>T-stat</i>	<i>Coef.</i>	<i>T-stat</i>
Cost of health insurance premium in state of residence, 2006 (in \$1,000)	11.3	4.1	-0.027	-2.55	-0.322	-4.90
Adj. R-Square			0.304		0.237	
Dependent Variable (DV) mean (DV: Had private insurance in 2006 (1,0))			0.858		0.682	
Sample size			38,079		28,106	

* Variables in parenthesis are the reference group.

Note: The model also contains a dummy variable for each state. Persons covered by public health insurance are excluded from the analysis.

Source: The CPS microdata files, March 2007.

private insurance coverage than wage and salary workers (comparing those who work all year)—23 percentage points less among the not-married/no-children group and 10 percentage points less among married workers with children. Higher insurance costs likely account for the lower insurance coverage among the self-employed, who cannot take advantage of lower group rates available to firms. Presumably, wage and salary workers who work year round are more likely to be employed at a firm that offers insurance, and those who value insurance highly may seek employment in such firms.

Education has a strong effect on the probability of having private insurance. Among the married-with-children group, the probability of coverage is 18 percentage points higher for college grads than it is for high school drop-outs, and for the not-married/no-children group, the differential is even larger. Note also that these large effects of educational attainment are net effects holding income level constant.

The regression results also demonstrate a powerful effect of income, and in this case, the effect is stronger for those married with children than it is for the not-married/no-children group. Those with high incomes are more likely to work in firms that offer health

insurance since the value of the tax subsidy for health insurance rises with wages.

Immigrant status has large and interesting effects even though we are controlling for race/ethnicity, income, and education. We have measured three aspects of immigrant status—foreign-born citizen, foreign-born non-citizen, and how long the individual has been a resident of the U.S. Compared to native-born individuals, the foreign born who are citizens have somewhat less coverage while the foreign born who are not citizens have a considerably lower probability of coverage. This is generally the case for both marital status groups. Moreover, the differentials relative to the native-born group decline with increasing years spent in the U.S.

In summary, our regression analysis indicates that personal characteristics such as educational attainment, immigrant status, and income are important factors in determining who is likely to be insured by private insurance and who is likely to be uninsured, both voluntarily and involuntarily. In addition, our results have implications for projecting future trends in the size of the uninsured population. They suggest that the growth in personal income and educational attainment will lead to a decrease in the number of uninsured, while the growth in

premium costs and in the immigrant population will lead to an increase in the uninsured. Long term planning for increasing insurance coverage should take these trends into account.

Regarding the responsiveness of the purchase of private insurance to the cost of an insurance premium, either by the individual directly or through his or her employer, we find a significant demand elasticity for individuals who are not married and have no children, but not for married couples with children, who tend to have a higher level of private insurance and respond less to changes in its cost. With regard to non-cost factors, we find that educational attainment and immigrant status are the two most important determinants, other than income, of the probability a family or individual has private insurance coverage.

We now turn to the issue of the extent to which uninsured persons use medical care resources.

Health Resources Obtained by The Uninsured

Two types of measures are available for estimating the amount of healthcare resources obtained by the uninsured. One is based on answers to specialized health surveys that ask questions about the types of medical care services received over particular time periods. Answers to those questions can be derived for the insured and separately for the involuntarily and voluntarily uninsured. A second type of measure is based on estimates of the dollar cost of all types of medical care services received by the uninsured that are either paid for by the uninsured (“out of pocket”) or are provided without charge by what has come to be called the “safety net”—various public and private charities as well as uncompensated care provided by hospitals and physicians. The data concerning

the “safety net” that we use here are available for the uninsured as a whole, but some inferences can be drawn about the differences between the voluntarily and the involuntarily uninsured.

Medical Services Received by the Uninsured

We use data from the 2005 Medical Expenditure Panel Survey (MEPS) to measure the receipt of various medical services by adults classified according to insurance status. The MEPS concept of the uninsured is similar to that used by the CPS—namely, individuals who were not covered by insurance at any time in the year before they were interviewed. A summary of the results is shown in Table 9. We show the results by age and specify the time periods when the service was received.

There are large differences between the insured and uninsured in the percent receiving particular services when the comparison is restricted to services received in the past two years. However, the differentials become smaller when the receipt period is measured within the past five years (the sum of the past two years and prior 3–5 years) and are smaller still when the comparison is for those who have “ever received” the service. Thus, 78 percent of the insured population had a routine check-up in the past two years compared to 50 percent of the uninsured, and the comparison narrows to 88 percent versus 68 percent when the period of receipt is within 5 years and 95 percent versus 84 percent when it is extended to “ever received”. (Of course, for many procedures “ever” may be too long ago to be meaningful.)

When it comes to cancer screening, 80 percent of insured women ages 40–64 had a mammogram within two years of the interview; and 87 percent when the period of receipt is extended to 5 years. That compares to 49 percent of uninsured women who had a mammogram within two years and

¹⁰ See Table 8 in O’Neill and O’Neill (2007), which provides comparisons of cancer screening in Canada and the U.S.

65 percent when the period is within 5 years. However, those screening rates are relatively high even for uninsured women when compared with screening rates in Canada, a country with universal health coverage. The Canadian health survey reports that 65 percent of Canadian women ages 40–69 had a mammogram within the past 5 years, the same percentage as uninsured women in the U.S.¹⁰ When it comes to Pap Smears, Canadian women also have about the same rate of

screening over the past five years as uninsured women in the U.S. (80 percent), although those rates are below those of insured American women, among whom 92 percent were screened. Among U.S. men ages 40–64, 52 percent of those with insurance were screened for prostate cancer with a PSA test within the past 5 years, compared to 31 percent for men who are uninsured. (In Canada, the comparable percent is 16 percent.)

