
The Effect of Insurance Coverage Changes and Poverty Status on Health Care Expenditures

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This paper uses the Medical Expenditure Panel Survey to examine the effect of changes in insurance coverage and poverty status on health services consumption and expenditures. The analysis focuses on health care expenditures in periods when individuals transition into or away from insurance coverage. If significant differences in expenditures between insured and transitionally insured individuals exist, this may lead to less desirable health outcomes and higher health care costs.

Individuals who lose insurance experience a decline in total health expenditures of \$646 and an increase in out-of-pocket expenditures of \$151. Individuals who gain insurance experience an increase in total expenditures of \$737 and a decline in out-of-pocket expenditures of \$16. When significant differences exist between wealthy and poor individuals, the poor in all insurance categories have a greater number of office-based visits and prescriptions filled.

Keywords: insurance, medical expenditures, transitions

For many individuals, insurance coverage is not continuous. As a consequence, access to care and health expenditures may vary as insurance coverage changes. For example, many studies have examined the effect of insurance coverage on the use of preventive services with findings showing that uninsured individuals are less likely to use preventive services. These low utilization rates also apply to individuals who are intermittently insured or who have recently become insured (Schoen and DesRoches 2000; Sudano and Baker 2003). Changing and/or losing insurance coverage often reduces access to care through delays in obtaining follow-up treatment (Burstin *et al.* 1998). Individuals who are continuously uninsured are more likely to have declines in their health (Baker *et al.* 2001) and a disproportionate number of health problems (Ayanian *et al.* 2000). Lack of insurance coverage also leads to a reduction in the number of prescriptions and expenditures on drugs (Poisal and Chulis 2000). Finally, the impact of insurance status on health care consumption may vary with income. Individuals at or below the poverty level are less likely to have insurance coverage and their out-of-pocket health expenditures typically represent 6.5 percent of their income (Waters, Anderson, and Mays 2004).

This study uses the Medical Expenditure Panel Survey (MEPS) data set collected by the Agency for Healthcare Research and Quality (AHRQ) to examine how health services utilization and expenditures change as individual insurance status varies. The MEPS is a nationally representative sample with detailed data which allows expenditures to be estimated for all users of health care and all sources of expenditures (Agency for Healthcare Research and Quality 2006). Health care expenditures and utilization rates for wealthy and poor individuals are also analyzed.

Methods

Empirical estimates of health expenditures are developed using data from the household component of the MEPS data sets from the years 1996 through 2002. Respondents were selected from a probability-weighted sample of non-institutionalized U.S. civilians (Cohen, DiGaetano, and Goksel 1999). The MEPS consists of four distinct surveys: the household component (HC), the medical provider component (MPC), the insurance component (IC) and the nursing home component (NHC). The HC is an overlapping panel design in which respondents in a panel were interviewed over a two-year period with new respondents added in each panel. The overlapping panel design allows nationally representative estimates of health care use and expenditures to be calculated (Agency for Healthcare Research and Quality 2006). Information on health care utilization and annual health expenditures by source and insurance coverage is provided. Because the MEPS data set follows respondents over a two-year period, it is possible to estimate the effect of changes in insurance status on health services utilization and expenditures.

The sample is restricted to individuals with observations for all variables used in the estimation of total health expenditures and for whom insurance status could be determined in two consecutive years. In addition, only individuals between the ages 25 to 64 during the sample period are included. Individuals over 64 are excluded since Medicare coverage typically begins at age 65. Respondents under 25 were

excluded to eliminate college insurance dependents, although the empirical results were similar when individuals between the ages of 18 and 24 were included. The final sample includes 85,510 observations for 42,755 individuals.

The sample is divided into four categories by insurance status. An individual is considered to be insured if they had insurance coverage for at least one month during the year and uninsured if they had no insurance coverage during the entire year. Respondents were either insured in both years (insured), uninsured in both years (uninsured), uninsured in the initial year, year 0 and insured in year 1 (gained), or insured in year 0 and uninsured in year 1 (lost). Over the two year period, 80% of the individuals (34,146) had health insurance coverage for at least one month in both years with an average number of months covered of 11.4 months during the first year and 11.5 months during the second. Fourteen percent of the sample (5,930 individuals) was uninsured over the entire two year period. Three percent of the sample (1,409 individuals) was uninsured during the first year, but gained insurance for at least one month in the second year. The average number of months covered during the year of coverage was 7.0 for respondents who gained insurance. Three percent of the sample (1,290 individuals) were insured at least one month in the initial year (average=7.1 months), but had no insurance in the second year.

