Individuals' Use of Care While Uninsured:

Effects of Time Since Episode Inception and Episode Length

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ABSTRACT

Objective: This study analyzes how individuals' use of care varies with time since the inception of an episode of being uninsured and with the ultimate length of the episode.

Data: We use data from the 1996-2002 Medical Expenditure Panel Survey (MEPS) Household Component (HC) files linked to the MEPS condition, event, and supplemental files.

Methods: We use multivariate logistic regression to model the probability that an uninsured individual has (1) any medical expenditures or charges, and (2) any office-based visit during each month of an uninsured episode, accounting for the time since episode inception and the ultimate episode length. We control for detailed measures of health status and sociodemographic factors that influence the demand for medical care.

Results: The results suggests that utilization is largely unrelated to episode length but is related to the number of months since inception. The results suggest rising utilization during the first year of an episode with a peak at about 12 months and declining utilization thereafter.

Discussion: The finding that patterns of care over the course of an episode are relatively invariant across shorter and longer episodes echoes earlier research findings. The observed pattern of care during the course of an episode may result if it takes time for individuals to locate, schedule and obtain low-cost or free care or if individuals delay care when they first become uninsured with the hope or knowledge that they will regain insurance at some later date.

1. Introduction

The uninsured are a diverse group, including individuals who lose health insurance coverage for a short period of time and then quickly become insured again, individuals who periodically switch between having and not having health insurance, and those who are persistently uninsured (Monheit and Schur,1988). While a substantial number of studies have analyzed utilization of care among the uninsured, few have addressed how use of care may vary over the course of an episode of being uninsured or across episodes with varying ultimate durations (e.g. short versus long episodes).

Most prior studies of utilization of care among the uninsured either rely on information about individuals who are uninsured at a specific point in time (such as the first day of the calendar year or the day of a survey interview) and compare utilization during the period just after or just before that point in time across individuals who report being insured or uninsured on that day (Cunningham and Kemper, 1998); other studies rely on data regarding individuals who are continuously insured or uninsured for a full year (Spillman, 1992; Gresenz, Rogowski, Escarce, 2006a & 2006b). A few studies have compared use among individuals with different temporal patterns of being uninsured (Ayanian, Weissman et al, 2000; Sudano and Baker, 2003; Baker, Sudanp et al, 2001). These studies show that the short- and long-term uninsured have lower utilization compared to the insured, with use of services generally lowest among individuals who are continuously uninsured. In another study, utilization over a four month period was compared across individuals who were uninsured both before and after the four month period, individuals who were insured before but not after the 4 month period, those who were insured both before and after the 4 month period, and those who were uninsured before but not after the period (Long, Marquis and Rodgers, 1998). The authors find little evidence that people change their utilization in anticipation of changes in their heath insurance.

Whether and how individuals' use of care varies over the months since the inception of an episode of being without insurance and across episodes of varying duration are questions this research takes up.

2. Conceptual Framework

Individuals' use of care may vary over the course of an episode and for episodes of varying lengths for several reasons. First, it may take time for uninsured individuals to locate, schedule and obtain free or low-cost care. As a result, we may observe lower utilization in early months of an episode and greater utilization thereafter among all uninsured.

Second, individuals who are uninsured may postpone using health care services until they are insured again in order to avoid the high costs of care while uninsured. These costs may include the actual out of pocket costs that patients must pay for care as

well as the costs associated with the effort of finding low-cost or free care. This explanation assumes that at least some care is delayable for some period of time, which is likely to be the case for preventive care, care for self-limited acute conditions, and care for asymptomatic or mildly symptomatic chronic conditions.

If individuals have no information about how long their episode of being uninsured will last, then they have an incentive to try to delay care in the hopes that the period of being uninsured will end before their ability to delay care does. As a result, we are likely to observe a rising probability of care over the months since an episode's inception as individuals' ability to postpone care declines. If everyone is equally uninformed about how long their episode will last, the pattern of rising care over time should not vary across individuals with varying episode lengths, holding all else constant.

On the other hand, if individuals can predict the length of their episode, then they must compare the length of time they can delay care to the length of the episode. Those with longer episodes will have little or no incentive to delay care (depending on how certain people are about how long they can delay care), while those with shorter episodes will have a stronger incentive to delay care. The result in this case will be that we observe more use of care during a given period of time among the long-term uninsured compared to the short-term uninsured.

More generally, the greater is the ability of an individual to predict how long their episode will be, the more likely we are to observe differences in use between long and short term uninsured for a given period of time. Conversely, the weaker is the ability of the uninsured to predict episode length, the less likely we are to observe differences in use.

3. Data and Episode Selection

We use data from the 1996-2002 Medical Expenditure Panel Survey (MEPS). MEPS is a nationally representative survey with detailed information on health status, health insurance, and health services utilization. MEPS uses an overlapping panel design in which respondents are interviewed multiple times over a 30-month period to collect data spanning a two year period (Cohen et al. 1996/97).

