Mind the Gap: Does Discontinuity in Health Insurance Status Cause Increased Usage of Emergency Department and Physician Office Visits?

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Abstract

Background: The health insurance market will undergo significant changes as the Affordable Care Act extends health coverage to millions of Americans who were previously uninsured. Yet, little is known how changes to insurance coverage affect usage of medical services.

Objectives: Investigate the statistical associations between changes in insurance status (becoming insured or uninsured) in both emergency department (ED) use and physician office visits and compare differences in the impact of the insurance status change on ED compared to physician office visits.

Sample: This study utilizes survey data from 262 775 respondents to the the National Health Interview Survey (NHIS) from 2006 to 2009.

Method: Insurance status was categorized into four groups: continuously insured, newly insured, newly uninsured and continuously uninsured. This status was compared to ED and physician office visits rates.

Results: Newly insured patients use more ED visits than the other groups (0.53 visits a year vs 0.52 for newly uninsured, 0.39 for continuously insured and 0.34 for continuously uninsured). Continuously insured people use more physician visits than the other groups (4.5 visits per year vs 4.4 for newly insured, 3.8 for newly uninsured and 2.6 for continuously uninsured). Continuously uninsured individuals do not drive ED use and seek less care than people with other insurance statuses, both in the ED and physician offices (2.6 visits per year vs 3.9 for newly uninsured, 4.4 for newly insured and 4.5 for continuously insured). Regardless of insurance status, people seek medical care in the physicians office more than the ED. A gain in insurance status is associated with an increase in seeking medical care in both EDs and physician offices.

Keywords: Health Insurance, Emergency Department, Physician Use

1. Introduction

Although many believe that the uninsured drive emergency department (ED) usage in the United States, studies have shown that in fact, the uninsured population forgoes care and whereas the newly eligible population drives care to the ED. (Weber:2008, Cheung:2011) Little is known about how ED usage compares with other physician office visits for the uninsured population, in comparison to the newly insured and those that have continuously had coverage.

The 2010 passage of the Patient Protection Affordable Care Act (P.L. 111-148) and the changing economic climate means that millions of Americans are seeing their health insurance status change. Economists have suggested that increased insurance causes a moral hazard for individuals to seek care when that care had previously been avoided due to lack of insurance. (Pauly: 1968)

Increased unemployment due to the 2008 recession and cuts in public insurance programs increased the number of uninsured individuals. From 2006-2009 these events caused people to cycle between being covered by insurance and being uninsured. Some studies have shown that uninsured people are most likely to seek care in the ED over physician offices because of limited access to seeking care in other care settings. (Cheung:2008, Ludwick:2009) A recent randomized controlled trial in Oregon showed that newly insured Medicaid beneficiaries were more likely to use the ED when first gaining coverage.

A previous study (Ginde: 2012) examined the relationship between Insurance status change and ED usage utilizing the National Health Interview Study (NHIS) from 2004 to 2009. The authors concluded that recent changes in health insurance status for newly insured adults and for newly uninsured adults was associated with greater ED use. The study described the proportion of people in each category using the ED but did not show an association.

Our study proposes to use another statistical approach to further examine these findings and investigate the association between health care utilization (including both emergency department use and physician visits) and change in insurance coverage status.

2. Methods

The National Center for Health Statistics within the Centers for Disease Control and Prevention (CDC) annually conducts the National Health Interview Survey

(NHIS). This is a cross sectional interview survey of families within the US population. We used publicly available NHIS data from 2006 to 2009. For more on NHIS methodology see: $http://www.cdc.gov/nchs/nhis/questdatarelated1997forward.htm$

From variables in the NHIS survey, we created four categories of individual coverage: (1) newly insured: if the survey respondent reported a lack of health insurance at some point within the last 12 months, but were currently insured; (2) continuously insured: if the survey respondent reported no lack of health insurance at some point within the last 12 months, and were currently insured; (3) newly uninsured: if the survey respondent reported a lack of health insurance at some point within the last 12 months, but were currently uninsured; (4) continuously uninsured, if they reported never having health insurance in the past 12 months and were currently uninsured. The relationship between these groups of individuals are shown in a descriptive analysis of these samples in Table 1.