TABLE 9. Percent Received Selected Medical Services by Insurance Status and Age, MEPS 2005

	Insured all 12 months	Uninsured all 12 months		
		Total	Involun.	Volun.
Ages 18-64				
Routine Check-Up				
% ever received routine check-up	95.08	84.08	83.74	84.47
Past 2 years	78.40	50.43	48.54	52.62
3–5 years ago	9.42	17.16	18.28	15.86
Blood Pressure Check				
% ever received blood pressure check	99.29	93.78	94.69	92.74
Past 2 years	93.17	71.79	72.36	71.14
3–5 years ago	4.33	14.39	14.91	13.78
Flu Shot				
% ever received flu shot	48.52	29.79	29.25	30.42
Past 2 years	34.96	17.05	15.29	19.07
3–5 years ago	7.25	5.31	5.86	4.69
Ages 20-64				
PAPSMEAR TEST (Women only)				
% ever received PapSmear Test	97.69	93.14	92.41	94.14
Past 2 years	83.84	62.81	58.95	68.04
3–5 years	8.04	17.23	17.45	16.95
Ages 40-64				
PSA TEST (Men only)				
% ever received PSA Test	55.00	35.99	34.23	37.71
Past 2 years	46.32	24.02	23.72	24.32
3–5 years	5.41	6.71	6.12	7.29
MAMMOGRAM (Women only)				
% ever received mammogram	91.26	76.15	66.66	86.86
Past 2 years	79.83	49.25	38.03	61.94
3–5 years	7.32	15.96	16.76	15.04

Note: Calculation excludes the small percentage that did not report whether they received the service or not.

Source: MEPS 2005

Table 9 also shows the same statistics on service receipt separately for the involuntarily and voluntarily uninsured. Generally speaking, we find no significant differences in the percent receiving the service between the two groups. The main exception is the higher rate of recent receipt of mammograms and pap smears by voluntarily uninsured women. As we show in (Table 12), the voluntarily uninsured not only have higher incomes than the involuntarily uninsured, but also have more education and other characteristics associated with good health, all of which may account for that difference.

Early detection of cancer is important for cancer survival. In international comparisons of 5-year relative survival rates for specific cancers, the U.S. comes out at the top, and undoubtedly, the generally high rate of screening in the U.S. helps to account for that ranking.¹¹ It is important to determine the extent to which the lower rates of screening of the uninsured, particularly of the involuntarily uninsured, are due to inability to pay, or if other factors, such as lack of information about available free services are more significant.

To summarize, the results in Table 9 show that for the services detailed, the uninsured receive about 50 to 60 percent of the amount of services received by those who are insured.

Estimates of the Total Cost of Resources Obtained by the Uninsured

Table 9 compared discrete types of health services received by persons with and without health insurance and also compared the services received by the involuntarily

and voluntarily uninsured. In Table 10, we provide estimates of the per capita dollar costs of all medical care resources received in 2008 by the uninsured using the estimates of Hadley, and Holahan, et al. (2008a, 2008b) (hereafter “Hadley and Holahan”). This is a more comprehensive metric than the comparison of discrete types of care presented above. Table 10 is based on data from the MEPS survey. An alternative approach to measuring uncompensated care uses reports of costs incurred by various public and private organizations that target the uninsured—components of the so-called “safety net” and we discuss that as well.

Hadley and Holahan have estimated the total cost of medical resources utilized by the uninsured in 2008 using pooled data from the MEPS surveys of 2002 and 2004 and then inflating these estimates to 2008 dollars.¹² MEPS reports data on medical services consumed by individuals collected both from the individuals and from the doctors and hospitals from which they obtained the services. The doctors and hospitals also provide MEPS with data on their charges for various services. Doctors and hospitals are reimbursed by out-of-pocket expenditures from patients and by payments from insurance companies. Data on these reimbursement payments are also provided to MEPS.

As shown in Table 10, the estimated per capita amount paid out-of-pocket by those uninsured for a full year was projected to be \$644 in 2008. In addition, the uninsured received care that was paid for by private and public sources. Those amounts on a per capita basis were estimated to be \$276 from public sources and \$317 from private sources.

¹¹ See O'Neill and O'Neill (2007) for comparison of the U.S. and Canada and a summary of results of the EURO CARE-4 Working Group, comparing cancer survival in Europe and the U.S. and showing the higher ranking of the U.S. Also see Verdecchia et al., 2007—for a detailed account of the EURO CARE-4 Working Group's results on cancer survival in the U.S. compared to European countries.

¹² The estimates reported here are based on a major study of medical costs and sources of reimbursement conducted by Hadley, and Holahan, et al. for the Kaiser Family Foundation (2008a). Their complete results for 2008 are provided in their report to the Foundation in August 2008.

es per capita. The uninsured also received medical services that were “implicitly subsidized” and were estimated to add another \$589 per capita. (Implicitly subsidized care is care received by the uninsured from indirect revenue sources that MEPS could not identify.) When we add up the cost of care received by the uninsured from all sources other than their own out-of-pocket payments, we get a total of \$1,182 per capita for 2008. When out-of-pocket spending is included, the total dollar amount of care received by the uninsured from all sources comes to \$1,825.

Medical spending on those who were privately insured for a full year is also shown in Table 10 and we can see that the total amount per capita was estimated to be \$4,639 for 2008, about \$2,800 more than the amount received by the uninsured. Thus, the uninsured receive about 40 percent of the health resources received by those with private insurance. The uninsured spend out-of-pocket about 80 percent as much as the privately insured, but subsidies and uncompensated care accounts for the majority of their health spending.

In the same study, Hadley and Holahan also provide alternative estimates of the uncompensated care component of medical resources obtained by the uninsured from data on individual components of the “safety net.” They report on uncompensated care for the uninsured that flows through hospitals and physicians’ offices, and through a variety of types of clinics and direct care programs. The largest direct care program is the Federally Funded Health Centers operated by the Health Resources and Services Administration of the Department of Health and Human Services. They find that the estimate of total uncompensated care based on expenditure data from those sources nearly equals the estimate based almost fully on MEPS data.

