

**Economic Research Initiative on the Uninsured
Working Paper Series**

**HEALTH INSURANCE COVERAGE
AND THE MACROECONOMY**

John Cawley¹
Cornell University

Kosali I. Simon
Cornell University

ERIU Working Paper 24
<http://www.umich.edu/~eriu/pdf/wp24.pdf>

Economic Research Initiative on the Uninsured
University of Michigan
555 South Forest Street, 3rd Floor
Ann Arbor, MI 49104-2531

Not to be distributed or copied without permission of the authors.

October 2003

¹ Corresponding author. 134 MVR Hall, Department of Policy Analysis and Management, Cornell University, Ithaca NY 14853. (607) 255-0952 (office) (607) 255-4071 (fax) jhc38@cornell.edu We thank David Cutler, Alan Garber, Jeanne Lambrew, Linda Loubert, Catherine McLaughlin, Mark Pauly, and conference and seminar participants for their helpful comments. We thank Justine Lyngne for editorial assistance. We gratefully acknowledge financial support from the Economic Research Initiative on the Uninsured and the Bronfenbrenner Life Course Center Innovative Research Program. Simon gratefully acknowledges support from a W.E. Upjohn Institute mini-grant.

ABSTRACT

The primary objective of this paper is to improve our understanding of the historical relationship between state and national macroeconomic climate and the health insurance coverage of Americans. The secondary objective of this paper is to use the historical findings to estimate how the number of uninsured Americans changed during the 2001 recession, and to estimate whether enough people have gained health insurance during the current recovery to offset the losses during the recession.

We conclude that the macroeconomy (in particular, the unemployment rate) is correlated with the probability of health insurance coverage and that this correlation is only partly explained by changes in individuals' employment status. We find that government-provided coverage for children is less than fully counter-cyclical. Finally, we estimate that roughly one million Americans lost health insurance due to macroeconomic conditions during the 2001 recession.

1. Introduction

In March 2001, the longest economic expansion in U.S. history ended, and an economic recession began that lasted until November of 2001.² The primary objective of this paper is to improve our understanding of the historical relationship between state and national macroeconomic climate and the health insurance coverage of Americans. The secondary objective of this paper is to use the historical findings to estimate how the number of uninsured Americans changed during the 2001 recession, and to estimate whether enough people have gained health insurance during the current recovery to offset the losses during the recession.

When thinking of how the macroeconomy may affect the probability of health insurance coverage, it is useful to consider the ways in which Americans receive health insurance coverage. Data from the 2001 Current Population Survey (CPS) indicate that 50% of adult Americans receive health insurance through their employer, and an additional 19% receive it through the employer of a parent or spouse. Six percent of Americans purchase individual health insurance coverage, 4% are covered by Medicaid, 4% receive it through some other source, and 18% were uninsured.³ The macroeconomy may affect the probability of coverage through each of these sources. For example, there are several ways that a poor economy may result in the loss of employer-provided coverage. Those who lose their jobs during recession are likely to lose any health insurance previously provided by that employer. Although the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA) allows eligible unemployed workers to

² Business Cycle Dating Committee, National Bureau of Economic Research (2003).

³ Lambrew (2001), Appendix Table 1.

temporarily purchase health insurance through their former employers,⁴ take-up rates under COBRA are low.⁵ In the majority of cases, the loss of employment involves the loss of any health insurance the worker received from the former employer. However, some who lose their jobs remain covered by insurance provided by a spouse's employer. Overall, 44 percent of those who lose their job become uninsured as a result.⁶

A poor macroeconomy can reduce health insurance coverage even among those who remain employed. Employers may cease offering health insurance in order to cut costs in the face of falling profits. Alternatively, employers may reduce their contributions and shift health insurance costs to employees, causing some of those workers to decline coverage. In addition, previously full-time workers may be shifted to part-time jobs that no longer qualify for health insurance benefits.

A poor macroeconomy may lead state governments to reduce eligibility for publicly provided health insurance. Medicaid spending is a large share of state budgets (it represents 19.6 percent of total state spending)⁷ so when state tax revenues fall because of an economic downturn, there is increased pressure to cut Medicaid budgets, potentially increasing the number of Medicaid-eligible individuals left without coverage. State governors proposed numerous cuts in response to the 2001 recession, including cuts

⁴ COBRA stipulates that those who recently worked at firms with more than 20 employees have the option of continuing in their employer's health insurance plan for up to 18 months by paying (at most) 102% of the full premium for active employees. The Commonwealth Fund 2001 Health Insurance Survey found that 65% of current workers would be eligible for COBRA if they became unemployed; see Doty and Schoen (2001).

⁵ Only 20 to 25 percent of those eligible for COBRA exercise the option to extend their health insurance coverage; see Rice (1999). The most common explanation for the low take-up rate is cost; on average families pay annual premiums of \$7,200 for coverage through COBRA, which represents up to two-thirds of the average worker's unemployment check; see Lambrew (2001).

⁶ Bennefield (1998).

⁷ National Association of State Budget Officers (2002).

in payments to providers.⁸ Those covered by the State Children's Health Insurance Plan (SCHIP) may also be vulnerable to state budget cuts. Medicaid and SCHIP cover 15% of unemployed women and 53% of children with unemployed parents.⁹ Two factors add to the current pressure on state governments to cut public health insurance programs: first, many states increased eligibility for public health insurance during the 1990s when state budget prospects were brighter, and second, health care costs appear to be increasing as a fraction of GDP after nearly nine years of stability.¹⁰

A poor macroeconomy may also affect the number of uninsured if those who previously purchased private health insurance become unable to afford it. On the other hand, some people might *gain* health insurance coverage during bad macroeconomic times if their incomes fall to a level that qualifies for Medicaid.

Policymakers should be concerned about the loss of health insurance coverage during recession for several reasons. First, some who lose employer provided health insurance will join the rolls of publicly provided health insurance such as Medicaid and SCHIP, increasing the strain on the budgets of those programs. Second, uninsured persons may receive less medical treatment than the insured.¹¹ Third, uninsured persons may impose costs on the health care system by receiving their care in relatively inefficient ways, such as using the emergency room for conditions that could have been treated with an office visit, or being hospitalized for conditions that could have been

⁸ Pear and Toner (2002).

⁹ Lambrew (2001).

¹⁰ Levitt et al. (2002).

¹¹ Doyle (2001) exploits auto accidents as natural experiments and finds that auto accident victims who were uninsured received 20% less treatment and had 37% higher mortality than those who were insured.

treated on an outpatient basis.¹² Fourth, uninsured individuals are at risk of severe financial loss in the event of illness.¹³

The long economic expansion of the 1990s followed by the 2001 recession and the current recovery raise the question: what is the relationship between macroeconomic climate and the health insurance coverage among the U.S. population? Our research will answer that question, plus these others: How does the effect of the macroeconomy on insurance coverage differ for men, women and children? What aspects of the macroeconomy matter: national recession, state unemployment rate, or real per capita gross state product? Does the macroeconomic climate primarily affect rates of uninsurance through employment? Our results indicate that increases in unemployment rate are negatively correlated, and increases in gross state product are positively correlated, with the probability of coverage. Changes in employment status explain roughly a fifth to a third of this correlation. We also find several noteworthy differences between men and women in our results.