We linked the MEPS Household Component (HC) files linked to MEPS Condition, Event, and Supplemental files. Of particular importance for this study, MEPS-HC data include individuals' monthly health insurance status. The indicators are constructed such that an individual is considered as uninsured in a particular month only if he/she is uninsured every day of the month. The MEPS Event files record detailed characteristics of individuals' use of care, including date of care. We are thus able to ascribe service use to particular months and to summarize use of care during months in which an individual was uninsured.

Our sample includes MEPS respondents aged 18-64 who experienced an episode of being without health insurance between 1996 and 2002. The initial sample includes

24,629 episodes (Figure 1) lasting between 1 and 24 months. Respondents contribute multiple episodes if they fluctuate between being insured and uninsured during the two-year period in which they are observed. The 24,629 episodes are taken from 22,578 unique individuals, with 20,631 people who had one episode of being uninsured; 1,850 who had two episodes; 90 who had three episodes; and 7 who had 4 episodes.

We exclude from analysis episodes in which the beginning of the spell is not observed because we are unable to estimate months since inception or episode length for spells in progress. In practice, this means that if an individual were uninsured in the first month of their 24-month observation window, we do not use the episode that included that first month. Of the initial 24,629 episodes, 15,846 were left-censored, leaving 8,783 episodes for analysis (Figure 1).

We also exclude from analysis the initial two months of each episode and, consequently, episodes in their entirety that lasted only one or two months. We do this because individuals' recollection of their insurance status may be imperfect, and we found empirical evidence that the misclassification of months in which individuals had insurance as uninsured months was more severe in the first two months of an episode.[1]

As shown in Figure 1, we drop 2,019 episodes that were only one or two months in length, leaving 6,764 episodes in the analytic sample. These 6,764 episodes represent 61,076 months of being uninsured; dropping the first two months of each episode yields 47,548 months available for analysis. We term this sample, "Sample 1."

For particular analyses, we place final, further limits on the sample. We exclude episodes that are right-censored (the episode is still in progress at the end of the observation window) for some analyses. This subtracts an additional 4,222 episodes, leaving 2,542 for analysis ("Sample 2"). In other cases, we exclude episodes that are right-censored but only if the observed length is less than 12 months (4,259 episodes remain for analysis, "Sample 3") or 18 months (3,150 episodes remain for analysis, "Sample 4").

4. Specification and Estimation

The dependent variables are dichotomous indicators for any expenditures or charges, and any office-based physician or non-physician visit. Each observation is a month period of being uninsured and utilization is measured for the specific observation month. We use multivariate logistic regression analysis to explore how utilization in a given month varies with the number of months since the inception of the episode and the

[1] For example, 5.4 percent and 4.9 percent of individuals in their first and second reported months of an uninsured episode, respectively, had at least some expenditures paid for by insurance, compared to an average of 3.9 percent of individuals in months 3-12. Among those reporting at least some expenditures in the first two months of their episode, more than one-fourth (26.1% in month 1 and 26.3 % in month 2) reported that a significant fraction (80% or more) of their expenditures were paid for by some private source, compared to an average of less than 20% who reported a significant fraction of privately paid expenditures in months 3-12.

ultimate episode length. All regressions were weighted and adjusted for the complex design of the MEPS survey (Cohen et al, 1996/1997).

We control for sociodemographic factors that affect the demand for medical care and detailed measures of health status. These controls are especially important because earlier research shows that individuals in long- versus short-term episodes differ (Swartz and McBride 1990; Swartz, Marcotte and McBride, 1993; Short and Friedman 1998, Bennefield 1996). Sociodemographic controls include education, household structure, gender, age, gender-age interactions, employment status, race, rural or urban resident, family income as a percentage of the federal poverty line, language of interview, and nativity. We also control for the quarter of the year in which the observed month occurs and include indicators for months that are longer (31 days) or shorter (28 or 29 days) than 30 days.

We measure health status with variables spanning four domains (1) functional, cognitive and social limitations (a single indicator for any such limitation) (2) vision/hearing problems (single indicator for any such problem, including blindness or deafness), (3) self-rated health and mental-health (dichotomous indicators for response categories), and (4) chronic conditions. Using the MEPS Condition files, we constructed indicators for the presence of 25 chronic conditions (such as diabetes, obesity, and asthma) and included specific indicator variables for a subset of those conditions and an summary indicator for the presence of any of the remaining conditions.

We begin with analyses focused on the association between episode length and utilization and estimated a series of logistic regressions for each of the dependent variables. The key variable of interest in these regressions was a measure of episode length. We experiment with three measures of episode length: A continuous measure of the number of months of the episode; a dichotomous indicator of whether the episode was less than a year or 12 months or more; and a set of indicators of episode length (for example, 3-4 months long, 5-11 months long, 12 or more months long).