Individuals with different health insurance types were categorized as having private insurance (as well as those with other types of insurance including Medicare), Medicaid (as well as those with Medicare and Medicaid), or Medicare only, other (if reporting another type of insurance including military coverage), and uninsured.

The relationship between insurance status and usage rates in ED and physician office visits was investigated using multivariable Poisson regression with factor analysis. Two-tailed $p< 0.05$ was considered statistically significant. Statistical analysis utilized R.

3. Results

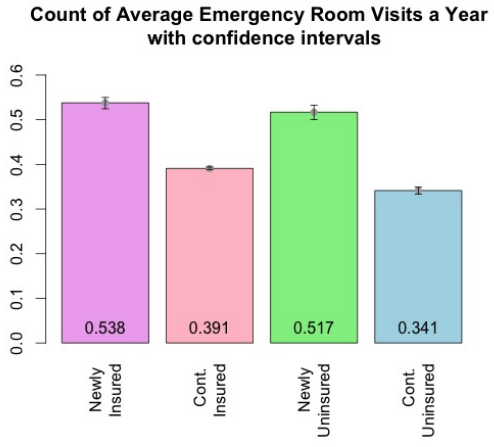

Figure 1: ED usage by insurance status.

People who are newly insured visit the ED most often followed by the newly uninsured (0.54 visits per a year compared to 0.52). People continuously without insurance visit the ED the least often (0.34 visits per a year). See Figure 1.

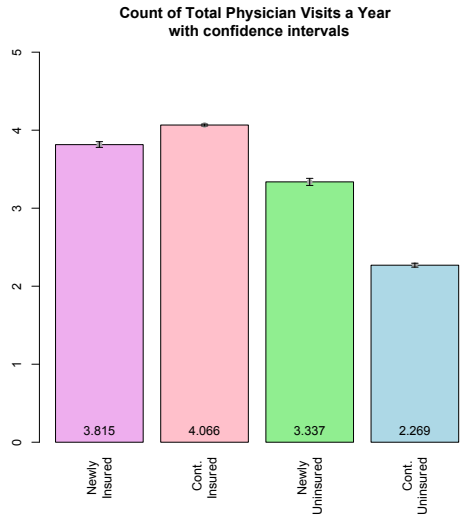

Figure 2: Physician office usage by insurance status.

Additional findings include continuously uninsured people are least likely to use physician offices (2.3 visits per year vs 3.4 for the newly uninsured, 3.8 for the newly insured and 4.1 for the continuously insured). The continuously insured are the group that seeks the most care in the physician office. Newly insured seek more care in the physician office than newly uninsured. See Figure 2.

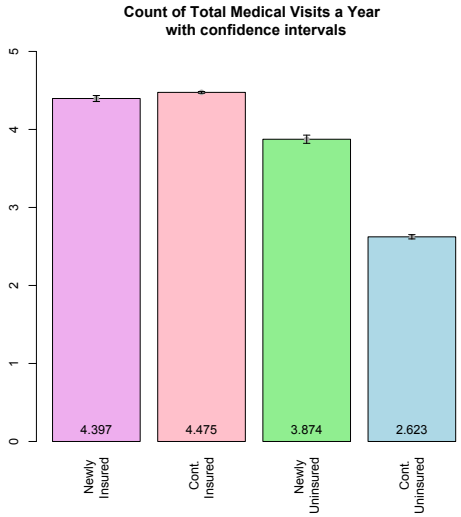

Figure 3: Total care by insurance status.

Combined with ED usage and physician office usage, we found that people who are continuously insured seek the most care (4.5 visits per year) followed closely behind by people who are newly insured (4.4 visits per year). Newly uninsured seek more care than continuously uninsured (3.9 visits per year and 2.6 for the continuously uninsured). See Figure 3.

4. Discussion

People primarily use physician offices for medical services, regardless of insurance status and people with insurance status changes use the ED more than those without insurance status changes. The continuously insured use the most total medical services. This suggests that efforts to increase continuity in health insurance status may reduce ED use, if accompanied by increased access to physician office visits.

