

The Dynamics of Health Insurance Coverage

CHICHUN FANG

University of Illinois at Urbana-Champaign

Abstract

In this paper I examine how health insurance coverage changes over the life cycle. Comparing to findings in cross-sectional studies that 16 percent of non-elderly U.S. population are not covered by health insurance, my analysis shows that only 2 percent of non-elderly male household heads are consistently uninsured between 1997 and 2006. Besides, only 70 percent of those in my sample are consistently covered by health insurance, which means around 28 percent are moving into and out of insurance coverage. This suggests a policy reform that focuses on providing continuous health insurance coverage in addition to covering those uninsured.

Introduction

Two of the most imminent problems in the current U.S. health care system are high and rising health care expenditures and the high and rising number of people not covered by health insurance (Gruber 2008). In the year of 2008, American people spent more than \$2.3 trillion dollars on health care, equivalent to 16 percent of U.S. gross domestic production (GDP). More surprisingly, health care expenditures actually surpass national defense spending—by four times. The United States spends much more in health care than most other developed countries do, and yet American people do not seem to have better health outcome in terms of life expectancy and infant mortality, according to the Organization of Economic Cooperation and Development Health Data (Organization for Economic Cooperation and Development 2009).

Not only does the United States have the largest amount of spending in health care among developed countries, it also has the largest proportion of population not covered by health insurance. The proportion of U.S. population without health insurance went up from 14.1 percent in 2001 to 15.4 percent in 2008, as 46.3 million non-elderly people did not have health insurance (Executive Office of the President Council of Economic Advisors 2009; Gruber 2008). Affordability may be one of the major reasons contributing to this: the average health insurance premium was around \$4,500 for a single and \$12,000 for a family of four in 2007; meanwhile, the full-time equivalent federal minimum wage was \$10,712 (Congressional Budget Office 2007, Gruber 2008, Executive Office of the President Council of Economic Advisors 2009), marking the first time that the health insurance premium for a family eclipses minimum wage.

Indeed, one of the top policy priorities of the current U.S. administration is health care reform, with one of its main focuses being extending the coverage and improving the affordability of health insurance to those currently uninsured. Both the House of Representatives and the Senate passed their own health care reform bills separately late in 2009. Despite some discrepancies in how the reform should be financed and whether a public option would be offered, both bills proposed to provide health insurance to at least an additional 30 million American people by setting up mechanisms similar to a “health insurance exchange” in order to provide group-based plans to those who would not be able to afford health insurance otherwise.

In this study, I examine how health insurance coverage changes over time through the life cycle. Sixteen percent of the U.S. population is uninsured in each year, but whether it is the same 16 percent subpopulation that is not insured consistently over time or a subpopulation that varies year by year yields very different policy implications. In other words, just like the transitions into and out of poverty or unemployment, in this study I would like to assess the transitions into and out of health insurance coverage.

Author's address: School of Labor and Employment Relations, 504 E. Armory Avenue, Champaign, IL 61820

Previous Studies and Their Limitations

There has been a huge body of literature in the study of health insurance coverage, especially in recent years. For example, Farber and Levy (2000) studied the recent trends of employer-sponsored health insurance plans by types of job. Gruber and Washington (2005) examined the impact of government subsidies to premiums of employer-sponsored health insurance on insurance coverage. Fairlie and London (2009) examined how individual and job characteristics influence the likelihood of gaining and losing health insurance. There are also studies focusing on the role of increasing insurance premiums on decreasing insurance coverage (Gruber and McKnight 2003; Avraham, Dafny and Schanzenbach 2009). Gruber (2008) provided possible resolutions to cover the uninsured in the United States as well. Valuable conclusions can be drawn from these studies using snapshots of cross-sectional health insurance coverage.

On the other hand, the *dynamics* of health insurance coverage are surprisingly understudied. Bhandari and Mills (2003) found that 16 percent of full-time workers in the United States experienced at least 1 month without health insurance. Studies have shown that even short spells without health insurance are associated with less frequent use of preventive medical practices (Schoen and DesRoches 2000) and worse health outcomes (Sudano and Baker 2003). These studies combined suggest that the dynamics of health insurance coverage bear equally important policy implications to the cross-sectional studies of health insurance coverage.

While Fairlie and London (2009) used matched Current Population Survey (CPS) data to study the annual transition into and out of health insurance, their study was restricted to a 16-month panel due to data limitation. Generally, CPS and Survey of Income and Program Participation (SIPP) do not have long enough panels to address the dynamics of health insurance coverage. The Medical Expenditure Panel Survey (MEPS) has a longer panel, but each wave still has only 36 months of health insurance information. Finally, while the Health and Retirement Study (HRS) is a long panel designed to study the dynamics of health status and retirement behaviors and is used extensively in health economics studies, its sample, made up of people over 50, makes it a less-than-desirable fit to study health insurance dynamics due to the mandatory coverage of Medicare at age 65.