For the analyses using the continuous measure of episode length, we exclude observations that are right-censored (the end of the spell was not observed). For the analyses using the indicator of an episode fewer than 12 compared to 12 or more months long, we exclude only observations where the censored length was less than 12 months. Thus, if an episode was observed to last 14 months but was right censored, it was included because we could definitively classify it as an episode that lasted longer than one year. Likewise, for the analyses that used the series of indicators, we include the observation as long as we can definitively classify its length (i.e., as long as a right-censored episode is observed to last at least as long as the greatest length used to classify episodes). As a result of the variability in the way we exclude observations, the analyses using the continuous measure of episode length have fewer observations compared to the analyses using the dichotomous indicator(s).

The first set of regressions explore the relationship between episode length and utilization for any given month, without regard to whether the month was near the

beginning of the episode, in its middle, or near its end (i.e., without regard to time since inception). Subsequent regressions stratify observations by time since inception: The initial six months of an episode, the 7th-12th months of the episode, and the 13th through 23rd month of the episode. For these regressions, only observations from months that fell into these specific periods were included.

In addition to analyzing episode length and utilization, we also analyzed the relationship between the number of months since inception and utilization. As with episode length, we explored several measures of months since episode inception. One measure was a continuous count of the number of months since the beginning of the episode. We also tried dichotomous indicators of 4-month intervals (0-4 months since inception, 5-8 months and so on) and 6-month intervals (0-6 months, 7-12 months, etc.).[2]

5. Results

Descriptive Data

Table 1 summarizes characteristics of the various samples used in the analyses. As described earlier and as shown in Figure 1, Samples 1-4 exclude left-censored and short (1 or 2 month) episodes; Sample 2 additionally excludes all episodes with right-censoring; Sample 3 also excludes all episodes that are right censored before 12 months; and Sample 4 excludes all episodes that are right-censored before 18 months.

While the characteristics of individuals is similar across Samples 1-4, the characteristics of the episodes vary substantially. Sample 1 is the least restrictive sample, with 6,764 episodes representing 47,548 months of a person being uninsured. The mean episode length in the sample is 9.1 months. Sample 2 is the most selective sample, including only 2,542 episodes compared to the nearly 4,259 episodes in Sample 3, and reflecting only one-third the number of observed months (11,735 in Sample 2 versus 36,184 in Sample 3). Sample 2 is more heavily weighted to shorter episodes (mean episode length=6.6 months versus 10.5 months in Sample 3), which results from the way in which the sample was constructed: Sample 2 excludes all right-censored observations and longer episodes are more likely to be right-censored. Sample 4 is less restrictive than Sample 2 but more restrictive than Sample 3, with 3,150 episodes and 22,612 months and a mean episode length of 9.2 months.

Effects of Episode Length

Table 2 shows results of analyses of utilization and episode length. Columns (a)-(c) are for the dependent variable indicating any expenditures or charges and columns (d)-(f) are for the dependent variable indicating any office-based visit. Specification (a)

[2] We note that while we excluded the first two months of each episode from analysis, our measure of months since inception is from the reported inception. We could have alternatively subtracted two months from each of our measure of months since inception when labeling those variables.

includes a continuous measure of episode length; Specifications (b)-(d) use dummy variables to indicate episode length. The dummy variable specifications test for non-linearities in the relationship between episode length and allow for less restrictive samples to be used in analysis.

We find little evidence that episode length is related to the probability of having an office-based visit in any given month. The results for any expenditures are more variable and we discuss them in what follows in detail. In Specification (a)—the analyses of any expenditures using a continuous measure of episode length—the odds ratios on episode length are statistically significant and less than one for all months (0.98), for months 3-6 (0.96), and for months 7-12 (0.93). The findings suggest that the probability of expenditures in any given month is lower for episodes of greater length. However, in regressions of all months and months 3-6 that included episode length and its square, neither the odds ratio on length nor its square were statistically significant (results not shown).

Specification (b) uses a dummy variable indicating whether the episode is more or less than 12 months long. For analyses using Sample 2, the odds ratio is less than one and statistically significant for both all months and for 7-12 months since inception (odds ratio=0.82 and 0.67 respectively).

However, Sample 2 is the most restricted sample and is weighted towards shorter episodes (half are less than 6 months and 90 percent are less than 12 months). We re-ran Specification (b) using the less restricted Sample 3 and compared results. The episode length finding was not robust to the change in sample; we find no statistically significant effects of episode length in the Specification (b) regressions using Sample 3.