Although Hadley and Holahan do not distinguish between the voluntarily and involuntarily uninsured, it is likely that the per capita amounts received by the involuntarily uninsured, especially of uncompensated care, are significantly higher than those received by the voluntarily uninsured. Most of the safety net providers target their assistance not only by insurance status, but also by

TABLE 10. Estimated Medical Spending Per Capita by Insurance Status and Source of Payment, Projected to 2008, for Persons Ages 19–64

	Uninsured (<i>Full-Year</i>)	Privately Insured (<i>Full-Year</i>)
Per capita spending	1,825	4,639
Source of payment		
Out-of-pocket	644	777
Private insurance	0	3,551
Medicare	0	23
Medicaid	0	28
Other Public ¹⁾	276	224
Other Private ²⁾	317	36
Implicitly Subsidized ³⁾	589	0

¹⁾ Includes Veterans Health Administration, TriCare, other federal, other state, and local, other public, and workers’ compensation.

²⁾ Includes other private and other sources.

³⁾ Implicitly subsidized care is care received by the uninsured that is subsidized by indirect revenue sources not measured by MEPS and imputed by Hadley, et al. (August 2008).

Source: Estimates are based on projections by Hadley, et al., in *Covering the Uninsured in 2008: A Detailed Examination of Current Costs and Sources of Payment, and Incremental Costs of Expanding Coverage*. Prepared for the Kaiser Commission, Henry J. Kaiser Family Foundation, August 2008, see Table 1c.

income, which by our definition, would disqualify many of those we characterize as voluntarily uninsured from “safety net” benefits.

We conclude this section by noting that the MEPS estimates of amounts of care received by the uninsured relative to the insured, show, as expected, that the uninsured receive less medical care resources than those with insurance. However, the estimates also reveal that the uninsured receive significant amounts of healthcare—whether measured by the discrete types of medical services obtained or by a measure based on individuals’ reports of expenditures matched with providers’ charge records. Does the remaining differential in the amount of care received translate into a significant difference in the health outcomes of the uninsured and the insured populations? We now turn to empirical evidence on this issue.

Lack of Insurance and Health Outcomes

It is extremely difficult to determine whether the lack of insurance causes significantly worse health outcomes. A large body of literature has addressed the question, often yielding very different results. We first briefly review the findings of other studies and then turn to our own analysis, which examines the effect of being uninsured on mortality and distinguishes between those who are involuntarily and voluntarily uninsured.

A Brief Review

The major problem facing analysts is that many factors besides health insurance status have an effect on health out-

comes. People with health insurance differ significantly from people without health insurance in terms of education, socio-economic status, and many other characteristics, some of which may be difficult to observe and measure.¹³ Those differences may influence both insurance coverage and health outcomes. In addition, although insurance coverage may influence health status because it provides greater access to health services, health status may also influence insurance coverage—either increasing it, because those with poor health may place a higher value on medical care, or decreasing, it because insurance companies may reject those with costly conditions. It is a challenge to assign cause and effect in examining the relationship between health status and health insurance.¹⁴

For example, the Institute of Medicine (IOM, 2002) reports that uninsured cancer patients have poorer outcomes and die sooner than insured cancer patients. They state that among women with breast cancer, those who are uninsured have a considerably higher risk of dying than do those with private health insurance and suggest that the differential is the result of the lack of timely preventive screening and the relatively advanced stage of the disease at time of treatment for uninsured patients. However, differences in characteristics between the insured and uninsured also help to explain differences in both detection of the disease and timely treatment.¹⁵ Income and educational attainment are both strongly correlated with cancer survival rates, and both of those factors are also strongly correlated with possession of health insurance. It is difficult to tell whether it is insurance coverage or edu-

¹³ See Table 12 below for differences in the characteristics of the insured and the voluntarily and involuntarily uninsured.

¹⁴ See the extensive discussion of the methodological difficulties in Levy and Meltzer (2004).

¹⁵ John Ayanian, et al. find that uninsured women as well as women with Medicaid had more advanced breast cancer than women with private insurance when the condition was initially diagnosed. They also find that the survival outcomes of both the Medicaid and uninsured women were worse than those of privately insured women. The authors note that higher socioeconomic status is a possible explanation for the better survival of privately insured women.

¹⁶ See O’Neill and O’Neill (2007), Banks, et al. (2006), Sekhri, Timmis, Chen, et al. (2008), Scandlen (2002).

¹⁷ See Levy and Meltzer (2004) and Newhouse, et al. (1993) for a discussion of the results.

cation and income that are more important in improving survival rates. The finding that inequality of health outcomes is as large in countries with universal coverage as it is in the U.S. suggests that education and income are at least as important.¹⁶

It is difficult, if not impossible, to measure all of the relevant characteristics of the insured and the uninsured. Random assignment experiments such as those used in drug trials are regarded as the best way to be sure of controlling for individual differences. However, the only randomized experiment to study insurance effects on health was the famous RAND study that was conducted between 1974 and 1982. The RAND experiment focused on differences between free care plans and plans requiring various forms of co-payment. The results revealed significant effects of insurance on the utilization of medical services, and hence, on expenditures, but little effect on health outcomes.¹⁷

It should also be recognized that even random assignment of treatment and control groups does not necessarily solve all methodological problems. For example, the many randomized experiments conducted to test welfare reform at times produced different results for the same programmatic change conducted in a different state or even county.¹⁸

Some studies have utilized quasi-experimental situations such as the introduction of a program like Medicare or the cancellation of a program like a veteran health program. Those results may also incorporate unmeasured differences in the people involved or in the true aspects of the program change. Regarding the effect of the introduction of Medicare, Lichtenberg (2002) finds positive effects on morbidity and mortality; Finkelstein and McKnight (2005) find no significant effect.

Card, Dobkin, and Maestas (2007), however, do find a reduction in mortality associated with Medicare eligibility. They use a quasi-experimental design which allows them to compare mortality outcomes of patients who were treated just before and after their 65th birthday in California hospital emergency rooms. Moreover, they restrict their analysis to those who were treated for severe conditions requiring immediate hospitalization and thereby avoid the problem of otherwise healthy patients delaying treatment for elective surgery and other procedures until they reach the age of Medicare eligibility. Not surprisingly, they find significant changes in insurance status at the age threshold of 65. The fraction of those with no insurance falls by 10 percent and the fraction with Medicare as their primary insurer increases sharply.¹⁹ They also find significant increases in treatment intensity and services at age 65, even for those who were insured prior to age 65.