Our empirical analysis focuses on how health services utilization and consumption change as insurance status varies. Expenditure data is in real 1996 dollars using the CPI-medical price adjustment (U.S. Government Printing Office 2005). We examine total expenditures, out-of-pocket expenditures, office-based visit expenditures, dental visit expenditures and expenditures on prescription drugs. Total expenditures are the sum of expenditures for office-based visits, emergency room visits, inpatient care, dental visits, home health care, other expenditures, and prescription drug purchases. Health services utilization includes the number of office-based physician visits, the number of dental visits and the number of prescriptions filled per year. Dental expenditures and visits are included for comparative purposes, since generally they are not covered by many insurance plans.

We use the individual level weights along with the stratified sampling design of the MEPS to yield valid national estimates (Cohen 1997). Stata 8.0 (Stata Corporation, College Station, TX) is used to perform statistical tests with the stratified data. Stata estimates standard errors after adjusting for the complex survey design. The technique used in Stata produces identical point estimates and standard errors as those produced by SUDAAN (Cohen 1997). We use the “svymean” and “svytc” commands in Stata to estimate the means and perform the t-tests for differences in means by insurance status.

Multivariate regression is used to predict the log of expenditures in separate equations based on the four states of insurance coverage. Because many individuals had zero expenditures, the two step method developed by Duan (1983) is used. This technique conditions the predicted expenditures on whether the individual had any expenditures during that year. The retransformation of the log results to a natural scale must account for the potential bias of the retransformation. We apply Duan’s non-parametric smearing technique to eliminate this bias.

The independent variables used in the regressions include year and age, as

well as, dummy variables for gender, ethnicity, region of the country, educational attainment, health status and poverty status. The gender variable is coded one for male and zero for female. The two indicator variables for ethnicity are for Black and Hispanic respondents. Indicators for region include west, south, and northeast. Educational attainment indicators include one for high school completion and a second for respondents with some education beyond high school.

Self reported health status in the MEPS is divided into five categories: poor, fair, good, very good and excellent. These categories are aggregated into two broader indicator variables - one if health was reported as poor or fair and a second if health was reported as good. The omitted category includes respondents with very good and excellent health. The poverty variables consist of 3 indicator variables equal to one if the individual's income was below the poverty level, below 125% of the poverty level and below 200 percent of the poverty level.

Results

The results in Table 1 show that individuals who lose their insurance in the second year (insurance losers) experience a reduction in total expenditures of \$646 and an increase in out-of-pocket expenditures of \$151. Individuals who gain insurance in the second year (insurance gainers) increase total expenditures by \$737 while out-of-pocket expenditures fall an economically insignificant \$16.

During the period with no insurance, the out-of-pocket expenditures of insurance losers are \$510, versus \$392 for insurance gainers. The out-of-pocket expenditures for insurance gainers (\$392) are similar to those of individuals who are uninsured during both periods (uninsured, \$389). Individuals who gain insurance may have been uninsured for more than one year and may have either substituted out-of-health care or found alternatives to health care. The lower expenditures of insurance gainers during the uninsured period may also reflect "pent-up" demand in anticipation of becoming insured (Martin *et al.* 1997; Tilford *et al.* 1999). Alternatively, note that insurance losers experience higher out-of-pocket expenditures (\$510) during the uninsured period relative to the uninsured (\$383). This may occur if these individuals have specific illnesses and/or health concerns that require care and continue this care after becoming uninsured. These results are consistent with results obtained when total expenditures during the period of no insurance for insurance gainers and insurance losers are compared to the uninsured (\$913 for insurance losers vs. \$727 for uninsured and \$675 for insurance gainers vs. \$703 for uninsured).

During the period with insurance, total expenditures for both insurance losers and insurance gainers are less than expenditures for individuals who are insured during both periods (insured). Total expenditures for insurance losers are \$1,558 versus \$1,916 for the insured. Total expenditures for insurance gainers are \$1,412 versus \$2,049 for the insured. Similar results are also observed when out-of-pocket expenditures are examined (\$359 for insurance losers vs. \$428 for the insured and \$376 for the insurance gainers vs. \$451 for the insured). The lower total and out-of-pocket expenditures for insurance gainers and insurance losers relative to the insured