Specification (c) uses a more refined set of dummy variables. Again, with the restricted Sample 2, we find some support for an effect of episode length on the probability of having any expenditures or charges (lower for episodes longer than 12 months compared to 3-4 months long, odds ratio=0.74), but the result is not robust to a change in sample. The odds ratios on episode length are not statistically significant in Specification (c) when Sample 3 is used.

One possible explanation for the result changes observed with different Samples (2 vs 3) is that utilization is relatively high in short episodes (less than 12 months), relatively low in medium-length episodes, and relatively high again (comparable to the short episodes) in long episodes. The distribution of Sample 2 episodes, where we find some evidence of an effect of episode length, is heavily weighted towards short episodes and includes few medium-length episodes (12-17 months) and almost no long episodes (18 months or longer) (Table 1). Sample 3 adds back in many longer episodes; for example, more than 10 percent of the episodes in Sample 3 are 18 months or longer. The regressions with Sample 3 compare the combined medium and long episodes to short episodes, whereas those using Sample 2 compare medium to short episodes exclusively.

In additional analyses using Sample 4, we separated episodes of one year or longer into those lasting 12-17 months and those lasting 18 or more months. The additional flexibility in specification comes at a price: We can only use observations where we observe either the conclusion of the episode or at least 18 months of it (Sample 4). These analyses include roughly 60 percent of the observations in Sample 3. We find a difference between episodes 12-17 months and 18 or more months long in the probability of utilization for the period between 7 and 12 months since inception (odds ratio=1.49 for utilization in episodes 18 or more months long vs 12-17 months long; not shown in table). But we find no difference between medium and long episodes during the period from 3-6 months since inception. Sample 4 also gives us some power to look at the period between 13 and 23 months since inception. We re-ran analyses for this time period but again found no difference between episodes 12-17 months long and those 18 or more months long.

One likely explanation for the finding regarding episodes 12-17 months long during the period from 7-12 months is that it is an aberrant result arising from the severe restrictions placed on episodes eligible for Samples 2 and 4. Thus, although there is some evidence that use of care between 7 and 12 months from inception of the episode is lower during medium-length episodes compared to long or short episodes, we view the preponderance of evidence as suggesting that episode length is unrelated to utilization.

Effects of Time Since Episode Inception

Based on our findings regarding episode length, we analyzed the relationship between time since inception and use of care without controlling for episode length. Table 3 shows results from these regressions.

The analyses reflected in the uppermost section of Table 3 included a continuous measure of the number of months since inception. In the specification that includes months since inception alone and months since inception and its square, the odds ratios are statistically significant and, respectively, greater than one and less than one, suggesting that the probability of utilization increases as the episode progresses but growth in the probability of utilization increases at a decreasing rate.

The middle and lower sections of Table 3 show results for analyses that include indicators of the months since inception by six- and four-month intervals. The six-month interval analysis show the probability of utilization is greater in months 7-12 compared to months 3-6, both for any expenditures and any visits, but utilization in months after the first year is not different from utilization in the first six months of the episode. The four-month interval analysis shows that the probability of utilization is greater in months 9-12 and months 5-8 compared to months 3-4; moreover, the odds ratio for the 9-12 month interval significantly is larger than for the 5-8 month interval. In the final months of the observed episode (months 21-23), the probability of any expenditures appears lower compared to the initial months of the episode, but utilization in months after the first year was otherwise no different compared to the first four months of the episode. Thus, the

results suggest rising utilization during the first year of an episode with a peak at about 12 months and utilization returning to the baseline of the initial months thereafter.

We re-ran all the analyses in Table 1 on the three additional Samples used in the Table 2 regressions to further clarify whether the severity of restrictions associated with Sample 2 may be giving rise to the fluctuations between Samples 2 and 3 in the episode-length findings. The results were robust to the use Sample 3, but we found almost no statistically significant results when Sample 2 was used (including in the specification with the continuous measures of episode length and episode length squared).

6. Discussion

This study finds that the ultimate length of an individual's episode of being uninsured bears little on individuals' use of healthcare in any particular month. While we find some evidence that use of care varies during the period 7-12 months since inception for medium versus long-term episodes, the finding is not robust and is limited to analyses that employ very restrictive samples.

A possible explanation for the lack of a relationship observed between episode length and utilization is that individuals are unable to anticipate changes in their insurance coverage. Thus patterns of care over the course of an episode do not vary among individuals who are close or far from being insured because individuals do not know how much longer they will be without insurance. Alternatively, it may be that individuals *can* anticipate when they will become insured, but either their care is not medically delayable or they do not perceive it to be so. Another possibility is that individuals are myopic in their utilization behavior; they can anticipate changes in their insurance status and know that if they delay care it may be paid for by someone else, but consider only the short-term benefits of receiving the care immediately, and not the longer-term tradeoffs.