Their estimates, however, do suggest a significant decline in mortality for those age 65 compared to those who were not yet 65: 20 percent after 7 days and 3–4 percent after a year. The authors point out, however, that the effect on mortality is too large to be driven solely by the change in insurance status of the 8 percent who moved from no insurance to Medicare since it included those who formerly were insured. In seeking explanations for the effect, they suggest that case review procedures may be less restrictive in Medicare or that Medicare simply may be more generous. So the full reason for the effect remains unclear.

Observational studies, which are more common, often utilize survey data. The data differ in the detail provided on relevant characteristics. Consequently, it is often difficult to determine whether the insured and uninsured differ in a way that would bias the results. It can also be difficult to obtain a useful measure of health output to

¹⁶ See O'Neill and O'Neill (1997).

¹⁹ In an earlier study of the effect of Medicare, Card, Dobkin, and Maestas (2004) also use the before and after age 65 comparison, but do not restrict the study to those requiring immediate treatment in emergency rooms. That study finds no effect of crossing the age 65 threshold.

correlate against insurance coverage. A metric that has objective quantitative dimensions such as mortality or days of increased employment can yield quantitatively measurable effects. However, one widely used outcome measure—Self Reported Health Status (SRHS)—cannot be quantitatively measured; it is based on the subjective assessment of an individual who answers that his or her health is excellent, very good, good, fair, or poor. Studies that use SRHS as their outcome measure can only conclude whether coverage affected an individual's self-assessment. Nevertheless, SRHS appears to provide a rough indication of a person's health status.

Many studies relate health outcomes to insurance coverage, but only a few are longitudinal, use a quantitative outcome measure such as mortality, and incorporate appropriate explanatory variables.²⁰ Kronick (2006) uses proportional hazard survival analysis to examine the link between lack of private health insurance and subsequent mortality. His analysis is based on a large sample of individuals who were interviewed in the NHIS surveys between 1986 and 2000 and were followed for mortality outcomes from the time of their initial interview through 2002. He controls for standard demographic characteristics plus education, income, health status, and health-related behaviors. He found that when all of his explanatory variables were included, lack of insurance was not associated with a higher risk of mortality. However, he also shows what happens when factors that themselves might be influenced by lack of health insurance are omitted from the analysis. Thus, when health status at baseline is omitted as an explanatory variable, lack of insurance is associated with a 10 percent increase in mortality. However, both health status at baseline and health insurance

might have been strongly influenced by socio-economic background and personality characteristics that are not measured and would be difficult to identify.

Among the studies that find a significant effect of insurance on health is the frequently cited study by Peter Franks, et al. (1993).²¹ The study was based on the National Health and Nutrition Examination Survey (NHANES), a clinically based survey of a representative cohort of the U.S. population that provided information on insurance status and subsequent mortality. In this study, 4,694 persons were followed from the time of their initial interview in the years 1971–1975 until 1987. Cumulative mortality was studied using a proportional hazard model, controlling for private insurance coverage and other characteristics, all observed at the baseline interview. The authors exclude those receiving public insurance at baseline. However, the sample includes individuals ages 25–75 at baseline—a large age range over which mortality probabilities change sharply. In addition, those who were 65–75 and on Medicare are excluded from the sample, but those who were 65–75 and not on Medicare are included. That procedure likely biases the results of the study because the latter older group likely had very high mortality. No controls are indicated for these age/insurance interactions, so we do not know the extent to which they contributed to the results.

The authors conclude that, holding non-insurance factors constant, the death rate among the uninsured was 25 percent higher than the death rate of those with private insurance. (The gross differential—before adjusting for any covariates—was 92 percent.) However, there is considerable uncertainty about the true effect because it has little

²⁰ Hadley (2003) reviews 54 health outcome studies, 24 of which examine the relation between insurance and outcomes of specific diseases, and 23 of which study the relation between insurance coverage and general mortality or health status. (Another group examines medical care use and mortality.) Of his 23 insurance-general mortality/health status studies, only a few are longitudinal and use a measurable outcome such as mortality. They vary in the extent to which they control properly for income, education, and other explanatory factors.

²¹ The Franks study is the basis for the IOM (2003) conclusion that 18,000 preventable deaths occur each year because of lack of insurance.

or no statistical significance. The 95 percent confidence interval is so large that it indicates that the excess mortality of the uninsured lies between no difference at all and a 55 percent increase.

We turn now to our own observational study of the effect of insurance on mortality.

The Effect of Insurance Status on Mortality: Evidence from the Health and Retirement Survey (HRS)

The HRS began in 1992 with a survey of close to 10,000 individuals ages 51 to 61 who were then re-surveyed every two years. It records the number of participants who die as time passes. It also includes an unusually comprehensive set of observations on the characteristics of the participants in the sample. We use the HRS to conduct regression analyses of the relation between insurance status and relevant characteristics in 1992 and the probability of dying over a period of time. We conduct the analysis separately for the probability of death by 2002, by 2004, and by 2006.

A few unique features of the data and the way we were able to use them should be noted. Data on the insurance status of the cohort in 1992 distinguish private and public insurance (such as Medicaid, Medicare for the disabled, and Tri-Care). In addition, because the survey provides data on both household income and household size and composition, we are able to use 2.5 times the poverty level in 1992 to identify the voluntary and involuntary status

of each uninsured household type. We use only one observation on insurance coverage and that is at the baseline year of 1992. Those who obtained or lost coverage after 1992 are not identified in our analysis; more intensive analysis of the data set can be carried out in the future.²² As the cohort ages, they also become eligible for Medicare. We control for age but our model is not explicitly designed to capture a Medicare effect.²³

We include survey respondents who were ages 51–61 in 1992 but exclude those lacking information on household income. We also exclude those whose vital status could not be determined in the years in which mortality status is measured. Respondents with missing vital status information include those who dropped out of the survey and may still be alive as well as those who died. Because of increases over time in the number with vital status missing for various reasons, including attrition, the sample is somewhat smaller in later years and the composition of the sample also changes somewhat.