We use our results to estimate the number of people who lost health insurance during the 2001 recession, and estimate whether enough people have gained health insurance during the current recovery to offset those losses. We emphasize that our results measure the number of people who lost (or gained) health insurance due solely to macroeconomic factors. Our results indicate that roughly one million Americans lost health insurance during the 2001 recession. Moreover, the recovery has only slightly offset these losses; we estimate that roughly 137,000 Americans gained health insurance

¹² Weissman, Gastonis, and Epstein (1992).

¹³ Jacoby, Sullivan, and Warren (2000) find that 45.6% of persons filing for bankruptcy either incurred at least \$1,000 in medical bills not covered by insurance or listed illness or injury as the reason for filing for bankruptcy.

coverage between the end of the recession in November 2001 and August 2003. As a result of the changing macroeconomy, 870,000 fewer Americans had health insurance coverage in August of 2003, almost two years after the end of the recession, than had coverage in March 2001 when the recession began.

2. Related Literature

The United States Bureau of Census, through its Current Population Reports, publishes counts of the number of uninsured in the United States. For example, Mills (2002) estimates that 1.4 million Americans lost health insurance during calendar year 2001, and Mills and Bhandari (2003) estimate that an additional 2.4 million Americans lost coverage during 2002. These estimates include losses of coverage for all reasons, whereas this paper focuses on the number of people who change coverage in response to changing macroeconomic conditions.

The Current Population Reports estimates are based on data from the Current Population Survey (CPS) Annual Demographic Supplement. A limitation of the CPS is that it does not capture month-to-month variation in health insurance coverage; it records whether the respondent was covered by health insurance at any point in the last twelve months. One cannot use the CPS to determine coverage in a specific month. This limitation of the CPS questions about health insurance is especially acute because the 2001 recession lasted less than a year. As an extreme example, suppose everyone in the U.S. lost health insurance during the 2001 recession, and then regained it as soon as the recession was over. Not a single one of those losing health insurance would be picked up

as such in the CPS, because each would report that he or she had been covered at some point in the past twelve months.

Most studies investigating determinants of insurance status include macroeconomic variables such as state unemployment rate as control variables, but the coefficients on these variables are not the focus of the study and are rarely discussed at any length in the text. Only a few studies focus on the link between macroeconomic conditions and health insurance coverage. A Kaiser Family Foundation brief studied aggregate March CPS data for 1980-2000 and found that every percentage point rise in unemployment was associated with an increase of 1.2 million uninsured persons.¹⁴ A study by Holahan and Garrett (2001) that is based on Ku and Garrett (2000) estimates that a percentage point increase in unemployment is associated with a rise in Medicaid enrollment of 1.5 million. Marquis and Long (2001) find mixed evidence that county unemployment rates are correlated with employer offers of health insurance and employer contributions to health insurance. They find that employers are more likely to offer health insurance in tight labor markets in 1993 but cannot reject the hypothesis of a zero correlation in 1997. They also find, contrary to their prediction, that the employer's contribution to employee health insurance is positively correlated with county unemployment rate. Using a variety of data including the CPS, Gilmer and Kronick (2001) estimate that if health expenditures grow twice as fast as personal income over next decade, the percent of the population under age 65 that is uninsured would rise from 16% to 21%.

A limitation of several of these previous studies is their use of the CPS data, which cannot indicate health insurance coverage in a particular month, which makes it

¹⁴ Gruber and Levitt (2002).

impossible to relate coverage at a point in time to macroeconomic conditions at that time. A contribution of this paper is to offer estimates derived from reports of health insurance coverage in a specific month matched with macroeconomic conditions during that month, using data from the Survey of Income and Program Participation (SIPP).

The previous literature is also limited by its use of cross-sectional data and inability to remove unobserved time-invariant heterogeneity. This is a particular problem if the populations of high-unemployment states differ from those in low-unemployment states in unobserved ways that affect the probability of health insurance coverage; such unobserved heterogeneity would result in biased estimates of the effect of macroeconomic conditions on health insurance coverage. This paper contributes to the literature by analyzing longitudinal data on individuals and by removing person-specific fixed effects. Our identification of the effect of macroeconomic conditions on the probability of health insurance coverage comes from variation within people over time.

3. Methods

We first estimate a model in which the dependent variable indicates whether an individual has any health insurance coverage at a particular point in time. The empirical analysis is based on a random utility model. Suppose that each person derives utility based on insurance status; people enjoy utility U_{INS} if they are insured, and utility U_{UNINS} if they are uninsured. The utility derived from being insured or uninsured depends upon individual characteristics X and macroeconomic conditions M :

$$U_{INS} = \alpha_{INS} + X\beta_{INS} + M\gamma_{INS} + \varepsilon_{INS}$$

$$U_{UNINS} = \alpha_{UNINS} + X\beta_{UNINS} + M\gamma_{UNINS} + \varepsilon_{UNINS}$$

Macroeconomic conditions may affect the utility of being insured if, for example, recession raises the cost of achieving health insurance coverage.

Let $y = 1$ if the individual is insured and $y = 0$ if the individual is uninsured. The probability that a person is insured is equal to the probability that utility in the insured state exceeds utility in the uninsured state.

$$\Pr[y = 1] = \Pr[U_{INS} > U_{UNINS}]$$

$$\Pr[y = 1] = \Pr[(\varepsilon_{INS} - \varepsilon_{UNINS}) > -(\alpha_{INS} - \alpha_{UNINS}) - X(\beta_{INS} - \beta_{UNINS}) - M(\gamma_{INS} - \gamma_{UNINS})]$$

$$\Pr[y = 1] = \Pr[\varepsilon > -\alpha - X\beta - M\gamma]$$

The distribution of the differenced error term determines the proper regression model to use to estimate the probability of health insurance coverage of individual i living in state s at time t as a function of macroeconomic conditions M and individual characteristics X . This paper assumes that the differenced error term follows a binomial distribution; as a result, linear probability models will be estimated.

$$(1) \quad y_{ist} = \alpha + X_{it}\beta + M_{st}\gamma + \varepsilon_{ist}$$

Macroeconomic conditions M include an indicator variable for national recession, state-level unemployment rates, and real per capita gross state product. Individual-specific fixed effects are removed. Individual characteristics X include time-varying factors that may affect the person's probability of being uninsured, including age, marital status, education, and family size.