The finding that patterns of care over the course of an episode are relatively invariant across short and long uninsured episodes echoes earlier work (Long, Marquis and Rodgers, 1998) showing few differences in utilization patterns among individuals continuously insured compared to the insured who later lost insurance or among the continuously uninsured compared to those who later gained insurance. These investigators found little evidence that people anticipate changes in their insurance status and modify their health care utilization as a result. Similarly, the RAND Health Insurance Experiment (HIE) analysis of use of care among individuals switching among different insurance plans (Newhouse et al 1993) found that people did not stock up or spend down their use of hospital and physician services over periods when they were covered by more or less generous plans.

We also explored the pattern of care over the months since the inception of an episode. We find a lower probability of utilization during the first several months of the episode that peaks at about 12 months and then tapers off. We may observe this pattern of care if it takes time for individuals to locate, schedule and obtain low-cost or free care,

resulting in lower utilization in early months. On the other hand, individuals may delay care when they first become uninsured with the hope or knowledge that they will regain insurance at some later date. After the first several months, however, either individuals cannot or choose not to delay care further. This explanation, if correct, would lend support to the notion that the invariance in utilization we see among individuals with different episode lengths may result from their inability to anticipate how long they will be uninsured.

It is worth clarifying that our findings do not imply that the uninsured are getting all the care they need. As previous research suggests, many of the uninsured may go without necessary care and with significant repercussions for their health (e.g., Marquis and Long 1994/95; Hafner-Eaton 1993; Franks, Clancy, Gold 1993; Spillman 1992;; Hadley, Steinberg, and Feder 1991; Lurie et al. 1984). Indeed, one possible reason that we do not observe larger transitory shifts in demand for care is that much of the care received by the uninsured is not discretionary. That is, delaying care may be impossible for the uninsured if they are only consuming health care at a level that is the minimum required to maintain some threshold health status.

Figure 1: Selection of Episodes for Analytic Sample

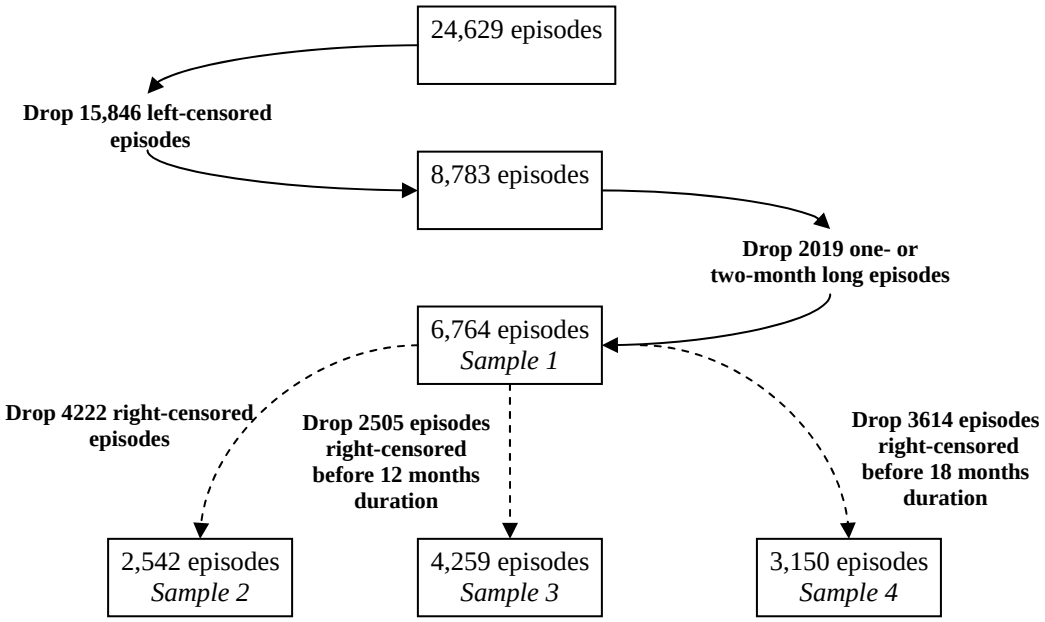

Table 1: Descriptive Statistics for Analytic Samples

Episodes excluded	**Sample 1** Left-censored or 1 or 2 months long	**Sample 2** Sample 1 exclusions plus any right-censoring	**Sample 3** Sample 1 exclusions plus right-censored at less than 12 months	**Sample 4** Sample 1 exclusions plus right-censored at less than 18 months
Number of episodes	6764	2542	4259	3150
Number of episode-months	47548	11735	36184	22612
Minimum episode length	3	3	3	3
25th percentile episode length	5	4	2	4
Median episode length	8	6	10	7
75th percentile episode length	13	9	15	13
90th percentile length	17	12	19	20
Maximum episode length	23	21	23	23
Episode begins in first quarter of calendar year (%)	17	19	18	18
Episode begins in second quarter of calendar year (%)	32	36	30	41
Episode begins in third quarter of calendar year (%)	29	26	25	26
Episode begins in fourth quarter of calendar year (%)	22	19	26	15