Overview of this Study

In this study I used 1999 through 2007 waves of the Panel Study of Income Dynamics (PSID) to assess the dynamics of health insurance coverage. While the PSID was initiated in 1968, it did not collect information about health insurance coverage until 1999. Although the PSID has been conducted only every other year since 1999, it has information about the number of months covered by health insurance each year. This results in a 10-year panel of health insurance coverage, which is a significant improvement over past studies. Among my major findings are that, while it remains the case that 10 percent to 15 percent of male household heads aged 20 to 64 who were in the labor force did not have health insurance each year between 1997 and 2006, 70 percent of uncensored (those who stay in the panel for the full 10-year period) observations consistently had health insurance during the same span. Surprisingly, the proportion of observations that never had health insurance coverage is merely 2 percent. This suggests that almost 30 percent of the male non-elder working population lost health insurance coverage at least for 1 month during the 10-year span. Among these, half of them (15 percent overall) have insurance coverage between 0 and 9 months per year on average. Contrary to conventional wisdom, these 15 percent of people represent the working population pretty well—they have a mean labor earning of \$35,500 (in 2008 dollars) and average 12.5 years of education. These results imply that besides providing coverage to those uninsured per se, government policies should focus more on providing continuous health insurance coverage to the working population of the United States.

The remainder of this paper is structured as follows: the next section introduces the PSID data, how individual and family data are merged, and the cross-sectional health insurance coverage in the PSID. This is followed by the analysis of health insurance coverage dynamics. Policy implications are then addressed before I conclude the paper.

Data

The Panel Study of Income Dynamics

The PSID is a longitudinal survey of representative U.S. individuals and the families they reside in. When it started in 1968, the PSID had two independent samples: a cross-sectional national sample and a national sample of low-income families. The cross-sectional sample was drawn by the Survey Research Center (SRC), having 2,930 households, and was an equal probability sample of U.S. families in contiguous 48 states. The sample from low-income families, also known as Survey of Economic Opportunity (SEO) sample, had 1,872 households and was conducted by the Bureau of the Census for the Office of Economic Opportunity (Hill 1991). The PSID core sample constitutes of these two samples. Between 1968 and 1996, PSID interviewed individuals from the households in the core sample. Household splits and merges were both tracked; adults were observed as they aged, and children were followed as they grew into adulthood and formed their own family units. Starting in 1997, PSID became biannual, and the most recent wave of PSID available was conducted in 2007. Many questions regarding health status and health care coverage were added to PSID questionnaires beginning in 1999, which makes the study an extremely valuable long panel to study the dynamics of health insurance coverage. Finally, since the composition of the U.S. population has changed dramatically since 1968, the PSID also provides sample weights to ensure its representativeness.

I estimate the dynamics of health insurance using the 1999 to 2007 waves of the PSID core sample. Only male PSID household heads who are still in the labor force (self-reported as “working now,” “temporary laid off,” or “unemployed and looking for job”) and aged between 20 and 64 are included in the analysis. People who are older than 65 would be eligible for Medicare automatically and hence are dropped, since they would not contribute to the dynamics of health insurance coverage. Also, people who are younger than age 20 (22 if college graduates) are excluded because their job and income information may be noisy. Such noise does not impact the estimation of insurance coverage dynamics per se, but it may obscure the result when the income patterns of the most vulnerable group are estimated. Households that were part of the Survey of Economic Opportunities subsample are also dropped to obtain a random sample since the Survey of Economic Opportunities oversampled households in the lower social-economic status. Overall, 4,009 individuals and 14,502 records are used in the analysis. Numbers of records are 2,732, 2,870, 2,970, 3,011, and 2,919 in each biannual wave, starting from 1999 and ending in 2007.

There are two major components of PSID data: individual survey and household survey. Individual characteristics, such as age, years of education, and types of health insurance, are obtained from the individual survey. Earnings in the previous year, hours worked/unemployed in the previous year, and number of months covered by health insurance are obtained from the household survey. Health insurance information, including type of insurance and length of coverage, are main outcome variables in this study and will be explained in detail later. Years of education is not available in all waves of PSID; in case of missing data, information from the most recent wave is used to fill in. Four types of earnings are available in PSID: labor earnings, unemployment benefits, Social Security benefits, and other transfer earnings. Only labor earnings are used in this study, and all the dollar amounts are deflated to 2008 U.S. dollars using the CPI-W. Descriptive statistics of these variables, weighed by the PSID sample weights to ensure the representativeness of the sample, are provided in Table 1.

Health Insurance Coverage Information in the PSID

Health insurance coverage information from both individual and household surveys is used. The individual survey has each individual’s type of health insurance at the time of the survey; 10 types of insurance are provided: not insured, employer-sponsored, directly purchased from private insurance market, Medicare, Medicaid, Military, CHAMPUS (Civilian Health and Medical Program of the Uniformed Services)/TRICARE/CHAMP-VA (Civilian Health and Medical Program–Veteran’s Administration), Indian Health Insurance, state-sponsored, and other government plans. I group the later seven categories as “public-provided health insurance” to ease the analysis. Up to four mentions of types of health insurance are allowed in the survey, and information from all four mentions is used in the analysis. To give a rough idea of the distributions of health insurance sources, first-mentioned health insurance providers are tabulated in Table 2,

weighted by the PSID sample weights. In order to utilize all four mentions of answers about the provider of health insurance, I follow Fairlie and London (2009) and only categorize an individual as having public-provided health insurance when no employer-sponsored or directly purchased from private market are reported. An individual is categorized as having employer-sponsored insurance if it is reported in any of the four mentions. The distribution of more broadly defined types that incorporate all four mentions is given in Table 3, again weighted by the PSID sample weights.