Models similar to equation (1) will be estimated for the following dependent variables: an indicator variable for whether one has health insurance coverage through

any source, an indicator for whether one receives health insurance coverage through one's own employer, an indicator for whether the individual is covered by government-provided health insurance, an indicator for whether the individual is covered by Medicaid, an indicator for whether one's current employer *offers* health insurance, and an indicator for whether a worker offered health insurance by his employer has accepted that offer ("take-up").

The parameters of interest are the γ coefficients, which will be used to measure the change in the probability that individuals are covered by health insurance associated with the change in macroeconomic variables. We hypothesize that the coefficients on variables for macroeconomic conditions will have the following sign, depending on the dependent variable (the source of the health insurance). Higher unemployment rate and national recession are assumed to decrease the probability of coverage through any source and the probability of coverage through one's own employer. Higher gross state product is predicted to have the opposite effect, increasing the probability of coverage through any source or through one's own employer. We do not have unambiguous predictions about the signs of the coefficients on macroeconomic variables in the regressions for coverage through the government in general or through Medicaid in particular, because there are potentially offsetting effects. A poor macroeconomy may increase the probability of coverage through the government because people's incomes fall to the point they qualify for Medicaid, or it may lead state legislatures to tighten eligibility requirements in order to decrease the Medicaid rolls, or to reduce the generosity of Medicaid benefits leading to lower rates of take-up among the eligible population.

To determine the extent to which macroeconomic conditions affect health insurance coverage through all pathways, we first estimate model (1) without controlling for employment status. However, a change in employment is clearly one important path by which macroeconomic conditions affect health insurance, so we also re-estimate model (1) controlling for employment status, which allows us to determine the percentage of the overall correlation that is due to changes in employment.

4. Data

The relationship between state and national economic climate and individuals' health insurance status is measured using data from two nationally representative samples: the Survey of Income and Program Participation (SIPP) and the National Longitudinal Survey of Youth (NLSY).¹⁵ Each is well-suited for a study of health insurance and the macroeconomy because each follows the same individuals over a considerable period of time, permitting the removal of individual fixed effects. An advantage of the SIPP is its large sample size (we have samples of roughly three quarters of a million observations each for men, women, and children), and an advantage of the NLSY is its richer set of questions about health insurance. The SIPP serves as the primary dataset in this study, but when the SIPP lacks certain health insurance information we use that contained in the NLSY.

¹⁵ The Current Population Survey (CPS) is another data set commonly used to assess the health insurance coverage of Americans. The advantages of the NLSY and SIPP over the CPS are that they track individuals for long periods of time and they record health insurance coverage at a particular point in time whereas the CPS records whether the individual had health insurance coverage at any time in the past year. Bennefield (1996) finds that CPS respondents tend to underreport health insurance coverage relative to SIPP respondents.

4a. The Survey of Income and Program Participation

The Survey of Income and Program Participation (SIPP) is a nationally representative sample of Americans over the age of 15¹⁶ and consists of a series of four-year panels starting in 1984 with sample sizes ranging from approximately 14,000 to 36,700 households. The SIPP interviews households at 4-month intervals (collecting data on the current month and, retrospectively, each of the three months between interviews) for up to 4 years. Each wave contains information on the source of health insurance coverage during each month as well as periods of uninsurance over the last 12 months. The SIPP also contains information on job status and demographic characteristics that influence the choice of insurance status (e.g. age, race, gender, education, marital status, and family size). Publicly available state identifiers permit the merger of macroeconomic variables with the SIPP data. This paper uses data from the 1990-1996 panels of the SIPP covering the period 1990-1999. In order to avoid recall bias we do not use the retrospective data; we instead focus exclusively on data collected for the current month in which the respondent is interviewed. The set of regressors used in each regression includes: highest grade completed, age, and indicators for individual fixed effects, marital status, and the presence of children in the family. We exclude income from the set of regressors because wages and salary are determined simultaneously with fringe benefits such as health insurance. Summary statistics of the SIPP data appear in Appendix Table 1A.

4b. The National Longitudinal Survey of Youth

¹⁶ There are also interview records for children in the household.

The National Longitudinal Survey of Youth (NLSY) contains data from interviews of 12,686 respondents conducted annually from 1979 to 1994 and every two years from 1994 to 2000. We use data from 1983-2000 on whether the respondent's primary employer offers health insurance coverage and whether the worker accepted (took up) that offer of coverage. Restricted-access geocodes permit the merger of macroeconomic variables with the NLSY data. The set of regressors used in each regression includes: individual fixed effects, highest grade completed, age, family size, and indicator variables for marital status. Summary statistics of the NLSY data appear in Appendix Table 1B.

4c. Data on Macroeconomic Conditions

The key explanatory variables that reflect the economic climate are an indicator variable for national recession, monthly state unemployment rate, and annual gross state product.

The coding of the indicator variable for national recession is based on the decisions of the Business Cycle Dating Committee of the National Bureau of Economic Research (NBER). Recession is sometimes casually defined as two consecutive quarters of declining real Gross National Product, but the NBER defines recession as: "a period of significant decline in total output, income, employment, and trade, usually lasting from six months to a year, and marked by widespread contractions in many sectors of the economy."¹⁷ The data used in this paper cover the recession that lasted from July 1990 to March 1991.

The Bureau of Labor Statistics Local Area Unemployment Statistics Series is the source for monthly unemployment rates at the state level. Unemployment rate is a

¹⁷ Public Information Office, National Bureau of Economic Research (2002).

lagging indicator of recession.¹⁸ We identify the effect of state unemployment rate on the probability of health insurance coverage using individual-specific variation over time in unemployment rate; this individual-specific variation occurs in two possible ways; first, when individuals move between states that differ in their unemployment rate, and when individuals remain in the same state but the unemployment rate in that state varies over time. Over the period covered by our data, 89% of the variation in unemployment rate is across states, with the remaining 11% of the variation within states over time.

Data on Gross State Product are derived from the Regional Accounts Data collected by the Bureau of Economic Analysis of the U. S. Department of Commerce. We convert GSP to year 2000 dollars using the annual CPI-U. Real GSP is divided by Census estimates of the state population in that year. We identify the effect of Gross State Product on the probability of health insurance coverage using individual-specific variation over time in real per capita GSP; this individual-specific variation occurs in two possible ways; first, when individuals move between states that differ in their real per capita GSP, and when individuals remain in the same state but the real per capita GSP in that state varies over time. Over the period covered by our data, 79% of the variation in real per capita GSP is across states, with the remaining 21% of the variation within states over time.

4d. Additional State-Level Data

We also include three regressors that control for heterogeneity at the state level. Percent of the workforce that is unionized in that state is relevant because unions are likely to negotiate health insurance coverage for their members.

¹⁸ Business Cycle Dating Committee (2003).