Table 11 shows the percentage of the original cohort (excluding those for whom vital status could not be determined) who died by 1998, 2002, 2004, and 2006, classified by insurance status in 1992. Cumulative mortality clearly differs by insurance status. Between 1992 and 1998, 7.2 percent of the total uninsured died compared to 3.8 percent of the privately insured—a 3.4 percentage point difference. By 2006, 21.9 percent of the uninsured had died compared to 14.2 percent of those with private insurance—a larger 7.7 percentage point difference.

²² Polsky, et al. (2006) report that close to 10 percent of the HRS sample changed insurance status from, uninsured to insured between the ages of 59–60 and 63–64. They did not take these changes into account in their own study presumably due to the difficulty of incorporating the changes into the analysis. We also do not account for insurance switches within the analysis period.

²³ Polsky, et al. use the HRS data and construct a model designed to measure the effect of crossing the age 65 Medicare threshold. They found no effect of Medicare on the differential mortality of the previously uninsured and the previously insured (after adjusting for personal characteristics). They did find that Medicare improved the self-reported health status of both the previously uninsured and the previously insured, but only for those who were relatively healthy. One possible explanation of this result could be that in anticipation that Medicare will pay, people postpone quality-of-life improvements such as knee and hip replacements until age 65—hence the better report of very good/excellent health.

**TABLE 11. Cumulative Mortality to 1998, 2002, 2004, and 2006
by Insurance Status in 1992, HRS Cohort Ages 51–61 in 1992**

	% died by 1998	% died by 2002	% died by 2004	% died by 2006
Insurance Status in 1992				
All Persons	5.7	11.9	14.5	18.3
Insured	5.4	11.2	13.7	17.4
Private insurance	3.8	8.6	10.9	14.2
Medicare	16.2	30.9	36.5	42.5
Medicaid	18.9	32.4	36.1	41.5
Other Public	13.0	23.6	28.9	34.8
Uninsured	7.2	14.9	17.5	21.9
Involuntarily uninsured	7.9	18.0	21.2	26.5
Voluntarily uninsured	6.4	11.8	13.8	17.3

Note: Sample restricted to those whose vital status could be determined in 1998, 2002, 2004, and 2006. Numbers are weighted means.
Source: Health Retirement Survey, 2006.

However, the comparison between the insured and uninsured population differs considerably when we consider the uninsured separately by voluntary and involuntary status. It is particularly striking that the mortality rates of the voluntarily uninsured are close to those of the privately insured and remain only about 3 percentage points higher in each of the four cumulative mortality periods considered between 1992–1998 and 1992–2006. Those with public insurance—Medicaid and Medicare for persons younger than age 65—have the highest mortality rates, presumably because access to those programs usually depends on disability status.

Characteristics of the HRS Sample

The characteristics of the individuals included in our 2006 regression analysis of the HRS data are shown in Table 12. The snapshot is taken in 1992, the baseline year when the participants are ages 51–61. Characteristics are shown for the sample we use in our subsequent regression analysis, which excludes individuals whose mortality status was not known in 2006. We show the characteristics separately by insurance coverage status in 1992.

The characteristics of participants with private insurance are more strongly related to those usually associated with

good health outcomes and low mortality than any other insurance group. About 76 percent were employed in 1992; 87 percent are white; their education is relatively high (24 percent are college graduates, 18 percent are high school dropouts); their mean annual household income was also high (\$60,000), 76 percent were married; and their health-related habits were better than average—fewer smoked and were obese. The self-assessed health status of the privately insured was also superior, as 59 percent reported that their health was excellent or very good and only 13.5 percent said fair or poor.

Those who we classified as voluntarily uninsured also have a relatively good profile of positive health-related characteristics, almost as good as those with private insurance. They were almost as likely to be employed (67 percent compared to 76 percent) and were only slightly less likely to be college graduates, married, or white. Their incomes were higher than those of the privately insured (\$69,000 vs. \$60,000), which is to be expected given that the sorting into the category of voluntary uninsured is based on having an income of 2.5 times the poverty level or more. A somewhat larger proportion smoked. The self-assessed health status of the voluntarily uninsured is almost the same as that of the privately insured, the only difference

TABLE 12. Characteristics of HRS 2006 Regression Sample

	All persons	Private insurance	Public insurance	Uninsured all 12 months		
				Total	Involun.	Volun.
Percent Died by 2006	18.3	14.2	39.7	21.9	26.5	17.3
Characteristics as of 1992 (%)						
Employed	67.1	76.4	21.2	57.7	48.1	67.4
Age in years	55.7	55.6	56.1	55.8	55.9	55.7
Female	51.5	50.3	53.6	54.6	60.3	48.8
Hispanic	5.9	3.8	9.6	11.3	15.1	7.5
Black	10.1	7.9	22.0	11.8	17.6	6.0
White	81.8	86.5	65.5	73.9	64.4	83.6
Other Race	2.2	1.9	3.0	3.0	2.9	3.0
Less than high school	24.3	18.2	44.3	35.4	51.1	19.6
High School grad.	36.6	38.3	30.6	33.6	30.2	37.1
Some College	19.1	20.0	15.4	17.9	12.7	23.1
College or more	20.0	23.6	9.7	13.1	6.0	20.2
Married	69.6	75.8	46.3	59.9	49.7	70.1
Obese (BMI ≥ 30)	22.3	20.8	29.2	24.3	28.4	20.2
Currently smokes	26.7	23.8	35.0	32.2	36.5	27.8
Household Income (\$10,000)	5.270	5.997	2.524	4.132	1.403	6.883
Heath Self Assessment						
Excellent or very good	53.0	59.2	20.1	47.7	36.8	58.7
Good	26.6	27.3	19.0	27.8	30.4	25.2
Fair or poor	20.4	13.5	60.9	24.5	32.8	16.1
Sample size	8,251	5,399	1,105	1,747	975	772

Note: Characteristics are for those observed in 1992 for whom vital status was known in 2006. All variables are weighted means.