TABLE 1
Descriptive Statistics

Panel A: Including records with zero labor earnings					
	1999	2001	2003	2005	2007
Age	40.95 (10.70)	41.42 (10.75)	41.96 (10.93)	42.39 (11.36)	43.08 (11.43)
Year of education	13.73 (2.19)	13.75 (2.16)	13.77 (2.17)	13.76 (2.16)	13.76 (2.12)
Labor earnings	61,123 (61,892)	65,585 (78,696)	64,118 (127,872)	66,522 (101,934)	66,654 (79,967)
Number of people	2,732	2,870	2,970	3,011	2,919
Panel B: Excluding records with zero labor earnings					
	1999	2001	2003	2005	2007
Age	40.64 (10.76)	41.11 (10.79)	41.61 (10.95)	42.16 (11.36)	42.79 (11.42)
Year of education	13.72 (2.19)	13.76 (2.16)	13.78 (2.14)	13.78 (2.14)	13.80 (2.10)
Labor earnings	66,031 (61,758)	70,688 (79,642)	68,600 (131,100)	69,657 (10,257)	71,038 (80,647)
Number of people	2,551	2,696	2,811	2,889	2,787

Labor earnings in 2008 U.S. dollars. Standard deviations in parentheses. Observations are weighted according to the PSID cross-sectional weights.

TABLE 2
First Mention Provider of Health Insurance, Male PSID Household Heads

Provider	1999	2001	2003	2005	2007
Not insured	9.76%	9.71%	10.32%	13.62%	12.39%
Employer-provided	81.75%	81.13%	80.05%	77.49%	77.56%
Directly purchased from private market	6.36%	6.42%	6.65%	5.43%	6.21%
Medicare	0.33%	0.10%	0.21%	0.10%	0.33%
Medicaid	0.30%	0.84%	0.62%	0.65%	1.08%
Military/VA	0.78%	0.69%	1.07%	1.12%	0.71%
CHAMPUS/TRICARE/CHAMP-VA	0.35%	0.36%	0.51%	1.19%	1.26%
Indian Health Insurance	0.09%	0.00%	0.00%	0.00%	0.00%
State-sponsored	0.12%	0.18%	0.44%	0.20%	0.18%
Other government plans	0.17%	0.59%	0.13%	0.19%	0.25%
Number of people	2,732	2,870	2,970	3,011	2,919

Observations are weighted according to the PSID cross-sectional weights.

TABLE 3
Broad Types of Health Insurance, Male PSID Household Heads

Provider	1999	2001	2003	2005	2007
Not insured	9.76%	9.71%	10.30%	13.62%	12.39%
Employer-provided	81.88%	81.31%	80.50%	77.85%	77.83%
Directly purchased from private market	6.41%	6.36%	6.51%	5.25%	5.95%
Public plans	1.95%	2.62%	2.69%	3.29%	3.83%
Number of people	2,732	2,870	2,970	3,011	2,919

Observations are weighted according to the PSID cross-sectional weights.

In addition to the type of insurance at the time of survey provided in individual data, household survey provides number of months each year that household head (and wife, if presented) is covered by health insurance 1 year and 2 years prior to the survey. Consequently, the 1999 wave of the PSID has number of months covered in 1997 and 1998, the 2001 wave has 1999 and 2000, etc. Combining five waves of PSID yields number of months each year that each PSID head and wife is covered by health insurance between 1997 and 2006. This is the main information that most analyses of health insurance dynamics rely on. Unfortunately, the type of health insurance is not available in the household survey and can only be inferred from the individual data at best. This is potentially problematic, as PSID actually has type of insurance at time t but coverage at times $t-1$ and $t-2$. I hence avoid connecting the dynamics of coverage to type of coverage directly in the subsequent analysis. Number of month covered is then divided into three categories: not insured (having health insurance coverage for zero months), fully covered (having coverage for 12 months), and partially covered (having coverage between 1 and 11 months). Table 4 shows the cross-sectional distribution of these three levels of coverage in each of the 10-year periods.

TABLE 4
Cross-Sectional Health Insurance Coverage

Year	Not insured (%)	Partially insured (%)	Fully insured (%)	Number of people
1997	11.67	3.11	85.22	2,732
1998	10.20	3.83	85.97	2,732
1999	11.12	3.08	85.80	2,870
2000	10.52	4.21	85.26	2,870
2001	11.03	3.70	85.26	2,970
2002	10.84	4.10	85.06	2,970
2003	15.69	3.50	80.81	3,011
2004	14.63	5.54	79.83	3,011
2005	14.39	3.01	82.60	2,919
2006	13.05	5.27	81.69	2,919

Observations are weighted according to the PSID cross-sectional weights.