The Medicare Hospital Wage Index is used to proxy for differences in the cost of health insurance. The Social Security Act requires that CMS prospective payments to hospitals be adjusted for area differences in hospital wages; the Hospital Wage Index is used to make this adjustment. For each distinct labor market (based on Metropolitan Statistical Areas and statewide aggregates of rural areas), the weighted average hourly wage (AHW) is computed from the sum of the wage costs of all hospitals in that market divided by the sum of the hours worked in all hospitals in the market; the wage index value for a particular labor market equals the AHW for that market divided by the national AHW. We use the statewide rural area measure of the index because we know the state, but not county, of residence in the SIPP.

Finally, we control for variation across states and over time in the generosity of Medicaid using a simulated Medicaid eligibility measure as in Currie and Gruber (1996). Specifically, we simulate the fraction of children under age 18 from the 1990 Public Use Micro Sample (5%) of the Census who would have been eligible for Medicaid or SCHIP had their families lived in a given state in a given year (after appropriately adjusting financial variables for inflation). This produces an index that measures the generosity of public assistance health insurance in a given state in a given year.

5. Empirical Results

We initially estimate the probability that an individual has health insurance coverage as a function of macroeconomic conditions and basic demographic characteristics while excluding employment status, and then we re-estimate our models

controlling for employment status in order to determine the proportion of the correlation explained by changes in employment.

In measuring the correlation between insurance status and the macroeconomy one must first decide what aspects of the macroeconomy to examine. A naive approach would be to use an indicator variable for recession as the sole measure of the macroeconomy; this ignores variation in intensity of recession and differences in the macroeconomy while out of recession. We predict that recession is associated with a lower probability of coverage, but when we estimate such models, we find for both men and women that the coefficient on the recession indicator is statistically significant but of the opposite sign than expected in regressions concerning coverage through any source and coverage through one's employer. Table 1 presents these coefficients, which suggest that a recession *raises* the probability of health insurance coverage by 0.80% for men, 0.76% for women, and 0.85% for children.¹⁹ While people who previously did not qualify for Medicaid or SCHIP may gain such coverage once a recession lowers their income to the point that they become eligible, this cannot be driving the results because the third column of Table 1 indicates that coverage through the government is less likely during recession. These results may be partly due to differences in health insurance and health care markets (such as the extent of mandated benefits) between the time of the recession in our data (1990-1991) and the more recent years in the data. However, the most likely explanation is that recession alone is an insufficient measure of the relevant macroeconomic dynamics that affect health insurance coverage. For example, because unemployment rate is a lagging indicator of recession, if unemployment rate is the most

¹⁹ Ruhm (2003, 2000) finds that recessions are good for your health. Based on these results, one might add that recessions are good for your health insurance!

important macroeconomic factor affecting health insurance coverage, coverage will be higher during recession (when unemployment has not yet peaked) and lower during recovery (when unemployment is still rising). The positive correlation between recession and coverage suggests that recession is an inaccurate measure of the meaningful ways in which the macroeconomy affects coverage. As a result, for the remainder of this paper we measure macroeconomic conditions using both unemployment rate and real per capita gross state product.

Table 2 contains results for males in the SIPP. In the first row, our prediction that higher unemployment rates will be associated with a lower probability of coverage is confirmed for both coverage through any source and that through an employer. The point estimates are such that a one percentage point increase in state unemployment rate is associated with a one-third of one percent decrease in the probability of coverage. (While this and other magnitudes we discuss in this section may seem small, we show in the conclusion of this paper that they imply large numbers of Americans losing health insurance coverage during the 2001 recession.)

The second row of Table 2 indicates that our prediction that higher GSP will be associated with a higher probability of coverage through any source or through an employer is also confirmed. The magnitude is such that a \$1,000 per capita increase in real GSP is associated with a 0.10% increase in the probability that a man has health insurance.

We lacked predictions of the sign of the coefficients in regressions concerning government-provided coverage; the last column of Table 2 indicates that the coefficient on unemployment is not statistically significant, while that on GSP is positive, indicating

that government coverage works pro-cyclically for men; when the economy is booming, men are more likely to be covered by the government, and when GSP is falling men are less likely to be covered.

Table 3 presents the analogous results for women. Again, higher unemployment is associated with a lower probability of coverage through any source or through an employer. A one percentage point increase in unemployment is associated with a one-quarter of one percent decrease in the probability of coverage through any source. Higher GSP is associated with a higher probability of coverage through any source or through an employer. A \$1,000 increase in per capita real GSP is associated with a 0.14% increase in the probability of coverage.

Surprisingly, the coefficient on GSP has different signs in the Medicaid and government coverage regressions; higher GSP is associated with a lower probability that women are covered through Medicaid (9.5% of the sample) but has a positive but close to zero correlation with the probability that a woman is covered through the government (13.8% of the sample). Sources of non-Medicaid coverage through the government include Medicare and the military health insurance program CHAMPUS.

Results for children are presented in Table 4. As predicted, higher unemployment is associated with a lower probability of coverage through any source. A one percentage point increase in unemployment is associated with a 0.30 percent decrease in the probability of coverage. A \$1,000 increase in per capita real GSP is associated with a one-quarter of one percent increase in the probability of coverage. While government-provided coverage for men was pro-cyclical, that for children is counter-cyclical. Higher unemployment is associated with a higher probability of coverage through Medicaid or

the government in general, and higher GSP is associated with a lower probability of such coverage. While government-provided coverage for children is counter-cyclical, it is not fully so; the rise in coverage through the government is not sufficient to fully offset the loss in coverage due to high unemployment or low GSP.

One important way that the macroeconomy affects individuals' health insurance status is through their employment status (Bennefield, 1998). To determine how the macroeconomy correlates with the probability of employment, we regressed an indicator for current employment on the same set of regressors as earlier. The results, which are contained in Table 5, reveal that both women and men, are, predictably, less likely to be employed when state unemployment rates are high. A one percentage point rise in state unemployment is associated with a decrease in the probability of employment of 0.74% for men and a 0.40% for women.

The NLSY contains certain information about health insurance options that is not available in the SIPP. For example, the NLSY asks respondents whether their employer offered them health insurance coverage. It also asks whether they are currently covered by their own employer, which allows us to measure take-up of employer offers.

The correlation of employer offers of health insurance coverage with macroeconomic conditions for the sample of employed respondents is described in Table 6.²⁰ In addition to controlling for the earlier set of regressors, we also add an indicator for whether the employee is a part-time worker (defined as 35 hours a week or less). Employer offers to men are more sensitive to state unemployment rate than those to women; a one percentage point increase in unemployment rate is associated with a

²⁰ Note that the data on employer offers are at the employee level. As a result, large employers are likely to be over-represented, biasing our estimates of the willingness of employers to offer health insurance.

decrease in the probability that one's employer offers health insurance coverage of 0.85% for males and a 0.49% decrease for females. This discrepancy is probably not due to employers having different policies toward the two genders, but is likely attributable to differences in occupation and sector or industry of occupation.