Table 1
Medical Expenditures by Insurance Status (1996 dollars)

| Lost Insurance Year 1 | | | |
|----------------------------------|---------------|---------------|------------------------------|
| | Year 1 | Year 0 | Difference (95% CI) |
| Total Expenditures | \$912.62 | \$1,558.87 | -\$646.25 (-701.05, -592.44) |
| Total Expenditures Self | \$510.24 | \$358.90 | \$151.34 (-169.99, -132.68) |
| Office-Based Visits Expenditures | \$233.18 | \$398.42 | -\$165.24 (-176.47, -154.00) |
| Dental Visit Expenditures | \$69.64 | \$103.70 | -\$34.07 (-36.93, -31.20) |
| Prescription Expenditures | \$229.72 | \$267.32 | -\$37.60 (-50.80, -24.41) |
| N | 1,290 | | |

| Gained Insurance Year 1 | | | |
|----------------------------------|---------------|---------------|---------------------------|
| | Year 1 | Year 0 | Difference |
| Total Expenditures | \$1,412.45 | \$675.27 | \$737.18 (685.48, 788.88) |
| Total Expenditures Self | \$376.49 | \$392.49 | -\$16.00 (-28.59, -3.41) |
| Office-Based Visits Expenditures | \$329.72 | \$189.96 | \$139.76 (131.26, 148.27) |
| Dental Visit Expenditures | \$95.24 | \$68.49 | \$26.76 (23.80, 29.71) |
| Prescription Expenditures | \$233.80 | \$147.26 | \$86.54 (73.86, 99.22) |
| N | 1,409 | | |

| Insured Both Years | | | |
|----------------------------------|---------------|---------------|---------------------------|
| | Year 1 | Year 0 | Difference |
| Total Expenditures | \$2,048.77 | \$1,916.03 | \$132.74 (115.55, 149.94) |
| Total Expenditures Self | \$450.58 | \$428.15 | \$22.44 (19.64, 25.23) |
| Office-Based Visits Expenditures | \$518.88 | \$491.62 | \$27.26 (23.91, 30.60) |
| Dental Visit Expenditures | \$198.92 | \$187.03 | \$11.90 (11.30, 12.50) |
| Prescription Expenditures | \$401.52 | \$428.88 | -\$27.36 (-32.05, -22.67) |
| N | 34,126 | | |

| Uninsured Both Years | | | |
|----------------------------------|---------------|---------------|-------------------------|
| | Year 1 | Year 0 | Difference |
| Total Expenditures | \$726.55 | \$702.58 | \$23.97 (6.24, 41.70) |
| Total Expenditures Self | \$383.38 | \$389.32 | \$5.94 (-14.19, 2.93) |
| Office-Based Visits Expenditures | \$166.14 | \$160.43 | \$5.71 (2.23, 9.18) |
| Dental Visit Expenditures | \$72.30 | \$62.50 | \$9.80 (8.75, 10.85) |
| Prescription Expenditures | \$146.63 | \$155.95 | -\$9.32 (-14.54, -4.10) |
| N | 5,930 | | |

is consistent with the lower utilization found in earlier empirical studies (Sudano and Baker 2003; Schoen and DesRoches 2000).

Insured individuals have higher total and out-of-pocket expenditures. This is partially a reflection of their higher incomes (\$34,074 for insured vs. \$20,283 for insurance losers, \$19,142 for insurance gainers, and \$18,088 for uninsured). Additionally, insured individuals are more likely to continue treatments and to seek follow up care (Burstin *et al.* 1998). Finally, the higher total and out-of-pocket expenditures of the insured may also reflect moral hazard. Similar results also hold for the other expenditures examined in this paper. Insured individuals experience higher expenditures on both office-based visits and prescriptions relative to insurance gainers, insurance losers and the uninsured. Insurance gainers show substantial increases in expenditures for office-based visits and prescriptions. Insurance losers

Table 2
Medical Expenditures by Poverty Status (1996 dollars)