One weakness in using this data set is that it does not provide information regarding when over the last 12 months people received their care. The individual's care may have triggered the insurance status change. For example, an uninsured person may seek care in any setting and the provider may find that they are eligible for Medicaid and enroll them, now categorizing them as newly insured.

Several types of research might be warranted given these findings. First, behaviorally oriented investigation might seek to uncover the mechanism of the findings. Second, these findings need replication both under the Affordable Care Act and in

new delivery system models of care delivery (minute clinics, Accountable Care Organization models, etc.). It would be useful to explore whether ED and physician office use varies geographically in order to target increased access to physician office services to reduce unnecessary use of the ED.

5. Conclusion

Uninsured adults are often cited for high ED usage, but this analysis finds that uninsured adults have ED use consistent with insured individuals. Continuously uninsured individuals use the ED less often than continuously insured or newly insured or uninsured. People with disruptions in insurance use (becoming newly insured or uninsured) have the highest ED usage, regardless of insurance type or health status. Continuously insured people use the physician office the most. These data suggest that policy directed towards insurance stability and improved physician office access may reduce unnecessary ED usage which may lower costs.

Appendix A. Bibliography

1. Weber EJ, Showstack JA, Hunt KA, et al. Are the uninsured responsible for the increase in emergency department visits in the United States? Ann Emerg Med. 2008;52(2):108-115

2. Cheung PT, Wiler JL, Ginde AA. Changes in barriers to primary care and emergency department utilization. Arch Intern Med. 2011;171(15):1397-1399

3. Pauly MV. The economics of moral hazard. Am Econ Rev. 1968;58(3, pt 1):531-537

4. Ludwick A, Fu R, Warden C, Lowe RA. Distances to emergency department and to primary care provider's office affect emergency department use in children. Acad Emerg Med. 2009;16(5):411-417

5. Ginde AA, MD, MPH, Lowe RA, MD, MPH, Wiler JL, MD, MBA. Health Insurance Status Change and Emergency Department Use Among US Adults. Arch Intern Med. 2012;172(8):642-647.

Appendix B. Supporting Tables

	Continuously Insured	Continuously Uninsured	Newly Insured	Newly Uninsured
Age 18-44	0.336	0.648	0.555	0.612
Age 45-64	0.246	0.221	0.155	0.159
Age 65+	0.137	0.008	0.019	0.003
Female Sex	0.520	0.423	0.538	0.517
Hispanic Origin	0.191	0.531	0.250	0.336
white	0.747	0.784	0.732	0.727
black	0.152	0.125	0.170	0.186
asian	0.072	0.055	0.055	0.051
Region-Northeast	0.178	0.106	0.159	0.119
Midwest	0.216	0.144	0.216	0.187
South	0.345	0.424	0.361	0.361
West	0.261	0.327	0.265	0.276
Poverty Ratio <1	0.127	0.253	0.208	0.205
1-1.99	0.139	0.282	0.250	0.266
2-3.9	0.211	0.185	0.252	0.239
+4	0.256	0.055	0.135	0.104
Unknown	0.268	0.226	0.154	0.186
Education < high school	0.113	0.334	0.143	0.186
high school graduate	0.196	0.263	0.193	0.238
Some College	0.314	0.266	0.389	0.382
College Grad+	0.359	0.125	0.271	0.188
Health: V Good/Excellent	0.687	0.587	0.656	0.634
Good	0.232	0.316	0.251	0.273
Fair/Poor	0.081	0.097	0.092	0.093
BMI < 20	0.045	0.040	0.049	0.041
20-24.9	0.234	0.238	0.252	0.235
25-29.9	0.255	0.267	0.248	0.252
>30	0.199	0.184	0.234	0.224
Smoking- Never	0.479	0.476	0.449	0.441
Current	0.138	0.198	0.235	0.237
Former	0.151	0.097	0.130	0.109
Hypertension	0.205	0.129	0.175	0.142
Diabetes	0.063	0.043	0.048	0.047
Heart Disease	0.030	0.013	0.014	0.015
Stroke	0.021	0.010	0.013	0.012
Asthma	0.095	0.065	0.130	0.104
Cancer	0.054	0.020	0.037	0.028

Table B.1: Descriptive Analysis of Surveyed Population

Table B.2: ED Usage by Insurance Type and Category. Poisson regression of the number of emergency department visits on insurance type and insurance status (newly insured, continuously insured, newly uninsured, continuously uninsured). The category used as reference category for the factor variable insurance status is newly insured.