Cutler (2002) finds that employee take-up rates fell during the 1990s. We tested for changes in take-up rates of employer-offered health insurance during periods of high unemployment. Specifically, we regressed an indicator variable for whether one receives health insurance coverage through one's own employer on macroeconomic variables for the sample of NLSY respondents who were both employed and offered health insurance coverage by their employer. The results are provided in Table 7. The coefficient on unemployment rate was statistically significant for women; a one percentage point increase in local unemployment rate is associated with a 1.9% increase in the probability of take-up for women; the results for men were not statistically significant at the 5% level. One story that is consistent with this gender discrepancy is that families tend to accept coverage through the husband's job. When unemployment rates rise, husbands are less likely to have a job or be offered coverage, so wives are more likely to take up coverage. Our results are consistent with the hypothesis that an improved macroeconomy is one reason that take-up rates fell during the 1990s.

We next measure the extent to which macroeconomic conditions are correlated with insurance status conditional on employment status. Tables 8 and 9 are comparable to Tables 2 and 3 with the difference that indicator variables for employment and part-time employment have been added to the set of regressors. The coefficients on the indicator variables for employment and part-time employment are uniformly large and

statistically significant, confirming that employment status has a large impact on the probability of coverage.

Tables 8 and 9 indicate that, even controlling for employment status, macroeconomic conditions remain correlated with the probability of health insurance coverage. In Table 2, before controlling for employment status, a one percentage point rise in unemployment was associated with a 0.34% decrease in the probability of health insurance coverage for men. In Table 8, after controlling for employment status, the associated decrease is 0.21%; about a third of the correlation of men's health insurance coverage with unemployment rates seems to operate through changes of employment status.

Similar results hold for the samples of women. In Table 3, before controlling for employment status, a one percentage point rise in unemployment was associated with a 0.26% decrease in the probability of health insurance coverage. After controlling for employment status, the associated decrease listed in Table 9 is 0.20%; roughly a fifth of the correlation of women's health insurance status with unemployment rates appears to be due to changes of employment status. Overall, we conclude that employment status is a major pathway through which macroeconomic conditions affect the probability of health insurance coverage, yet the macroeconomy still has a strong correlation with coverage controlling for employment status.

6. Sensitivity Analyses

This section presents the results of sensitivity checks that were conducted to gauge the robustness of our findings. The results are not presented in table form in this paper but are available upon request.

In our primary results, we exclude indicators for year because we want to use the across-year variance in unemployment rate and GSP; in this we follow the method of Ruhm (2000). As a check of robustness we include a set of indicator variables for year. The point estimates of the coefficient on recession fall and many lose statistical significance. The point estimates of the coefficients on unemployment rate and GSP fall after indicator variables for year are included, but they remain statistically significant and the overall conclusions are very similar. If instead we include a linear time trend, the coefficients on unemployment and GSP are slightly smaller and overall the results are very similar to when we include no time controls.

In our primary results we use state-level unemployment. The restricted-access geocode for the NLSY allows us to merge county unemployment rates to the individual observations and to determine whether our results differ when we use a measure of unemployment from a smaller geographic area. We find very similar results when we use county rather than state unemployment rate in the NLSY regressions.

We also experimented with controlling for the employment rate instead of the unemployment rate. The first, but not the second, denominator includes people who are out of the labor force. We find that the coefficient on employment rate is statistically significant in the same regressions in which that on unemployment rate is statistically significant and that the absolute values are similar, although, predictably, the two have opposite signs.

We estimate linear probability models in this paper. Our attempts to estimate nonlinear models such as logit or probit have been unsuccessful because of the large size of the SIPP sample (over three-quarters of a million observations each of men, women, and children) combined with our method of removing individual-specific fixed effects.

The NLSY contains a richer set of information on industry and occupation than the SIPP. When we add controls for occupation and industry in the regressions that control for employment status (i.e. the models reflected in Tables 8 and 9, but estimated using NLSY rather than SIPP data), we find that these controls have little impact on the NLSY results.

7. Conclusion

This paper uses variation within individuals over time in a large longitudinal dataset to examine how the probability of health insurance coverage varies in response to macroeconomic conditions. The results confirm our prediction that the probability of any health insurance coverage is negatively associated with unemployment rate and positively correlated with real per capita gross state product. We find that a one percentage point increase in state unemployment rate is associated with a decrease in the probability of health insurance coverage through any source of 0.34% for men, 0.26% for women, and 0.30% for children. A \$1,000 increase in real per capita gross state product is associated with an increase in the probability of health insurance coverage through any source of 0.10% for men, 0.14% for women, and 0.25% for children.

This paper finds that government-provided health insurance for children is counter-cyclical; when unemployment rates rise, children are less likely to receive health

insurance coverage through their parents' employers and are more likely to receive coverage through the government. However, these programs are not fully counter-cyclical; the increase in the probability of government coverage is not sufficient to fully offset the decreased probability of coverage through an employer. As a result, the probability that children are covered by health insurance from any source falls as unemployment rises.

Our prediction that an indicator variable for national recession would be negatively correlated with the probability of health insurance coverage was not supported by the data; in fact, the coefficient on recession has a positive sign in most regressions. This likely reflects the fact that unemployment rate is a lagging indicator of recession. This may also be due to differences in health insurance and health care markets between the recession in our data (1990-1991) and the more recent years in the data.

Employment status is correlated with both macroeconomic conditions and with the probability of health insurance coverage. Changes in employment status explain between a fifth and a third of the correlation between health insurance coverage and unemployment rates, but almost none of the correlation of coverage with GSP.

This paper also finds that employer offers of health insurance are sensitive to the local unemployment rate. Women appear to be more likely to take up employer-offered health insurance when unemployment rates are high.

From March to November of 2001 the U.S. experienced an economic recession. We can use our estimates of the historic correlation between health insurance coverage and unemployment rate and GSP to predict the number of Americans who lost health insurance during the recession. During the 2001 recession, the national unemployment

rate rose from 4.2% to 5.6% and real per capita GDP rose from \$31,827 to \$31,892. Based on these changes and our regression results, we estimate that roughly 1,009,000 Americans, including 292,000 children, lost health insurance during the 2001 recession. Our estimate is less than that of Families USA (2002), which estimated that two million Americans lost health insurance due to increased unemployment between March and December of 2001. It should be kept in mind when comparing these figures that the estimate of Families USA was based on an extra month (December 2001) and was based on different data (CPS rather than SIPP). In addition, the Families USA study did not take into account the gain in health insurance coverage during the recession that occurred as a result of a slight rise in per-capita GSP.