	Mean	**Std Err**	**Mean**	**Std Err**	**Mean**	**Std Err**	**Mean**	**Std Err**
Episode length	9.08	(0.092)	6.63	(0.094)	10.51	(0.122)	9.20	(0.149)
Income<poverty	0.18	(0.007)	0.16	(0.010)	0.19	(0.008)	0.18	(0.010)
Income 1-2x poverty	0.25	(0.007)	0.25	(0.012)	0.26	(0.009)	0.26	(0.010)
Income 2-4x poverty	0.31	(0.009)	0.32	(0.013)	0.31	(0.010)	0.31	(0.013)
Income>4x poverty	0.26	(0.008)	0.27	(0.013)	0.25	(0.010)	0.25	(0.012)
Less than high school	0.19	(0.007)	0.16	(0.009)	0.19	(0.008)	0.17	(0.009)
GED or high school diploma	0.40	(0.008)	0.39	(0.013)	0.40	(0.010)	0.40	(0.011)
Some college	0.25	(0.008)	0.27	(0.012)	0.25	(0.009)	0.27	(0.011)
College graduate	0.16	(0.007)	0.18	(0.010)	0.16	(0.008)	0.17	(0.009)
Never married	0.41	(0.008)	0.40	(0.013)	0.40	(0.010)	0.40	(0.012)
Married	0.41	(0.009)	0.44	(0.015)	0.42	(0.011)	0.43	(0.014)
Widowed/Divorced/Single	0.17	(0.006)	0.17	(0.010)	0.18	(0.008)	0.18	(0.009)
Family size	3.06	(0.032)	3.02	(0.048)	3.06	(0.040)	3.03	(0.044)
Female	0.53	(0.008)	0.55	(0.011)	0.54	(0.009)	0.55	(0.010)
Aged 18-24	0.27	(0.008)	0.25	(0.012)	0.26	(0.010)	0.25	(0.012)
Aged 25-34	0.29	(0.008)	0.33	(0.013)	0.30	(0.010)	0.32	(0.011)
Aged 35-44	0.23	(0.008)	0.23	(0.012)	0.23	(0.009)	0.23	(0.011)
Aged 45-64	0.21	(0.007)	0.19	(0.009)	0.21	(0.008)	0.20	(0.009)
White (non Hispanic)	0.67	(0.009)	0.69	(0.013)	0.67	(0.011)	0.68	(0.012)
Black (non Hispanic)	0.14	(0.007)	0.13	(0.009)	0.14	(0.008)	0.13	(0.009)
Hispanic	0.14	(0.006)	0.13	(0.009)	0.14	(0.007)	0.14	(0.008)
Other minority	0.05	(0.006)	0.06	(0.008)	0.05	(0.006)	0.05	(0.007)
Interview in English	0.95	(0.003)	0.96	(0.005)	0.95	(0.004)	0.95	(0.005)
Employed	0.66	(0.008)	0.71	(0.011)	0.68	(0.009)	0.70	(0.010)
US born	0.82	(0.008)	0.83	(0.011)	0.82	(0.009)	0.82	(0.010)
Missing US born	0.05	(0.004)	0.04	(0.006)	0.05	(0.005)	0.05	(0.006)