| Expenditures | Lost Insurance Year 1 Wealthy | | | Lost Insurance Year 1 Poor | | |
|---------------------|---------------------------------|----------------------|-------------------------|------------------------------|---------|-------------------------|
| | Year 1 | Year 0 | Difference (95% CI) | Year 1 | Year 0 | Difference (95% CI) |
| Total | \$945 ⁿ | \$1,651 ⁿ | -\$706 (-\$806,-\$607) | \$881 | \$1,454 | -\$573 (-\$683,-\$463) |
| Total Self | \$595 | \$422 | \$173 (\$137, \$209) | \$426 | \$287 | \$139 (\$102, \$176) |
| Office-Based Visits | \$251 | \$433 | -\$182 (-\$203, -\$161) | \$215 | \$359 | -\$143 (-\$166, -\$121) |
| Dental Visit | \$96 | \$136 | -\$40 (-\$44, -\$35) | \$43 | \$67 | -\$24 (-\$28, -\$20) |
| Prescription | \$231 ⁿ | \$288 ⁿ | -\$57 (-\$86, -\$27) | \$228 | \$243 | -\$15* (-\$49, 18) |
| N | 615 | | | 675 | | |
| Expenditures | Gained Insurance Year 1 Wealthy | | | Gained Insurance Year 1 Poor | | |
| | Year 1 | Year 0 | Difference | Year 1 | Year 0 | Difference |
| Total | \$1,454 ⁿ | \$744 | \$710 (\$612, \$807) | \$1,362 | \$611 | \$751 (\$657, \$846) |
| Total Self | \$410 | \$452 | -\$42* (-\$74, -\$9) | \$335 | \$337 | -\$2* (-\$27, \$30) |
| Office-Based Visits | \$329 ⁿ | \$201 ⁿ | \$128 (\$111, \$144) | \$331 | \$180 | \$152 (\$134, \$169) |
| Dental Visit | \$122 | \$92 | \$31 (\$25, \$36) | \$62 | \$47 | \$15 (\$11, \$20) |
| Prescription | \$211 | \$138 ⁿ | \$73 (\$48, \$98) | \$261 | \$156 | \$106 (\$79, \$132) |
| N | 718 | | | 691 | | |
| Expenditures | Insured Wealthy | | | Insured Poor | | |
| | Year 1 | Year 0 | Difference | Year 1 | Year 0 | Difference |
| Total | \$1,961 | \$1,835 | \$125 (\$104, \$146) | \$2,438 | \$2,287 | \$151 (\$93, 209) |
| Total Self | \$468 | \$444 | \$24 (\$21, \$28) | \$374 | \$357 | \$17 (\$8, \$25) |
| Office-Based Visits | \$513 | \$486 | \$27 (\$23, \$31) | \$544 | \$517 | \$27 (\$17, \$37) |
| Dental Visit | \$219 | \$205 | \$14 (\$13, \$14) | \$112 | \$104 | \$8 (\$6, \$10) |
| Prescription | \$371 | \$396 | -\$24 (\$-\$30, -\$19) | \$535 | \$580 | -\$45 (-\$62, -\$28) |
| N | 26,210 | | | 7,916 | | |
| Expenditures | Uninsured Wealthy | | | Uninsured Poor | | |
| | Year 1 | Year 0 | Difference | Year 1 | Year 0 | Difference |
| Total Expenditures | \$804 | \$748 | \$56 (\$20, \$91) | \$660 | \$660 | -\$0* (-\$31, \$31) |
| Total Self | \$430 | \$421 | \$9* (-\$7, \$26) | \$343 | \$360 | -\$17* (-\$32, -\$2) |
| Office-Based Visits | \$195 | \$181 | \$13 (\$6, \$21) | \$142 | \$141 | \$1* (-\$5, \$7) |
| Dental Visit | \$100 | \$84 | \$16 (\$14, \$19) | \$48 | \$42 | \$6 (\$4, \$7) |
| Prescription | \$143 ⁿ | \$144 | -\$2* (-\$11, \$8) | \$150 | \$167 | -\$17 (-\$27, -\$6) |
| N | 2,413 | | | 3,517 | | |

ⁿ Difference in corresponding means between wealthy and poor is not significant p=0.01

* Difference between means for year 1 and year 0 is not significant p=0.01

have a correspondingly large reduction in expenditures on office-based visits; however, they do not significantly reduce prescription expenditures.

Note, that although it is statistically significant, the change in total expenditures for the uninsured (\$24) is small. Uninsured individuals often receive assistance with health expenditures. Additional sources may include private and public charity in addition to workers compensation.

Because income varies significantly within each of the four categories of insurance states, it is useful to examine how expenditures vary with income. Table 2 summarizes expenditures based on income for each of the four insurance categories.