Specific patterns in Table 4 imply some extent of heteroscedastic retrospective/measurement errors. Recall that the 1999 wave of PSID asked the length of coverage in 1997 and 1998, the 2001 wave asked about 1999 and 2000, etc.; this means information about 1997 and 1999 coverage may have more measurement error than information about 1998 and 2000, simply because 1997 and 1999 are farther from the time of the survey than 1998 and 2000. Table 4 suggests people are more likely to answer “not insured at all” or “fully insured” regarding the coverage in 1997, 1999, and later than in 1998, 2000, and later. This should not be surprising, since people are less likely to recall the exact amount of months covered by health insurance in

earlier years and may just report either “not insured at all” or “fully insured” instead, especially if the exact number of months is close to 0 or 12. A histogram not reported here that illustrates relative frequency that people report 1 through 11 months of coverage in adjacent years also shows people are more likely to report 3, 6, or 9 months of coverage when asked about the coverage 2 years prior than the coverage 1 year prior to the survey, which is again consistent with the argument of heteroscedastic retrospect errors across time.

Comparison with Other Commonly Used Data

Results in Tables 2 and 3 suggest that health insurance coverage of PSID male household heads aged 20 to 64 in the labor force may be somewhat different than the coverage of nonelderly population in other data. Overall, around 10 percent to 15 percent male nonelderly population are not insured, 80 percent are covered by employer-sponsored plans, and 5 percent have individually purchased private insurance coverage, while the remaining have government-sponsored plans. Gruber (2008), for example, tabulates March CPS and shows that 17.9 percent of the nonelderly population are uninsured, 62.2 percent are covered by employer-sponsored plans, 6.8 percent have individually purchased plans, 13.4 percent are covered under Medicaid, and 5.2 percent have other public sponsored plans. The Executive Office of the President Council of Economic Advisors (2009), using data from the U.S. Census Bureau, reports similar statistics as Gruber (2008). The discrepancy between numbers in Table 2 and other data is likely due to the difference in the composition of sample: PSID only has insurance coverage information for household heads and wives, which automatically excludes children from my analysis, and I further restrict the sample to male household heads, of ages between 20 and 64 who are still in the labor force. Inclusion of those in the labor force only increases the likelihood of coverage under employer-sponsored plans (those who are switching to new jobs or are temporarily laid off may still be covered by employer-sponsor insurance through COBRA, the Consolidated Omnibus Budget Reconciliation Act); exclusion of female heads and children likely will exclude a great amount of Medicaid recipients. Hence the differences of health insurance coverage in PSID and other data sets seem to be reasonable.

Dynamics of Health Insurance Coverage

Preliminary Analysis

In order to assess the dynamics of health insurance coverage, I start with estimating how long people stay in “fully insured” (12 months a year) status before they transit into “not insured at all” (0 months a year) or “partially insured” (neither fully insured nor uninsured). Figure 1 shows the Kaplan-Meier survival curve of “fully insured” status, utilizing all observations between 1997 and 2006. Roughly, 5 percent of initially “fully insured” people drop out and become either not insured or partially insured each year, and only slightly less than 75 percent of people are still fully covered 9 years after first becoming fully insured. Given that around 80 percent of the observations are fully insured each year, this translates to around 60 percent of observations who stay fully insured for 10 years.

I also estimate the duration of “not insured” spells, and the Kaplan-Meier survival curve is graphed in Figure 2. Around 20 percent drop out of the status annually and become partially or fully insured, resulting in 25 percent remaining after 9 years. This suggests that some 2.5 percent or 3 percent are not insured at all consistently. Combining with the result that around 60 percent of observations stay fully insured for 10 years yields a conclusion that around 35 percent people in the data lose their health insurance coverage for at least one month during the 10-year span.

Although the survival curves give clear illustrations of transitions out of fully insured and uninsured states, they do not give any information regarding the “partially insured” group. Neither do the survival curves tell how these groups differ from each other in terms of observable characteristics such as years of education and earnings. Both of these are important questions to answer in order to identify the subpopulation most vulnerable to the interruption of health insurance coverage.