Source: Health Retirement Survey, 2006.

being a slightly higher proportion of fair/poor compared to good.

The characteristics of those who are classified as involuntarily uninsured and those who had public insurance are similar in some ways and different in others. Both groups have characteristics associated with poor health outcomes. Among the involuntarily uninsured, more than half are high school dropouts, only 48 percent were employed in 1992; their income is low (\$14,000) and 37

percent were smokers (higher than the other groups). A smaller proportion of the involuntarily uninsured are white or married than either the privately insured or the voluntarily uninsured. The self-assessed health status of the involuntarily uninsured is much lower—one-third report fair or poor health.

The demographic characteristics of those with public insurance are similar to those of the involuntary uninsured, but they have somewhat higher incomes and education.

They share with the involuntarily uninsured a relatively high proportion of high school dropouts. They also share a high rate of smokers and a somewhat higher rate of obesity. In addition, since inability to work is often a condition for receipt of Medicare or Medicaid disability benefits, it is not surprising that the proportion employed is very low—only 21 percent. The self-assessed health status of those with public insurance is the poorest of any group—61 percent report fair or poor health. Their subsequent high mortality is consistent with their own evaluation of their health status at baseline.

Regression Findings on the Effect of Insurance on Mortality

We use standard least squares multiple regression analysis to analyze the relation between insurance status and subsequent mortality. As we discussed above, it is extremely difficult if not impossible to devise an analysis that can unambiguously measure the effect of health insurance on mortality or other health outcomes. Without random assignment to the insurance categories, we cannot really know the extent to which underlying health conditions or other unmeasured factors account for the purchase of insurance or the lack of insurance. Our analysis is an observational one where we use survey data on the characteristics of sample participants that are related to the insurance choice as well as to mortality in an effort to provide quantitative measures of the relevant causal factors.

The dependent variable in our analysis is whether an individual in our HRS sample had died between 1992 and a subsequent year. We conducted three series of regressions, each covering a different time period over which mortality could have occurred: 1992–2002, 1992–2004 and 1992–2006. We provide summary regression results for the three periods in Appendix Table 3; Table 13 provides details of our analysis of the probability of dying over the period 1992–2006.

Table 13 shows results for three models, each of which controls for an increasing array of explanatory variables. Close to 20 percent of the cohort died between 1992 and 2006. Model 1 (M1) shows the differences in cumulative mortality over the period 1992–2006 by insurance status when no other explanatory variables are included in the analysis. The reference group is the involuntarily uninsured, a group, as noted, with relatively high mortality. The cumulative mortality rate of the voluntarily uninsured was 8 percentage points lower than that of the involuntarily uninsured and the cumulative mortality of the privately insured was 11 percentage points lower. Thus, the mortality rate of the privately insured was only 3 percentage points below that of the voluntarily uninsured. However, those with public insurance were 10 percentage points more likely to have died than the involuntary uninsured.

Model 2 (M2) shows the result of controlling for all of the characteristics discussed except for self-assessed health status. The controls have a big effect; consequently, the differences in mortality between the privately insured and the two uninsured groups are much lower in Model 2. As we go from M1 to M2, the difference in the probability of dying between the privately insured and the involuntarily uninsured is reduced from 11.3 percentage points to 3.7 percentage points; between the privately insured and the voluntarily uninsured it is reduced from 3.3 percentage points (subtract -0.080 from -0.113) to 1.9 percentage points (subtract -0.018 from -0.037).

The other explanatory variables generally perform as expected. For each year an individual ages, the probability of dying between 1992 and 2006 increases by 1.4 percentage points. Being employed in 1992 is associated with an 8.7 percentage point lower risk of dying, and being female is associated with close to an 11 percentage point lower risk. Hispanics were more than 4 percentage points less likely to die; blacks were 5 percentage points more

TABLE 13. Relation Between Insurance Status and Personal Characteristics in 1992 and the Probability of Death by 2006 (OLS Regression Results for HRS cohort ages 51–61 in 1992)

	M1		M2		M3	
	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat
1992 Characteristics						
<i>(Involuntarily uninsured)*</i>						
Voluntarily uninsured	-0.080	-4.27	-0.018	-0.96	-0.012	-0.63
Private insurance	-0.113	-8.34	-0.037	-2.56	-0.029	-2.07
Public insurance	0.101	5.87	0.085	5.08	0.054	3.24
<i>(Health good, very good, or excellent)*</i>						
Health fair or poor					0.183	16.78
Employed			-0.087	-9.18	-0.054	-5.67
Age in years			0.014	10.18	0.014	10.28
Female			-0.107	-12.44	-0.099	-11.76
<i>(White and other)*</i>						
Hispanic			-0.043	-2.77	-0.056	-3.67
Black			0.052	4.42	0.038	3.25
<i>(Less than high school)*</i>						
High School grad.			-0.035	-3.19	-0.015	-1.37
Some College			-0.024	-1.84	0.004	0.32
College or more			-0.045	-3.19	-0.013	-0.90
Married			-0.056	-5.49	-0.044	-4.42
Obese (BMI ≥ 30)			0.026	2.67	0.009	0.91
Currently smokes			0.145	15.17	0.136	14.45
Household Income (10,000)			-0.003	-3.43	-0.002	-2.60
Adj. R-Square	0.036		0.115		0.145	
Dependent Variable (DV) Mean (DV: Died by 2006=1)			0.197			
Sample Size			8,251			

*The reference group.

Source: Health Retirement Survey, 2006.

likely to die. More education and higher income were associated with lower mortality.

Smoking has a huge effect. The proportion of smokers who died over the 14 year period was 14.5 percentage points greater than that of non-smokers holding all other

variables constant. The effect of obesity is smaller than in other studies. However, the HRS measures obesity by self-reported weight and height, which has been found to be reported with error by survey participants. In addition, weight is a variable that may have changed over the period.