Table 3
Health Care Utilization by Insurance Status

| Lost Insurance Year 1 | | | |
|-------------------------|--------|--------|----------------------|
| | Year 1 | Year 0 | Difference (95% CI) |
| Office-Based Visits | 3.18 | 4.27 | -1.09 (-1.20, -0.98) |
| Dental Visit | 0.48 | 0.67 | -0.19 (-0.21, -0.17) |
| Prescriptions filled | 5.47 | 6.45 | -0.99 (-1.23, -0.74) |
| Gained Insurance Year 1 | | | |
| | Year 1 | Year 0 | Difference |
| Office-Based Visits | 3.62 | 2.53 | 1.09 (1.01, 1.17) |
| Dental Visit | 0.65 | 0.44 | 0.22 (0.20, 0.23) |
| Prescriptions filled | 5.49 | 3.96 | 1.54 (1.32, 1.75) |
| Insured Both Years | | | |
| | Year 1 | Year 0 | Difference |
| Office-Based Visits | 5.25 | 5.26 | -0.01 (-0.04, 0.18) |
| Dental Visit | 1.20 | 1.15 | 0.05 (0.04, 0.05) |
| Prescriptions filled | 8.93 | 8.87 | 0.06 (-0.02, 0.14) |
| Uninsured Both Years | | | |
| | Year 1 | Year 0 | Difference |
| Office-Based Visits | 2.26 | 2.26 | 0.00 (-0.04, 0.04) |
| Dental Visit | 0.45 | 0.40 | 0.05 (0.05, 0.06) |
| Prescriptions filled | 3.81 | 3.78 | -0.04 (-0.07, 0.13) |

Respondents are designated as poor if their income level is less than or equal to 200 percent of the poverty level and wealthy if their income is greater than 200 percent of the poverty level. Thirty percent of the overall sample falls into the group designated as poor. Fifty-two percent of insurance losers and 49 percent of insurance gainers are in this group. Only 23 percent of the insured had incomes in the poor category, compared with 59 percent of the uninsured.

Poor insurance losers experience an increase in their out-of-pocket expenditures of 49 percent (\$139) compared with a 41 percent (\$173) increase for wealthy insurance losers. Both poor and wealthy insurance losers experience a significant reduction in total expenditures (39 percent for poor and 43 percent for wealthy insurance losers). On the other hand, as individuals gain insurance, no significant change in out-of-pocket expenditures is evident for either group, even though total expenditures increased by 95 percent for the wealthy and 123 percent for the poor.

Regardless of income and period (insured year or uninsured year), individuals who lose insurance have higher total expenditures than the uninsured and lower total expenditures than the insured. This result also holds for insurance gainers during the period in which they are insured. However, during the uninsured period, both poor and wealthy insurance gainers have total expenditures below the uninsured. This result is consistent with earlier results obtained using the full sample.

Table 3 shows the number of office based visits, dental visits and prescriptions filled by insurance status. The insurance losers and insurance gainers show

Table 4
Health Care Utilization by Insurance Status and Poverty Status

| | Lost Insurance Year 1 Wealthy | | | Lost Insurance Year 1 Poor | | |
|----------------------|---------------------------------|--------|---------------------|------------------------------|-------------------|---------------------|
| | Year 1 | Year 0 | Difference (95% CI) | Year 1 | Year 0 | Difference (95% CI) |
| Office-Based Visits | 3.12 | 4.24 | -1.12 (-1.31,-0.92) | 3.24 ⁿ | 4.30 ⁿ | -1.06 (-1.30,-0.82) |
| Dental Visit | 0.65 | 0.86 | -0.22 (-0.24,-0.19) | 0.32 | 0.46 | -0.14 (-0.16,-0.12) |
| Prescriptions filled | 5.33 | 6.57 | -1.24 (-1.77,-0.71) | 5.60 ⁿ | 6.32 ⁿ | -0.72 (-1.35,0.09)* |
| N | 615 | | | 675 | | |
| | Gained Insurance Year 1 Wealthy | | | Gained Insurance Year 1 Poor | | |
| | Year 1 | Year 0 | Difference | Year 1 | Year 0 | Difference |
| Office-Based Visits | 3.43 | 2.52 | 0.91 (0.73,1.09) | 3.86 | 2.55 ⁿ | 1.31 (1.10,1.52) |
| Dental Visit | 0.75 | 0.52 | 0.23 (0.20,0.26) | 0.54 | 0.36 | 0.18 (0.15,0.20) |
| Prescriptions filled | 4.99 | 3.77 | 1.22 (0.74,1.70) | 6.11 | 4.14 ⁿ | 1.98 (1.45,2.50) |
| N | 718 | | | 691 | | |
| | Insured Wealthy | | | Insured Poor | | |
| | Year 1 | Year 0 | Difference | Year 1 | Year 0 | Difference |
| Office-Based Visits | 5.08 | 5.09 | -0.02 (-0.05,0.02)* | 6.01 | 6.04 | -0.03 (-0.14,0.07)* |
| Dental Visit | 1.30 | 1.24 | 0.05 (0.05,0.06) | 0.79 | 0.75 | 0.04 (0.03,0.05) |
| Prescriptions filled | 8.21 | 8.15 | 0.06 (-0.04,0.16)* | 12.07 | 12.15 | -0.08 (-0.38,0.22)* |
| N | 26,210 | | | 7,916 | | |
| | Uninsured Wealthy | | | Uninsured Poor | | |
| | Year 1 | Year 0 | Difference | Year 1 | Year 0 | Difference |
| Office-Based Visits | 2.37 | 2.29 | 0.08 (-0.01,0.16)* | 2.16 | 2.23 ⁿ | -0.07 (-0.15,0.01)* |
| Dental Visit | 0.58 | 0.50 | 0.08 (0.07,0.09) | 0.34 | 0.31 | 0.03 (0.03,0.04) |
| Prescriptions filled | 3.63 | 3.45 | 0.19 (0.00,0.37)* | 3.96 ⁿ | 4.08 | -0.12 (-0.33,0.09)* |
| N | 2,413 | | | 3,517 | | |