FIGURE 1
Kaplan-Meier Survival Curve of Staying Insured

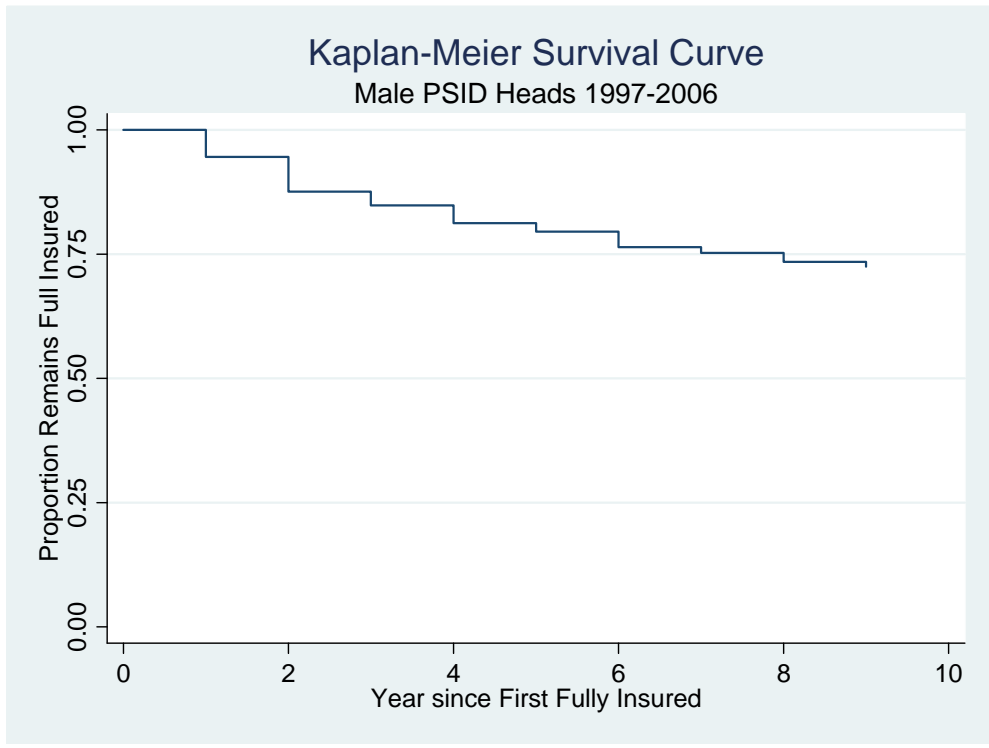
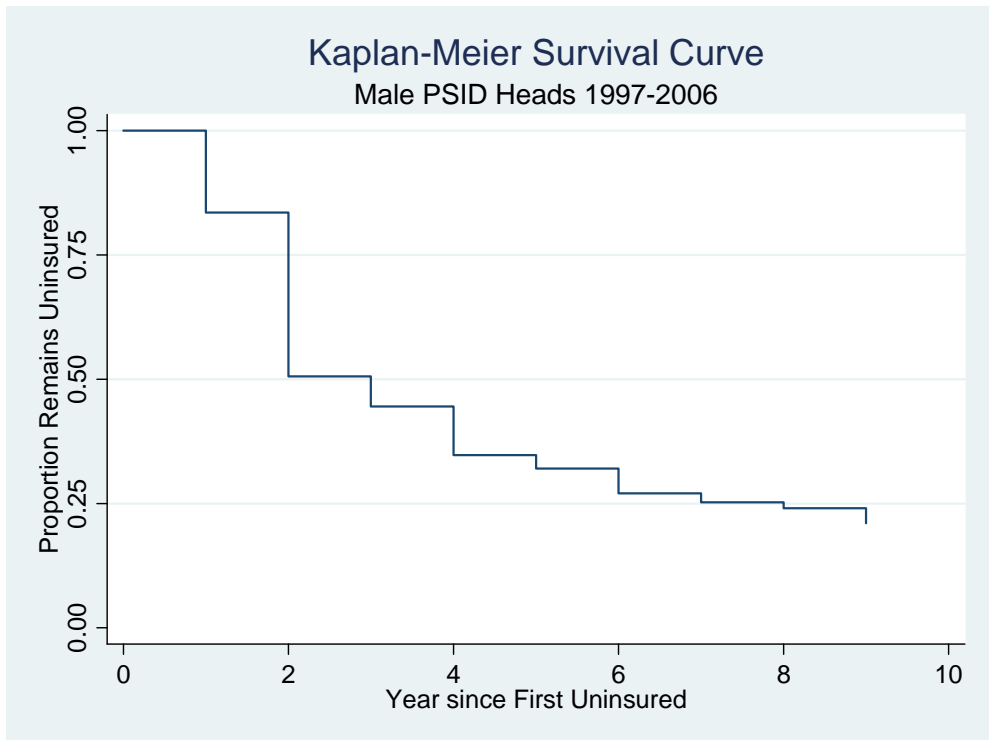


FIGURE 2
Kaplan-Meier Survival Curve of Staying Uninsured



The Main Results

In the subsequent analysis I calculate mean annual amount of months covered by health insurance for each individual and divide the observations into six groups: 1) those who are never covered by health insurance, 2) those covered between 0 and 6 months annually on average, 3) those covered between 6 and 9 months on average, 4) those covered between 9 and 11 months, 5) those covered between 11 and 12 months, and 6) those always covered by a full 12 months. I then tabulate individual characteristics for each group. A potential sample selection problem could arise in the unbalanced panel: younger people will have fewer records due to the panel nature of PSID. Since people who are interviewed in all waves have to be at least 20 years old in 1999, people younger than that will not enter the panel until 2001 or subsequent years and hence will have fewer records. Younger people are more likely to have no health insurance coverage (Gruber 2008) and less earnings; consequently, those who have fewer records are also likely to have less health insurance coverage and earnings. I hence use only those who stay in the panel for the whole 10-year period to avoid the sample selection problem on health insurance coverage and earnings, and the results are shown in Table 5.