In Model 3 (M3), we add a variable indicating whether the individual rated his or her health status as fair or poor in 1992. Those who reported their health status as such in 1992 experienced very high relative mortality between 1992 and 2006. Their probability of death was 18 percentage points greater than those who reported they were in good, very good, or excellent health. The effects of the other variables that are inter-correlated with poor health status are also changed in M3. The differences between the mortality risk of the privately insured and the two uninsured groups are reduced somewhat more than in M2. The education variables are considerably weakened, suggesting that they are highly inter-correlated with health status.

The results vividly show the importance of controlling for characteristics that are strongly related to health status and health outcomes and are also strongly related to insurance status. The unadjusted gross difference in mortality risk between those with private insurance and the involuntarily uninsured was -0.113 or 11 percentage points. After adding to the model all characteristics, including the variable indicating fair/poor health status (M3), we find that the differential in the mortality risk between those with private insurance and those who are involuntarily uninsured is reduced to -0.029, a 2.9 percentage point difference.

The unadjusted differential between the privately insured and the voluntarily uninsured (M1) was small—only 3.3 percentage points—because the characteristics of the two groups are fairly similar. That differential becomes

even smaller after controlling for measurable differences in characteristics. Thus, in M3, the mortality rate of the voluntarily uninsured is only 1.7 percentage points below that of the privately insured.

Summary and Concluding Comments

At the outset of this report, we noted that the annual report by the Census Bureau of the official number of uninsured has been dramatized by advocates and the media to the point where many people believe that the millions of people cited as uninsured are without care and are in very poor health. However, a significant fraction of the uninsured are in a financial position to purchase their own insurance, and we refer to them as the voluntarily uninsured. The remainder are the involuntarily uninsured, those with incomes that are low enough to make it unlikely that they could afford health insurance if they wanted to purchase it.

We define the voluntarily uninsured as those whose incomes are at or above 2.5 times the poverty threshold and find that about 43 percent of the uninsured in the 18–64 age group fall into that category. (The percentage of the uninsured classified as voluntary varies among the states from a low of 27 percent in Mississippi to a high of 55 percent in Vermont.)

The socio-economic characteristics of the uninsured, and particularly the involuntarily uninsured, are very different from those of the privately insured population. Education differences are striking. One-third of the involuntarily uninsured are high school dropouts compared to only 7 percent of the privately insured. A disproportionately large percentage of the involuntarily uninsured are young, a third are immigrants, close to half are single without children, and close to 40 percent did not work during the year. Presumably, efforts to cover the uninsured would target the low income population. The char-

acteristics of the target populations should be seriously considered in devising policies that could be effective in providing them with better access to medical care. Simply subsidizing an insurance policy may not be effective for some groups.

In Section III, we reported on the type and amount of healthcare resources used by the uninsured. With respect to the utilization of certain services—in particular, screening for cancer—the uninsured receive less than those who are privately insured. However, when compared with Canadians, the uninsured in the United States compare favorably. We also reported estimates of the dollar amounts of healthcare resources obtained by the uninsured in total. The estimates indicate that on a per capita basis, the uninsured receive about 40 percent of the amount of health resources received by those with insurance. However, it is likely that the involuntarily uninsured receive more than half of the total and the voluntarily uninsured less, because “safety net” providers generally distribute resources to lower income people.

It has proven difficult to determine whether lack of insurance leads to higher mortality rates for the uninsured because health status is affected by many of the same characteristics that set the uninsured apart from the pri-

vately insured. We use the HRS to address the issue. After controlling for differences in characteristics including education, income, and smoking, we find that the higher probability of dying between 1992 and 2006 of the involuntarily uninsured compared to the privately uninsured is reduced from an unadjusted differential of about 11 percentage points to 3 percentage points. The unadjusted difference in mortality between the voluntarily uninsured and the privately insured is only 3 percentage points at the start and it falls below 2 percentage points after controlling for differences in characteristics.

In summary, we find as have others, that lack of health insurance is not likely to be the major factor causing higher mortality rates among the uninsured. The uninsured—particularly the involuntarily uninsured—have multiple disadvantages that in themselves are associated with poor health.

As we show, many of the involuntarily uninsured gain access to medical care through the “safety net”. However, the uncertainty of access is undoubtedly a source of anxiety, and many probably lack access to adequate care. Prudent policy should view the problem with balance and should be based on accurate information about the number and characteristics of those who most need public help.

Appendix Table 1.
WOMEN: Personal Characteristics by Insurance Status, Ages 18–64, March CPS 2007

	Total	Privately insured	Uninsured		
			Total	Voluntary	Involuntary
Total Pop. (in '000)	80,734	63,650	17,084	6,245	10,839
Total Pop. (% distribution)	100.0%	78.8%	21.2%	7.7%	13.4%
Age (%)					
18–34		32.3	48.1	42.2	51.5
35–44		24.3	20.9	19.7	21.6
45–64		43.4	31.1	38.1	27.0
Education (%)					
HS dropout		6.0	25.0	17.0	29.6
HS grad.		26.1	36.2	33.4	37.7
Some college		32.1	26.4	30.0	24.3
College grad. or more		35.8	12.5	19.5	8.4
Race/Ethnicity (%)					
White, non-Hispanic		73.7	47.4	54.7	43.2
Black, non-Hispanic		10.4	16.0	12.9	17.8
Other race, non-Hispanic		6.8	7.3	8.5	6.6
Hispanic		9.2	29.3	23.9	32.4
Immigrant status (%)					
Native born		87.7	71.6	75.2	69.5
Foreign born, citizen		6.3	6.5	8.1	5.7
Foreign born, non-citizen		6.1	21.9	16.8	24.9
Foreign born by year came to the U.S. (100%)					
Before 1990		48.6	29.7	37.8	25.9
1990–99		30.2	37.3	34.2	38.8
2000–07		21.2	33.0	28.0	35.3
Marital and child status (%)					
Married, no children		30.0	17.2	27.9	11.1
Married with children		32.0	22.1	17.1	25.0
Not married, with children		10.8	23.1	13.4	28.7
Not married, no children		27.2	37.5	41.6	35.2
Employment Status in 2006					
Never worked		18.8	40.6	27.8	48.1
Wage and salary workers, worked all year		63.9	39.9	49.4	34.4
Wage and salary workers, worked part year		11.7	13.0	12.5	13.2
Self-employed workers, worked all year		4.4	5.3	9.1	3.2
Self-employed workers, worked part year		1.1	1.2	1.3	1.1
Family Income (%)					
Family income <20,000		7.0	37.5	0.0	59.1
Family income 20,000–40,000		16.3	29.1	18.6	35.1
Family income 40,000–70,000		26.5	19.2	42.5	5.8
Family income >70,000		50.2	14.2	38.9	0.0