ⁿ Difference in corresponding means between wealthy and poor is not significant p=0.01

* Difference between means for year 1 and year 0 is not significant p=0.01

statistically significant changes in office-based visits and prescriptions filled, however the insured and uninsured have no significant change in either variable. Insurance losers reduce their office-based visits by 1.09 per year which is equal in magnitude to the increase in office-based visits for the gainers. Insurance losers filled one less prescription per year while insurance gainers increased prescriptions by 1.5. Similarly, insurance gainers and insurance losers have almost equal but opposite changes in dental visits (0.2 visits annually).

Table 4 shows the use of services by insurance and poverty status. Office-based visits for individuals who lost insurance decreased approximately one visit per year for both the wealthy and poor, representing significant declines for each income level. Office-based visits for individuals who gained insurance increased significantly for both income levels while changes in office-based visits for individuals in the insured and uninsured categories were insignificant, regardless of income level.

Prescriptions filled for individuals who lost insurance declined for both income levels; however, the only significant change was for wealthy individuals. This may be because wealthy individuals are more likely to be healthier and obtain

prescriptions for less serious health problems. Prescriptions filled for individuals who gained insurance increased significantly in both wealthy and poor income groups while individuals in the insured and uninsured groups experienced no significant change irrespective of income.

Insurance gainers experienced significant increases in the use of all three health services, regardless of poverty status. During the time when they were uninsured, results indicate no significant difference in the number of office-based visits and prescriptions filled by wealthy and poor individuals.

In most cases, poor individuals had more office-based visits and more prescriptions filled than their wealthier counterparts (although the difference is not significant in some cases as noted earlier in Table 4). These differences are particularly large for the insured. The poor insured individuals have at least one more office-based visit per year and four more prescriptions filled. This likely reflects poor health status for this group. More than 22 percent of poor individuals classify their health status as poor, while only eight percent of wealthy individuals report poor health.

Conclusions

Two central issues in the debate over health care policy include the extent to which insurance coverage increases health services utilization and how health outcomes are affected in this process. Many studies have found that having health insurance increases the use of health services. However, insurance coverage is not continuous for many individuals. If consumption patterns for health care services are different for the intermittently insured/uninsured, then ignoring this sector of the population will understate problems arising from low health services utilization due to lack of insurance. If greater health services utilization results in better health outcomes, then policies designed to address health insurance coverage should take into account not only those individuals that are uninsured but also those that transition in and out of insured states.

The results of our research indicate that when individuals have no insurance, they have lower consumption of health care services relative to insured individuals. Individuals who experience a change in insurance status have significant changes in expenditures and use of health services. For example, we found that individuals who gained insurance coverage increased total expenditures by \$737 and increased office visits by 1.09 visits per year. Individuals who lost insurance coverage reduced total expenditures by \$646 and experienced a corresponding reduction in annual office visits of 1.09.

Even though the changes in expenditures of individuals as they transition in or out of insured states are significant, their expenditures lie between those who are uninsured and insured during both periods. This implies a gradual rather than a sudden change in the consumption of health services with a lag greater than one year to fully adjust to the new insurance state. This is consistent with Sudano and Baker (2003) who find that individuals who gain insurance do not utilize preventive care services as fully as those that were already insured. Although they could not

accurately estimate the length of time required for those gaining insurance to catch up to the insured, they found that a period greater than two years was suggested by their data.

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