Metropolitan residence	0.80	(0.009)	0.81	(0.013)	0.80	(0.010)	0.82	(0.011)
Hearing problem	0.04	(0.003)	0.04	(0.006)	0.04	(0.004)	0.04	(0.005)
Vision problem	0.04	(0.004)	0.05	(0.006)	0.05	(0.005)	0.05	(0.005)
Functional limitation	0.06	(0.004)	0.06	(0.006)	0.06	(0.005)	0.06	(0.005)
Social limitation	0.03	(0.003)	0.03	(0.004)	0.03	(0.003)	0.03	(0.004)
Cognitive limitation	0.02	(0.002)	0.02	(0.003)	0.02	(0.003)	0.02	(0.003)
Excellent self-rated health	0.28	(0.008)	0.28	(0.012)	0.28	(0.009)	0.28	(0.010)
Very good self-rated health	0.34	(0.009)	0.35	(0.013)	0.34	(0.010)	0.34	(0.011)
Good self-rated health	0.28	(0.008)	0.27	(0.011)	0.28	(0.009)	0.28	(0.010)
Fair self-rated health	0.07	(0.004)	0.08	(0.007)	0.08	(0.005)	0.08	(0.006)
Poor self-rated health	0.03	(0.002)	0.02	(0.003)	0.03	(0.003)	0.03	(0.003)
Excellent self-rated mental health	0.38	(0.009)	0.38	(0.013)	0.38	(0.010)	0.38	(0.011)
Very good self-rated mental health	0.33	(0.009)	0.34	(0.013)	0.33	(0.010)	0.34	(0.011)
Good self-rated mental health	0.23	(0.007)	0.22	(0.010)	0.23	(0.009)	0.23	(0.010)
Fair self-rated mental health	0.05	(0.004)	0.05	(0.006)	0.05	(0.004)	0.05	(0.005)
Poor self-rated mental health	0.01	(0.002)	0.01	(0.002)	0.01	(0.002)	0.01	(0.002)
Depression	0.08	(0.005)	0.07	(0.007)	0.07	(0.005)	0.07	(0.006)
Hypertension	0.08	(0.004)	0.08	(0.007)	0.08	(0.005)	0.08	(0.006)
Diabetes	0.03	(0.003)	0.03	(0.004)	0.03	(0.003)	0.03	(0.003)
Arthropathies	0.03	(0.003)	0.03	(0.004)	0.03	(0.003)	0.03	(0.004)
Asthma	0.04	(0.003)	0.05	(0.006)	0.04	(0.004)	0.04	(0.005)
Non-organic psychoses	0.04	(0.003)	0.04	(0.005)	0.03	(0.004)	0.04	(0.004)
Migraine	0.02	(0.002)	0.03	(0.004)	0.02	(0.003)	0.02	(0.003)
Disease of lipid metabolism	0.03	(0.003)	0.03	(0.004)	0.03	(0.003)	0.03	(0.004)
Other chronic condition	0.05	(0.003)	0.04	(0.005)	0.05	(0.004)	0.04	(0.004)
Any expenditure or charge	0.13	(0.006)	0.13	(0.009)	0.13	(0.007)	0.13	(0.008)
Any office-based visit	0.12	(0.006)	0.12	(0.008)	0.13	(0.007)	0.13	(0.008)
1996	0.16	(0.009)	0.18	(0.013)	0.22	(0.012)	0.20	(0.013)
1997	0.13	(0.007)	0.13	(0.011)	0.12	(0.009)	0.13	(0.010)
1998	0.12	(0.008)	0.12	(0.010)	0.11	(0.008)	0.11	(0.009)
1999	0.14	(0.009)	0.14	(0.011)	0.14	(0.010)	0.15	(0.011)
2000	0.15	(0.012)	0.14	(0.014)	0.14	(0.013)	0.14	(0.013)
2001	0.14	(0.007)	0.15	(0.009)	0.17	(0.009)	0.16	(0.009)
2002	0.14	(0.007)	0.15	(0.011)	0.10	(0.007)	0.12	(0.009)

Table 2:
Relationship Between Use of Care and Episode Length
for All Months and for Specific Intervals of Time Since Episode Inception

	Any Expenditures or Charges *Odds Ratios Reported*			Any Office-Based Visit *Odds Ratios Reported*		
	All months (a)	**3-6 month since inception (b)**	**7-12 months since inception (c)**	**All months (d)**	**3-6 month since inception (e)**	**7-12 months since inception (f)**
Specification (a), Sample 2						
Episode length (in months)	0.98*	0.97**	0.92***	0.99	0.98	0.93**
Specification (b), Sample 2						
Episode less than 12 months long	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
Episode 12 or more months long	0.82	0.83	0.63***	0.86	0.96	0.67**
Specification (b), Sample 3						
Episode less than 12 months long	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)
Episode 12 or more months long	0.97	0.95	0.86	1.02	1.04	0.87
Specification (c), Sample 2						
Episode 3-4 months long	(ref)	(ref)	†	(ref)	(ref)	†
Episode 5-11 months long	0.90	0.84		1.05	0.97	
Episode 12 or more months long	0.75*	0.73		0.89	0.94	
Specification (c), Sample 3			†			†
Episode 3-4 months long	(ref)	(ref)		(ref)	(ref)	
Episode 5-11 months long	0.89	0.84		1.03	0.96	
Episode 12 or more months long	0.88	0.83		1.04	1.00	
Specification (d), Sample 4						
Episode 3-4 months long	(ref)	(ref)	n/a	(ref)	(ref)	n/a
Episode 5-11 months long	0.89	0.85	(ref)	1.04	0.97	(ref)
Episode 12-17 months long	0.73*	0.78	0.62***	0.88	0.99	0.63**
Episode 18 or more months long	0.93	0.78	0.92	1.09	0.92	0.91

Notes: † Specification *c* is the same as specification *b* for the subset of 7-12 months;
* $p<.10$; ** $p<.05$; *** $p<.01$