Our estimates can also be used to estimate whether enough Americans have gained coverage during the current recovery to fully offset the loss of coverage during the recession. Between the end of the recession in November 2001 and August of 2003, the national unemployment rate rose from 5.6% to 6.1% and real per capita GDP rose from 31,892 to 33,191. Based on these figures, we estimate that roughly 137,000 Americans, including 126,000 children, gained health insurance coverage during the current recovery. Surprisingly, we estimate that while the number of women and children with health insurance rose during the recovery, the number of men with coverage fell by roughly 35,000. This difference is due to the fact that men's coverage is more sensitive to the unemployment rate (which has risen) and less sensitive to GSP (which has risen) than the coverage of women or children. Our estimate of 137,000 Americans gaining coverage during the current recovery is far less than the number of Americans who lost coverage during the recession, suggesting that roughly 872,000 fewer Americans,

including 166,000 fewer children, had health insurance coverage in August 2003 than had coverage in March 2001 when the recession began.

We emphasize that our estimates cover only those who lost (or gained) health insurance because of changes in the macroeconomy. Because of other changes in health insurance markets, labor markets, or society, additional people may have lost health insurance during the periods we study, which is one factor to consider when comparing our estimates to recent Census estimates of the number of persons who lost health insurance for any reason during calendar years 2001 and 2002.

We stress that because the changes in probabilities of coverage are multiplied by a large number of Americans, small changes in parameter estimates can result in large changes in the estimates of Americans losing or gaining health insurance coverage. We encourage readers to focus on the larger conclusions that the macroeconomy (in particular, unemployment rate) is correlated with the probability of health insurance coverage, that this correlation is only partly explained by changes in employment status, that government-provided coverage for children is less than fully counter-cyclical, and that more Americans likely lost health insurance during the 2001 recession than have gained it during the current recovery, than to assign great precision to the estimated number of Americans losing health insurance during recession or gaining it during the recovery.

Caution should be used when estimates derived from the last decade are used to estimate the impact of the current recession. Several factors have changed that may affect the relationship between the macroeconomy and health insurance coverage. For

example, more couples are dual-earner, suggesting that the impact of one spouse losing employer-provided health insurance may be less today than in the past.

References

- Bennefield, Robert L. 1996. "A Comparative Analysis of Health Insurance Coverage Estimates: Data from CPS and SIPP." #9608. (Bureau of the Census, U. S. Department of Commerce: Washington, DC).
- Bennefield, Robert L. 1998. "Dynamics of Economic Well Being: Health Insurance 1993-1995. Who Loses Coverage and for How Long." *Current Population Reports*. August. (U. S. Census Bureau: Washington, D.C.).
- Business Cycle Dating Committee, National Bureau of Economic Research. 2003. "The NBER's Business-Cycle Dating Procedure." July 17.
- Currie, Janet, and Jonathan Gruber. 1996. "Health Insurance Eligibility, Utilization of Medical Care, and Child Health." *Quarterly Journal of Economics*, 111: 431-66.
- Cutler, David. 2002. "Employee Costs and the Decline in Health Insurance Coverage." *NBER Working Paper #9036*.
- Doty, Michelle M., and Cathy Schoen. 2001. "Maintaining Health Insurance During a Recession: Findings from The Commonwealth Fund 2001 Health Insurance Survey." Issue Brief. (The Commonwealth Fund: New York). December.
- Doyle, Joseph J. 2001. "Does Health Insurance Affect Treatment Decisions & Patient Outcomes? Using Automobile Accidents as Unexpected Health Shocks." Unpublished manuscript, University of Chicago.
- Families USA. 2002. "2 Million Americans Lost Their Health Insurance in 2001: Largest One-Year Increase in Nearly a Decade." Press release. February 12.
- Gilmer, Todd, and Richard Kronick. 2001. "Calm Before the Storm: Expected Increase in the Number of Uninsured Americans." *Health Affairs* 20(6): 207-210.
- Gruber, Jon, and Larry Levitt. 2002. "Rising Unemployment and the Uninsured." (Kaiser Family Foundation: Menlo Park, CA). January.
- Holahan, John, and Bowen Garrett. 2001. "Rising Unemployment and Medicaid." *Health Policy Online*. October.
http://www.urban.org/UploadedPDF/410306_HPOOnline_1.pdf
- Jacoby, Melissa B., Teresa A. Sullivan, and Elizabeth Warren. 2000. "Medical Problems and Bankruptcy Filings." *Harvard Law School Public Law and Legal Theory Working Paper Series #008*, April.
- Ku, L and B. Garrett. 2000 "How Welfare Reform and Economic Factors Affected Medicaid Participation:1984-96." *Assessing the New Federalism Discussion Paper*, Number 00-01. (The Urban Institute: Washington, D.C.).
- Lambrew, Jeanne M. 2001. "How the Slowing U.S. Economy Threatens Employer-Based Health Insurance." (The Commonwealth Fund: New York). November.
- Levitt, K. C. Smith, C. Cowan, H. Lazenby, and A. Martin. 2002. "Inflation Spurs Health Spending in 2000." *Health Affairs*, 21(1): 172-181.
- Marquis, M. Susan, and Stephen H. Long. 2001. "Employer Health Insurance and Local Labor Market Conditions." *International Journal of Health Care Finance and Economics*, 1(3-4): 273-292.
- Mills, Robert J. 2002. "Health Insurance Coverage: 2001." *Current Population Reports*. September. (U. S. Census Bureau: Washington, D.C.).

- Mills, Robert J., and Shailesh Bhandari. 2003. "Health Insurance Coverage in the United States: 2002." *Current Population Reports*. September. (U. S. Census Bureau: Washington, D.C.).
- National Association of State Budget Officers. 2002. *State Expenditure Report 2001*. World wide web content.
<http://www.nasbo.org/Publications/PDFs/nasbo2001exrep.pdf>
- Pear, Robert and Robin Toner. 2002, "States Face Hard Choices on Medicaid Cuts" *New York Times*, January 14, p.1.
- Public Information Office, National Bureau of Economic Research. 2002. "Business Cycle Expansions and Contractions." Press Release.
- Rice, Thomas. 1999. "Subsidizing COBRA: An Option for Expanding Health Insurance Coverage" (Kaiser Foundation: Washington, D.C.).
- Ruhm, Christopher J. 2003. "Good Times Make You Sick." *Journal of Health Economics*, 24(4): 637-658.
- Ruhm, Christopher J. 2000. "Are Recessions Good for Your Health?" *Quarterly Journal of Economics*, 115(2): 617-650.
- Weissman, J. S., C. Gastonis, and A. M. Epstein. 1992. "Rates of Avoidable Hospitalization by Insurance Status in Massachusetts and Maryland." *Journal of the American Medical Association* 268(17): 2388-2394.