	Dependent variable:
	visits
Private Insurance	-0.277^{***}
	(0.010)
Medicaid	0.748^{***}
	(0.010)
medicare Only	0.359^{***}
	(0.015)
other Kind	0.303^{***}
	(0.014)
Factor: Continuously Insured	-0.319^{***}
	(0.012)
Factor: Newly Uninsured	-0.041^{**}
	(0.020)
Factor: Continuously Uninsured	-0.455^{***}
	(0.018)
Constant	-0.587^{***}
	(0.015)
Observations	262,775
Log Likelihood	−269,831.900
Akaike Inf. Crit.	539,679.700
Note:	*p<0.1; **p<0.05; ***p<0.01

Table B.3: Physician Office visits by Insurance Type and Category of Coverage. Poisson regression of the number of physician visits on Insurance type and Insurance status (newly insured, continuously insured, newly uninsured, continuously uninsured). The category used as reference category for the factor variable insurance status is newly insured.

	Dependent variable:
	phyvis
Private Insurance	0.042^{***}
	(0.006)
Medicaid	0.235^{***}
	(0.006)
medicare Only	0.362^{***}
	(0.007)
other Kind	0.059^{***}
	(0.007)
Factor: Continuously Insured	0.064^{***}
	(0.005)
Factor: Newly Uninsured	-0.133^{***}
	(0.009)
Factor: Continuously Uninsured	-0.520^{***}
	(0.008)
Constant	1.262^{***}
	(0.007)
Observations	262,775
Log Likelihood	−928,813.900
Akaike Inf. Crit.	1,857,644.000
Note:	*p<0.1; **p<0.05; ***p<0.01

Table B.4: ED Use by Insurance Status

	Dependent variable:
	visits
Newly Uninsured	0.241^{***}
	(0.014)
Continuously Uninsured	-0.173^{***}
	(0.010)
Newly Insured	0.440^{***}
	(0.012)
continuously Insured	
Constant	-0.869^{***}
	(0.003)
Observations	262,775
Log Likelihood	−278,540.700
Akaike Inf. Crit.	557,089.300
Note:	*p<0.1; **p<0.05; ***p<0.01

Table B.5: Physician Office Visit by Insurance Status

	Dependent variable:
	phyvis
newly Uninsured	-0.295^{***}
	(0.006)
continuously Uninsured	-0.682^{***}
	(0.004)
newly Insured	-0.063^{***}
	(0.005)
continuously Insured	
Constant	1.424^{***}
	(0.001)
Observations	262,775
Log Likelihood	−933,913.300
Akaike Inf. Crit.	1,867,835.000
Note:	*p<0.1; **p<0.05; ***p<0.01

Table B.6: ED Use on length of time without insurance. Regression of ED visits on duration without insurance using the factor variable hilast and the shorter period without insurance as reference category.

	Dependent variable:
	visits
hilast)2	-0.080^{***}
	(0.028)
hilast)3	-0.240^{***}
	(0.024)
hilast)4	-0.245^{***}
	(0.022)
hilast)5	-0.846^{***}
	(0.025)
hilast)999	-0.246^{***}
	(0.018)
Constant	-0.596^{***}
	(0.018)
Observations	262,775
Log Likelihood	−278,608.900
Akaike Inf. Crit.	557,229.900
Note:	*p<0.1; **p<0.05; ***p<0.01

Table B.7: Physician Office Visits by Duration without Insurance

	Dependent variable:
	phyvis
hilast)2	-0.225^{***}
	(0.012)
hilast)3	-0.337^{***}
	(0.010)
hilast)4	-0.289^{***}
	(0.009)
hilast)5	-0.779^{***}
	(0.010)
hilast)999	0.205^{***}
	(0.007)
Constant	1.216^{***}
	(0.007)
Observations	262,775
Log Likelihood	−931,971.000
Akaike Inf. Crit.	1,863,954.000
Note:	*p<0.1; **p<0.05; ***p<0.01