TABLE 5
Individual Characteristics, by Average Length of Health Insurance Coverage

Panel A: Including records with zero labor earnings						
	Exact 0	0–6	6–9	9–11	11–12	Exact 12
Age	44.22	43.14	41.58	44.12	43.79	47.77
	-10.39	-10	-8.32	-10.5	-9.65	-8.59
Year of education	11.68	12.2	12.32	13.38	13.7	14.2
	-1.76	-1.97	-1.8	-2.03	-2.05	-2.05
Labor earnings	19,345	27,739	36,674	47,081	56,505	82,429
	-10,155	-14,356	-17,708	-31,998	-33,299	-111,893
Number of people	35	88	104	161	129	1,229
Percent of sample	2.00	5.04	5.96	9.22	7.39	70.39
Panel B: Excluding records with zero labor earnings						
	Exact 0	0–6	6–9	9–11	11–12	Exact 12
Age	43.67	43.08	41.47	44.16	43.65	47.7
	-10.02	-10.04	-8.28	-10.52	-9.55	-8.58
Year of education	11.67	12.18	12.28	13.4	13.7	14.2
	-1.78	-1.94	-1.75	-2.01	-2.04	-2.05
Labor earnings	24,057	33,906	40,647	49,635	58,083	86,096
	-14,864	-19,764	-20,437	-33.79	-35,440	-118,483
Number of people	34	87	103	160	129	1,217
Percent of sample	1.97	5.03	5.95	9.25	7.46	70.35

Labor earnings in 2008 U.S. dollars. Standard deviations in parentheses.

The dynamics of health insurance coverage are captured clearly in Table 5. Those who either never had health insurance (averaged exactly 0 months of coverage) or never lost coverage (averaged exactly 12 months of coverage) between 1997 and 2006 only account for slightly more than 70 percent of the sample; in other words, almost 30 percent of the sample lost a certain amount of health insurance coverage during the 10-year span. This is a huge contrast to the cross-sectional coverage summarized in Table 4: the proportion of “partially insured” population is around 3 to 5 percent each individual year in column 2 of Table 4, but Table 5 suggests this number jumps to almost 30 percent (columns 2 through 5 combined) when the 10-year coverage history is examined. Also, Table 4 shows that some 10 to 15 percent are uninsured each year, while Table 5 shows that only 2 percent are consistently uninsured throughout the 10-year period. Additionally,

Table 4 shows that around 85 percent are insured each year, but Table 5 shows only 70 percent are consistently insured. Comparing Tables 4 and 5 shows that, in contrast to the cross-sectional snapshot, proportions of the population who are “not insured” or “fully insured” decrease dramatically when 10-year dynamics of health insurance coverage are examined. A significant fraction of the population actually moves into and out of health insurance coverage over time.

Besides, average length of coverage is positively correlated with labor income and level of education in Table 5—this by itself is not surprising and is consistent with findings in previous studies (Gruber 2008, Fairlie and London 2009). A closer inspection, however, indicates that people who on average lost three months of health insurance (only have 9 months or less of coverage) have more than 12 years of education and earn two or even three times above full-time equivalent federal minimum wage. People who lost on average less than one month of insurance coverage actually have mean earnings above the median labor earnings in the United States. Table 5 clearly shows that people who did not have health insurance coverage were from low-income families only; those who had their coverage interrupted for short spells are actually pretty typical American workers in terms of age, education, and earnings. Evidence in the table also suggests that in addition to “covering those uninsured” per se, public policy should address more on providing continuous health insurance coverage.

Given the presence of COBRA (short for “Consolidated Omnibus Budget Reconciliation Act of 1985”), the results presented here are more striking. The act requires employers who provide group-based health insurance plans to offer most employees who lose or leave jobs the option to continue the coverage under the original plan for up to 18 months. While COBRA is associated with higher employee turnover and early retirement (Gruber and Madrian 1995, 1996), such “insurance portability” should significantly decrease the likelihood of health insurance coverage interruption due to job turnovers. And yet, a great amount of coverage interruption is still observed.

Finally, as noted above, young people are less likely to have insurance coverage. Such improvement of coverage over life cycle may cause alternative explanations of numbers in Table 5, as what appears to be “less than 9 months of coverage on average each year” can be either interrupted coverage each year or no coverage in earlier years accompanied by full coverage in later years. One way of robustness check is to count the frequency of “low coverage,” defined here as “losing health insurance coverage for at least 3 months in a year.” Table 6 shows the individual characteristics of those who are in the data for 10 years but lost at least 3 months of coverage for 5, 6, 7, 8, 9, or 10 times during the 10-year span. The last column in Table 6 includes all people listed in previous six mutually exclusive columns.

Overall, around 8.5 percent of people lost at least 3 months of coverage for at least 5 years between 1997 and 2006. This subpopulation is the most vulnerable to the lack or interruption of health insurance coverage. A natural comparison is to see how numbers in Table 6 (those who lost at least 3 months of coverage for at least 5 times in 10 years) deviate from numbers in the first three columns in Table 5 (those who lost at least 3 months of coverage each year on average in 10 years), and they turn out to be very similar. This suggests that the dynamics of health insurance coverage shown in Tables 5 and 6 are not only capturing the improvement of health insurance coverage over the life cycle.

To summarize, I find that health insurance coverage of PSID male household heads aged between 20 and 64 in 1997 to 2006 is anything but static. On the one hand, tabulation of transition into and out of each type (in terms of lengths of coverage within the year) of insurance shows that bad outcomes are somewhat persistent: people who do not have a full 12 months of coverage tend to fare in a similar way in the very next year, but the pattern of transitions is far from deterministic. On the other hand, fewer people are consistently insured or uninsured at all than what is suggested in a cross-sectional tabulation. Almost 30 percent of people lost some amount of insurance in the 10-year span, but only slightly more than 2 percent of people are consistently uninsured. Those who are the most vulnerable to the loss of coverage can be categorized as the “working poor,” as their mean earnings are around \$30,000, a figure much higher than full-time equivalence minimum wage but only 150 percent of federal poverty level for a family of four. A separate analysis not shown here indicates that if spousal income is also included, this group has a mean household income of \$41,500, roughly twice the federal poverty level.