Table 1
SIPP
Whether Covered by Health Insurance
as a Function of Current Recession
Linear Probability Coefficients (and T Statistics)

Group	Any Source	Employer Coverage	Government Provided
Men N=731,749	0.0080 (6.16)	0.011 (7.14)	-.0021 (-2.71)
Women N=800,782	0.0076 (6.58)	0.0031 (2.25)	-.0057 (-6.02)
Children N=703,109	0.0085 (6.28)	N.A.	-.0115 (-8.89)

Notes:

- 1) Data: pooled 1990-1996 waves of the SIPP. Sample includes all individuals between the ages of 17 and 64 years of age regardless of employment status.
- 2) Dependent variables: column 1: indicator variable that equals one if individual covered by health insurance from any source and zero otherwise; column 2: indicator variable that equals one if individual is covered by employer health insurance in own name and zero otherwise; column 3: indicator variable for any type of government provided health insurance.
 Other regressors: Individual fixed effects, Medicare hospital wage index, union coverage rate in the state, Medicaid generosity index of the state, highest grade completed, marital status, presence of children in the family, and age. For the child-only regression, the list excludes highest grade completed, marital status and presence of children in the family.

Table 2
SIPP Men
Whether Covered by Health Insurance
as a Function of Macroeconomic Conditions
Linear Probability Coefficients (and T Statistics)

Macroeconomic Variable Or Statistic	Any Source	Employer Coverage	Government Provided
State Unemployment Rate	-.0034 (-9.66)	-.0055 (-13.2)	0.0002 (0.93)
Per Capita Real G.S.P.	0.0010 (4.28)	0.0022 (7.53)	0.0011 (7.49)
Mean of Dependent Variable	0.785	0.554	0.09
Number of Observations	731,749	731,749	731,749

Notes:

- 1) Data: pooled 1990-1996 waves of the SIPP. Sample includes all individuals between the ages of 17 and 64 years of age regardless of employment status.
- 2) Dependent variables: column 1: indicator variable that equals one if individual covered by health insurance from any source and zero otherwise; column 2: indicator variable that equals one if individual is covered by employer health insurance in own name and zero otherwise; column 3: indicator variable for any type of government provided health insurance.
- 3) Other regressors: Individual fixed effects, Medicare hospital wage index, union coverage rate in the state, Medicaid generosity index of the state, highest grade completed, marital status, presence of children in the family, and age.

Table 3
SIPP Women
Whether Covered by Health Insurance
as a Function of Macroeconomic Conditions
Linear Probability Coefficients (and T Statistics)

Macroeconomic Variable Or Statistic	Any Source	Employer Coverage	Medicaid	Government Provided
State Unemployment Rate	-0.0026 (-8.23)	-0.00227 (-6.14)	0.0027 (12.1)	0.0018 (7.25)
Per Capita Real G.S.P.	0.0014 (6.25)	0.0013 (5.05)	-0.0017 (-10.46)	0.0002 (1.16)
Mean of Dependent Variable	0.772	0.374	0.095	0.138
Number of Observations	800,782	800,782	800,782	800,782

Notes:

- 1) Data: pooled 1990-1996 waves of the SIPP. Sample includes all individuals between the ages of 17 and 64 years of age regardless of employment status.
- 2) Dependent variables: column 1: indicator variable that equals one if individual covered by health insurance from any source and zero otherwise; column 2: indicator variable that equals one if individual is covered by employer health insurance in own name and zero otherwise; column 3: indicator variable for Medicaid coverage; column 4: indicator variable for any type of government provided health insurance.
- 3) Other regressors: Individual fixed effects, Medicare hospital wage index, union coverage rate in the state, Medicaid generosity index of the state, highest grade completed, marital status, presence of children in the family, and age.

Table 4
SIPP
Whether Child Has Health Insurance Coverage
as a Function of Macroeconomic Conditions
Linear Probability Coefficients (and T Statistics)

Macroeconomic Variable Or Statistic	Any Source	Medicaid	Government Provided
State Unemployment Rate	-.0030 (-8.19)	0.0053 (15.99)	0.0047 (13.45)
Per Capita Real G.S.P.	0.0025 (9.17)	-.0046 (-18.19)	-.0030 (-11.19)
Mean of Dependent Variable	0.684	0.190	0.217
Number of Observations	703,109	703,109	703,109

Notes:

- 1) Data: pooled 1990-1996 waves of the SIPP.
 - 2) Dependent variables: column 1: indicator variable that equals one if child covered by any health insurance from any source and zero otherwise; column 2: indicator variable that equals one if child has government-provided health insurance coverage and zero otherwise; column 3: indicator variable that equals one if child covered by Medicaid and zero otherwise.
 - 3) The sample consist of those who are under 18 years of age.
- Other regressors: Individual fixed effects, Medicare hospital wage index, union coverage rate in the state, Medicaid generosity index of the state, and age.

Table 5
SIPP
Whether Currently Employed
as a Function of Macroeconomic Conditions
Linear Probability Coefficients (and T Statistics)

Macroeconomic Variable Or Statistic	Men	Women
State Unemployment Rate	-.0074 (-18.83)	-.0040 (-9.96)
Per Capita Real G.S.P.	0.000008 (0.03)	0.00137 (4.91)
Mean of Dependent Variable	0.802	0.657
Number of Observations	731,749	800,782

Notes:

- 1) Data: pooled 1990-1996 waves of the SIPP. Sample includes all individuals between the ages of 17 and 64 years of age regardless of employment status.
- 2) Dependent variable equals one if employed during the survey month and zero otherwise.
- 3) Other regressors: Individual fixed effects, Medicare hospital wage index, union coverage rate in the state, Medicaid generosity index of the state, highest grade completed, marital status, presence of children in the family, and age..

Table 6
NLSY
Whether Current Employer Offers Health Insurance
as a Function of Macroeconomic Conditions
Linear Probability Coefficients and (T Statistics)

Macroeconomic Variable Or Statistic	Men	Women
State Unemployment Rate	-.0085 (-8.16)	-.0049 (-4.41)
Per Capita Real G.S.P.	-.0002 (-.30)	.00013 (.18)
Part-Time Worker	-.2357 (-35.7)	-.1981 (-39.33)
Mean of Dependent Variable	.76	.76
Number of Observations	51,253	43,716

Notes:

- 1) Data: 15 pooled years of the NLSY. Sample includes only those currently employed.
- 2) Dependent variable equals one if current employer offers health insurance coverage and zero otherwise.
- 3) Other regressors: Individual fixed effects, year indicators, Medicare hospital wage index, highest grade completed, age, family size, and indicator variables for marital status.