Note: Voluntarily uninsured are those with family income equal to or exceeding 2.5 times the poverty threshold for their family type. Involuntarily uninsured are those with family income less than 2.5 times the poverty threshold for their family type. All calculations are weighted. The demographic variables are reported as of March 2007. Employment status, income, and insurance status are reported for the prior calendar year (2006).

Source: The CPS microdata files, March 2007.

Appendix Table 2.
MEN: Personal Characteristics by Insurance Status, Ages 18–64, March CPS 2007

	Total	Privately insured	Uninsured		
			Total	Voluntary	Involuntary
Total Pop. (in '000)	81,774	61,066	20,708	9,954	10,754
Total Pop. (% distribution)	100.0%	74.7%	25.3%	12.2%	13.2%
Age (%)					
18–34		33.1	52.3	52.7	51.8
35–44		24.4	21.5	19.5	23.3
45–64		42.6	26.2	27.7	24.9
Education (%)					
HS dropout		8.3	29.5	22.6	35.9
HS grad.		28.4	37.9	38.0	37.9
Some college		28.9	21.7	25.2	18.5
College grad. or more		34.5	10.9	14.3	7.8
Race/Ethnicity (%)					
White, non-Hispanic		74.7	47.1	53.1	41.5
Black, non-Hispanic		8.9	14.0	12.6	15.4
Other race, non-Hispanic		6.6	6.4	6.6	6.1
Hispanic		9.8	32.5	27.8	36.9
Immigrant status (%)					
Native born		87.3	68.8	73.2	64.6
Foreign born, citizen		5.9	5.5	6.1	4.9
Foreign born, non-citizen		6.8	25.8	20.7	30.5
<i>Foreign born by year came to the U.S. (100%)</i>					
Before 1990		47.5	28.5	31.9	26.1
1990–99		31.3	34.4	35.9	33.3
2000–07		21.1	37.0	32.0	40.6
Marital and child status (%)					
Married, no children		28.6	12.3	15.6	9.2
Married with children		33.4	18.0	10.9	24.6
Not married, with children		6.0	11.7	12.4	10.9
Not married, no children		32.0	58.0	61.1	55.2
Employment Status in 2006					
Never worked		7.9	21.0	14.3	27.3
Wage and salary workers, worked all year		73.4	50.8	55.1	46.7
Wage and salary workers, worked part year		7.8	14.3	13.1	15.3
Self-employed workers, worked all year		9.9	11.4	15.0	8.0
Self-employed workers, worked part year		1.1	2.6	2.5	2.7
Family Income (%)					
Family income <20,000		5.1	29.0	0.0	55.8
Family income 20,000–40,000		14.3	30.4	21.8	38.4
Family income 40,000–70,000		27.3	23.1	41.8	5.8
Family income >70,000		53.3	17.5	36.5	0.0

Note: Voluntarily uninsured are those with family income equal to or exceeding 2.5 times the poverty threshold for their family type. Involuntarily uninsured are those with family income less than 2.5 times the poverty threshold for their family type. All calculations are weighted. The demographic variables are reported as of March 2007. Employment status, income, and insurance status are reported for the prior calendar year (2006).

Source: The CPS microdata files, March 2007.

Appendix Table 3.

Relation Between Insurance Status and Personal Characteristics in 1992 and the Probability of Death by 2002, by 2004, and by 2006 (OLS Regression Results for HRS cohort ages 51–61 in 1992)

	DV: died by 2002				DV: died by 2004				DV: died by 2006				
	M1		M3		M1		M3		M1		M3		
	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat	Coef.	T-stat	
Characteristics as of 1992													
Voluntarily uninsured	-0.049	-3.20	0.000	0.01	-0.061	-3.64	-0.003	-0.18	-0.080	-4.27	-0.012	-0.63	
Private insurance	-0.082	-7.36	.0023	-1.95	-0.089	-7.34	-0.019	-1.47	-0.113	-8.34	-0.029	-2.07	
Public insurance	0.087	6.14	0.049	3.53	0.097	6.29	0.056	3.76	0.101	5.87	0.054	3.24	
Health fair or poor			0.141	15.42				0.159	16.16				
Employed			-0.048	-5.96				-0.052	-5.99				
Age in years			0.009	8.51				0.011	9.23				
Female			-0.073	-10.32				-0.087	-11.36				
Hispanic			-0.053	-4.22				-0.063	-4.59				
Black			0.030	3.08				0.035	3.36				
High School Graduate			-0.006	-0.66				-0.014	-1.44				
Some College			0.006	0.52				-0.006	-0.52				
College or more			-0.005	-0.44				-0.010	-0.75				
Married			-0.028	-3.33				-0.036	-4.02				
Obese (BMI=>30)			0.001	0.18				0.005	0.56				
Currently Smoked			0.093	11.85				0.107	12.51				
Household Income (10,000)			-0.002	-2.81				-0.002	-2.67			-0.002	-2.60
Adj. R-Square	0.030		0.114		0.031		0.126		0.036		0.145		
Dependent Variable (DV) mean (DV:Died by 2002 or 2004 or 2006=1)	0.130				0.157				0.197				
Sample size	8,698				8,580				8,251				

Note: See Table 13 and text.

Source: Health Retirement Survey, 2006.

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