TABLE 6
Individual Characteristics, by Number of Years Losing at Least Three Months of Coverage

Panel A: Including records with zero labor earnings							
	5	6	7	8	9	10	5–10
Age	43.43	44.14	41.85	42.78	41.64	43.96	43.27
	-9.12	-9.7	-8.6	-11.64	-9.1	-10.4	-9.8
Year of education	12.47	12.51	12.38	12	12.64	11.8	12.2
	-2.06	-2.04	-1.77	-1.82	-1.94	-1.87	-1.91
Labor earnings	40,823	34,677	29,272	26,731	26,487	20,245	28,447
	-25,886	-21,775	-11,070	-15,171	-9,446	-10,571	-17,778
Number of people	23	27	21	19	14	50	154
Percent of sample	1.32	1.55	1.20	1.09	0.80	2.86	8.82
Panel B: Excluding records with zero labor earnings							
	5	6	7	8	9	10	5~10
Age	43	43.96	41.85	42.78	41.64	43.57	43.03
	-9.09	-9.84	-8.6	-11.64	-9.1	-10.13	-9.72
Year of education	12.27	12.61	12.38	12	12.64	11.79	12.19
	-1.85	-2.02	-1.77	-1.82	-1.94	-1.89	-1.88
Labor earnings	43,096	40,962	36,291	31,842	35,010	24,712	33,769
	-24,776	-29,870	-19,551	-18,447	-13,966	-13,487	-21,305
Number of people	22	26	21	19	14	49	151
Percent of sample	1.27	1.50	1.21	1.04	0.81	2.83	8.69

Labor earnings in 2008 U.S. dollars. Standard deviations in parentheses.

Policy Implications

The above results suggest that, in addition to focus on those who are consistently uninsured (which accounts for 2 percent of working population), government policies should address more those whose health insurance coverage is occasionally interrupted, which accounts for almost 30 percent of the working population. The advantages of such policy are twofold: on the one hand, short spells of lacking health insurance is associated with less frequent use of preventive medical practices (Schoen and DesRoches 2000) and worse health outcomes (Sudano and Baker 2003); on the other hand, since more than 90 percent of those who are insured through nonpublic plans have employer-provided health insurance coverage (Gruber 2008), provision of continuous coverage should decrease “job lock” (a situation where individuals are reluctant to find better job matches for the fear of losing health insurance) and increase labor market efficiency (Gruber and Madrian 1994, Gruber 2008). In other words, a policy on “insurance portability” that guarantees continuous coverage and portability of insurance policy among different employers and/or different states of employment should be one of the top priorities.

COBRA provides a certain level of insurance portability, as described above. The act mandates that employers who provide group-based health insurance plans offer eligible employees, regardless of the reasons of turnover, an option to continue health-insurance coverage for up to 18 months after the termination of employment contract. Each year, around 10 percent of working people are eligible for COBRA, and 20 percent of those who are eligible take the option (Gruber and Madrian 1995). While COBRA is intended to provide insurance portability to improve labor market efficiency, there are some unintended results. Studies have shown that, while COBRA increases job turnover of people aged 55 to 64 (presumably moving to jobs with better matches), it also increases early retirement (Gruber and Madrian

1995, Gruber and Madrian 1996). Since enrollment into the optional coverage is voluntary, COBRA is also associated with adverse selection issues. COBRA enrollees cost 50 percent more than what active employees do on average (Madrian 1998). COBRA beneficiaries also have 1.3 additional physician visits and consume 80 percent more prescription drugs compared to job separators experiencing temporary insurance loss (Zimmer 2008). Overall, the cost of COBRA to employers is estimated to be close to the amount of unemployment benefit paid by the U.S. government (Madrian 1998). Besides, numbers in Tables 5 and 6 also indicate that there is much room to improve in providing continuous health insurance coverage and insurance portability to the working population. Consequently, the COBRA policy needs some extent of reform as well in order to guarantee its efficiency.

Conclusion

Despite important policy implications, the dynamics of health care coverage throughout the life cycle are not widely studied. This study examines the dynamics of health insurance coverage over a 10-year period using data from the Panel Study of Income Dynamics (PSID). I find a different pattern of insurance coverage than those observed using cross-sectional data. Only around 70 percent of the sample have the full 12 months of coverage consistently throughout the period; around 2 percent are never covered at all during the same span, which leaves some 30 percent who have their health insurance coverage interrupted occasionally. Comparatively, each year more than 80 percent of people are insured, 10 percent to 15 percent are uninsured, and those whose insurance coverage is interrupted only make up a small proportion of the sample. This suggests that policy reform should focus on providing continuous coverage to the working population along with coverage to those consistently uninsured. Those who are most vulnerable to the loss of coverage can be categorized as the “working poor,” as their mean earnings are close to \$30,000, a figure much higher than full-time equivalence minimum wage but only at 150 percent of federal poverty level for a family of four.