Table 7
NLSY
Whether Employee Takes Up Employer Offer of Health Insurance
as a Function of Macroeconomic Conditions
Linear Probability Coefficients and (T Statistics)

Macroeconomic Variable Or Statistic	Men	Women
State Unemployment Rate	.0033 (1.69)	.0194 (8.28)
Per Capita Real G.S.P.	-.0010 (-.99)	-.0021 (-1.83)
Part-Time Worker	-.0583 (-4.03)	-.0808 (-7.75)
Mean of Dependent Variable	.85	.76
Number of Observations	21,794	18,321

Notes:

- 1) Data: 15 pooled years of the NLSY. Sample includes only those currently employed.
- 2) Dependent variable equals one if current employer offers health insurance coverage and zero otherwise.
- 3) Other regressors: Individual fixed effects, year indicators, Medicare hospital wage index, highest grade completed, age, family size, and indicator variables for marital status.

Table 8
SIPP Men
Whether Covered by Health Insurance
as a Function of Macroeconomic Conditions and Employment Status
Linear Probability Coefficients (and T Statistics)

Macroeconomic Variable Or Statistic	Any Source	Employer Coverage	Government Provided
State Unemployment Rate	-0.0021 (-6.04)	-0.0030 (-7.43)	-0.0002 (-1.10)
Per Capita Real G.S.P.	0.0012 (4.78)	0.0024 (8.56)	0.0011 (7.30)
Indicator: Employed	0.0631 (51.65)	0.1034 (72.60)	-0.0268 (-36.44)
Indicator: Part-Time Worker	-0.0824 (-69.52)	-0.1738 (-125.78)	0.0228 (31.92)
Mean of Dependent Variable	0.79	0.55	0.09
Number of Observations	731,749	731,749	731,749

Notes:

- 1) Data: pooled 1990-1996 waves of the SIPP. Sample includes all individuals between the ages of 17 and 64 years of age regardless of employment status.
- 2) Dependent variables: column 1: indicator variable that equals one if individual covered by health insurance from any source and zero otherwise; column 2: indicator variable that equals one if individual is covered by employer health insurance in own name and zero otherwise; column 3: indicator variable for any type of government provided health insurance.
- 3) Other regressors: Individual fixed effects, year indicators, Medicare hospital wage index, percent unionization in state, Medicaid eligibility index, highest grade completed, marital status, presence of children in the family, and age.

Table 9
SIPP Women
Whether Covered by Health Insurance
as a Function of Macroeconomic Conditions and Employment Status
Linear Probability Coefficients (and T Statistics)

Macroeconomic Variable Or Statistic	Any Source	Employer Coverage	Medicaid	Government Provided
State Unemployment Rate	-0.0020 (-6.34)	-0.0008 (-2.11)	0.0024 (10.61)	0.0015 (5.82)
Per Capita Real G.S.P.	0.0013 (5.99)	0.0012 (4.66)	-0.0016 (-10.17)	0.0003 (1.50)
Indicator: Employed	0.0497 (49.83)	0.1034 (90.53)	-0.0403 (-55.94)	-0.0434 (-52.94)
Indicator: Part-Time Worker	-0.0665 (-69.02)	-0.1788 (-162.09)	0.0304 (43.64)	0.0324 (40.94)
Mean of Dependent Variable	0.77	0.37	0.10	0.14
Number of Observations	800,782	800,782	800,782	800,782

Notes:

- 1) Data: pooled 1990-1996 waves of the SIPP. Sample includes all individuals between the ages of 17 and 64 years of age regardless of employment status.
- 2) Dependent variables: column 1: indicator variable that equals one if individual covered by health insurance from any source and zero otherwise; column 2: indicator variable that equals one if individual is covered by employer health insurance in own name and zero otherwise; column 3: indicator variable for Medicaid coverage; column 4: indicator variable for any type of government provided health insurance.
- 3) Other regressors: Individual fixed effects, year indicators, Medicare hospital wage index, highest grade completed, marital status, presence of children in the family, and age.

Appendix Table 1A
Summary Statistics of SIPP Data

Variable	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Indicator: covered by own employer HI	1,532,531	0.460	0.498	0	1.0
Indicator: covered by any HI	1,532,531	0.778	0.415	0	1.0
Indicator: covered by Medicaid	1,532,531	0.069	0.253	0	1.0
Indicator: covered by gov't health ins	1,532,531	0.115	0.319	0	1.0
Indicator: national recession	1,532,531	0.061	0.239	0	1.0
State unemployment rate	1,532,531	5.942	1.704	1.9	12.80
Hospital wage index	1,329,731	8232.01	952.08	4080	12456
Per capita real gross state product	1,532,531	24.08	6.33	11.54	104.01
State Medicaid generosity	1,532,531	0.249	0.11	0.074	.817
Union coverage	1,532,531	17.22	6.70	3.8	31.89
Indicator: female	1,532,531	0.522	0.499	0	1.0
Year	1,532,531	1994.4	2.84	1990	2000
Indicator: High-school dropout	1,532,531	0.163	0.369	0	1.0
Indicator: High-school graduate	1,532,531	0.333	0.471	0	1.0
Indicator: Some college	1,532,531	0.281	0.449	0	1.0
Indicator: College graduate	1,532,531	0.128	0.334	0	1.0
Age	1,532,531	38.666	12.48	18	64
Presence of children in family	1,532,531	0.527	0.499	0	1.0
Indicator: employed	1,532,531	0.726	0.446	0	1.0
Indicator: employer full time	1,532,531	0.584	0.493	0	1.0
Indicator: married	1,532,531	0.596	0.490	0	1.0
Indicator: widowed	1,532,531	0.022	0.148	0	1.0
Indicator: separated or divorced	1,532,531	0.129	0.334	0	1.0
Indicator: child covered by any HI	703,109	0.685	0.464	0	1.0
Indicator: child covered by gov't HI	703,109	0.217	0.412	0	1.0

Notes:

- 1) The sample for all but the last two items consists of adults (age 18-64). The sample for the last two items is all children under age 18.

**Appendix Table 1B:
Summary Statistics of NLSY Data**

Variable	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Indicator: employer offers HI	102,135	.743	.44	0	1
Indicator: took up employer offer of HI	56,179	.592	.49	0	1
Indicator: national recession	102,135	.077	.27	0	1
State unemployment rate	102,135	6.44	2.21	1.7	21.6
Medical Hospital Wage Index	81,080	8409.09	958.67	4089	14870
Indicator: female	102,135	.469	.50	0	1
Indicator: black	102,135	.267	.44	0	1
Indicator: Hispanic	102,135	.173	.38	0	1
Year	102,135	199.48	4.81	1983	2000
Highest grade completed	102,135	12.94	2.33	0	20
Age	102,135	29.42	5.27	18	44
Family size	102,135	3.05	1.67	1	15
Indicator: employed	102,135	.930	.26	0	1
Indicator: married, spouse present	102,135	.481	.50	0	1
Indicator: other marital status	102,135	.154	.36	0	1