Table 3:
Relationship between Use of Care and Months Since Episode Inception

	Any Expenditures *Odds Ratio*		**Any Visits** *Odds Ratio*	
Months since inception, continuously measured				
Months since inception	1.01		1.01	*
Months since inception	1.07	***	1.08	***
Months squared	0.997	***	0.997	***
Months since inception by 6 month intervals				
3-6 months since inception	(reference)		(reference)	
7-12 months since inception	1.17	***	1.18	***
13-18 months since inception	1.06		1.08	
19-24 months since inception	1.10		1.20	
Months since inception by 4 month intervals				
3-4 months since inception	(reference)		(reference)	
5-8 months since inception	1.12	**	1.15	***
9-12 months since inception	1.26	***	1.27	***
13-16 months since inception	1.11		1.15	
17-20 months since inception	1.17		1.21	
21-23 months since inception	0.63	**	0.76	

Notes: * $p<.10$; ** $p<.05$; *** $p<.01$

REFERENCES

Ayanian JZ, Weissman JS, Schneider EC, Ginsburg JA, Zaslavsky AM, Unmet health needs of uninsured adults in the US, Journal of the American Medical Association, 2000, 284:2061-2069.

Baker DW, Sudano JJ, Albert JM, Borawski EA, Dor A. 2001. "Lack Of Health Insurance And Decline In Overall Health In Late Middle Age." *N Engl J Med* 345:1106-1112.

Bennefield, RL 1996. Dynamics of Economic Well being: Health insurance 1992-1993: Who loses coverage and for how long? Current Population Reports P70-54 (May): 1-5.

Cohen, J.W., A.C. Monheit, K.M. Beauregard, S.B. Cohen, D.C. Lefkowitz, D.E.B. Franks, P., C.M. Clancy, and M.R. Gold. 1993. "Health Insurance and Mortality: Evidence from a National Cohort." *Journal of American Medical Association* 270:737-41.

Cunningham, P. J. and P. Kemper. 1998. "Ability to Obtain Medical Care for the Uninsured: How Much Does It Vary Across Communities?" *Journal of American Medical Association* 280 (10): 921-927.

Gresenz, C.R., J. Rogowski, and J. Escarce, "Dimensions of the Local Health Care Environment and Use of Care By Uninsured Children in Rural and Urban Areas, *Pediatrics*, 117:509-517, 2006a.

Gresenz, C.R., J. Rogowski, and J. Escarce, "Healthcare Markets, the Safety Net, and Utilization of Care Among the Uninsured," forthcoming, *Health Services Research*, 2006b.

Hadley, J., E.P. Steinberg, and J. Feder. 1991. "Comparison of Uninsured and Privately Insured Hospital Patients: Condition on Admission, Resource Use, and Outcome." *Journal of the American Medical Association* 265:374-79.

Hafner-Eaton, C. 1993. "Physician Utilization Disparities Between the Uninsured and Insured." *Journal of the American Medical Association* 269:787-92.

Long, S. H., M. S. Marquis, and J. Rodgers. 1998. "Do People Shift Their Use of Health Services over Time to Take Advantage of Insurance?" *Journal of Health Economics* 17: 105-115.

Lurie, N., N. B. Ward, M. F. Shapiro, and R. H. Brook. 1984. "Termination from Medi-Cal: Does it Affect Health?" *New England Journal of Medicine* 311:480-84

Marquis, M.S., and S.H. Long. 1994/1995. "The Uninsured Access Gap: Narrowing the Estimates." *Inquiry* 31:405-14.

Monheit, A. C. and C. L. Schur. 1988. “The Dynamics of Health Insurance Loss: A Tale of Two Cohorts.” *Inquiry* 25: 315-327.

Newhouse, JP et al 1993. *Free for all? Lessons from the RAND Health Insurance Experiment.* Harvard Univ Press, Cambridge, MA.

Potter, J.P. Sommers, A.K. Taylor, and R.H. Arnett. 1996 - 1997. “The Medical Expenditure Panel Survey: A National Health Information Resource.” *Inquiry* 33:373-89.

Short PF and Freedman VA ,1998. “Single Women and the Dynamics of Medicaid.” *Health Services Research*, 33(5): 1309-1336.

Spillman, B. C. 1992. “The Impact of Being Uninsured on Utilization of Basic Health Care Services.” *Inquiry* 29: 457-466.

Sudano, JJ and DW Baker. 2003. “Intermittent Lack of Health Insurance Coverage and use of Preventive Services,” *American Journal of Public Health* 93(1): 130-137.

Swartz, K. and T. D. McBride. 1990. “Spells without Health Insurance: Distributions of Durations and Their Link to Point-in-Time Estimates of the Uninsured.” *Inquiry* 27: 281-288.

Swartz, K., J. Marcotte, and T. D. McBride. 1993. “Spells without Health Insurance: The Distribution of Durations When Left-Censored Spells are Included.” *Inquiry* 30: 77-83.