One of the limitations of this study is that the only information available in PSID is the number of months a person is covered by health insurance. Ideally, estimation of health insurance coverage dynamics should build on information about the duration of each health insurance coverage spell instead of yearly based information, especially when the intention of the study is to provide policy implications. Whether an individual is covered for 6 months, then uncovered for 6 months for 2 years in a row or is covered for 6 months, loses coverage for 12 months, then is covered for 6 months again has very different implications for the design of optimal health care coverage, risk to health status, and smoothing medical expenses.

Also, health insurance is far more complicated than a dichotomy of covered or uncovered. Health insurance policies differ in their generosity and comprehensiveness, and there are huge idiosyncrasies in out-of-pocket medical expenses, namely amount of co-payment and deductibles and whether first-dollar coverage is provided. PSID data, unfortunately, does not provide information on these aspects. Medical Expenditures Panel Survey (MEPS) does have such information, but it suffers from the problem of short panels since individuals are interviewed for six times but within 2 years. In order to propose more sound, feasible, and efficient policy reforms, the generosity and comprehensiveness of health insurance policies should also be studied.

Acknowledgment

I thank the Health Care Industry Council for providing the chance to present this paper. Comments from Adrienne Eaton, Adam Seth Litwin, Craig Olson, and Dana Weinberg are gratefully acknowledged, and I am responsible for all the remaining shortcomings. I also appreciate the encouragement from Eun Kyung Lee, my colleague at the University of Illinois.

References

- Avraham, Ronen, Leemore S. Dafny, and Max M. Schanzenbach. 2009. *The Impact of Tort Reform on Employer-Sponsored Health Insurance Premiums*. NBER Working Paper 15371.
- Bhandari, Shailesh, and Robert Mills. 2003. “Dynamics of Economics Well-Being: Health Insurance 1996–1999.” In *U.S. Bureau of the Census Current Population Reports*, 70-92: Government Printing Office.

- Congressional Budget Office. 2007. *The Long-Term Outlook for Health Insurance Spending*. Washington, DC: Congressional Budget Office.
- Executive Office of the President Council of Economic Advisors. 2009. *The Economic Case for Health Care Reform*. Washington, DC: Executive Office of the President Council of Economic Advisors.
- Fairlie, Robert W., and Rebecca A. London. 2009. "Who Is at Risk of Losing and Gaining Health Insurance?" *Industrial Relations*, Vol. 48, No. 2, pp. 287–310.
- Farber, Henry S., and Helen Levy. 2000. "Recent Trends in Employer-Sponsored Health Insurance Coverage: Are Bad Jobs Getting Worse?" *Journal of Health Economics*, Vol. 19, No. 1, pp. 93–119.
- Gruber, Jonathan. 2008. "Covering the Uninsured in the United States." *Journal of Economic Literature*, Vol. 46, No. 3, pp. 571–606.
- Gruber, Jonathan, and Brigitte C. Madrian. 1995. "Health-Insurance Availability and the Retirement Decision." *American Economic Review*, Vol. 81, No. 4, pp. 938–48.
- Gruber, Jonathan, and Brigitte C. Madrian. 1996. "Health Insurance and Early Retirement: Evidence from the Availability of Continuation Coverage." In David A. Wise, ed., *Advances in Economics of Aging*. Chicago: University of Chicago Press, pp. 115–43.
- Gruber, Jonathan, and Brigitte C. Madrian. 1994. "Health Insurance and Job Mobility: The Effects of Public Policy on Job-Lock." *Industrial and Labor Relations Review*, Vol. 48, No. 1, pp. 86–102.
- Gruber, Jonathan, and Robin McKnight. 2003. "Why Did Employee Health Insurance Contributions Rise?" *Journal of Health Economics*, Vol. 22, No. 6, pp. 1085–104.
- Gruber, Jonathan, and Ebonya Washington. 2005. "Subsidies to Employee Health Insurance Premiums and the Health Insurance Market." *Journal of Health Economics*, Vol. 24, No. 2, pp. 253–76.
- Hill, Martha S. 1991. *The Panel Study of Income Dynamics: A User's Guide*. Thousand Oaks, CA: Sage Publications.
- Madrian, Brigitte C. 1998. "Health Insurance Portability: The Consequences of Cobra." *Regulation*, Vol. 21, No. 1, pp. 27–33.
- Organization for Economic Cooperation and Development. 2009. "OECD Health Data 2009: Frequently Requested Data Organization for Economic Cooperation and Development." <http://www.oecd.org/document/16/0,3343,en_2649_34631_2085200_1_1_1_1,00.html>. [October 21, 2009].
- Schoen, Cathy, and Catherine DesRoches. 2000. "Uninsured and Unstably Insured: The Importance of Continuous Insurance Coverage." *Health Services Research*, Vol. 35, No. 1, pp. 187–206.
- Sudano, Joseph J., and David W. Baker. 2003. "Intermittent Lack of Health Insurance Coverage and Use of Preventive Services." *American Journal of Public Health*, Vol. 93, No. 1, pp. 130–37.
- Zimmer, David M. 2008. "The Effect of the Consolidated Omnibus Reconciliation Act of 1985 on Health Care Utilization of Employment Separators." *B.E. Journal of Economic Analysis and Policy*, Vol. 8, No. 2, pp. 1–26.