

Policy Forum

Understanding the Effects of Medicare Prescription Drug Insurance

By Robert Kaestner and Kelsey McCoy

The Medicare Modernization Act became law in 2003, creating a prescription drug benefit for the elderly called Medicare Part D. At the time of its passage, approximately one-third of seniors did not have prescription drug coverage, leaving them prone to financial and medical hardships. About half of those without prescription drug insurance incurred out-of-pocket spending of \$1,200 or more per year. Uninsured patients were also more likely to forego buying essential medications.

By creating Medicare Part D, policymakers intended to increase access to prescription drugs among those who did not have coverage, which would in turn provide financial and, presumably, health benefits. However, this improvement would come with significant costs. Medicare Part D was created to serve all seniors, whether or not they already had insurance, or would likely have insurance in the absence of Part D. Thus, for every newly insured person, Medicare Part D provided subsidized coverage for two additional persons who were already insured.

The average subsidy in Medicare Part D is 75 percent, and low-income seniors pay virtually nothing for the insurance. Given the size and extent of the subsidy, Medicare Part D is a very expensive program. In 2009, Medicare Part D cost approximately \$50 billion, and the U.S. Department of the Treasury indicated that the program has a projected \$7.2 trillion liability.

The size and potential significance of Medicare Part D have generated interest in its effects. Did Medicare Part D increase the number of annual prescriptions for those who previously did not have coverage? If so, did an increase in annual prescriptions result in a decrease in use of medical services that often substitute for prescription drugs? And, most importantly, did Medicare Part D improve the health of American elderly?

Past research has provided some insight into the effects of prescription drug insurance on these outcomes. Most researchers agree that prescription drug insurance is associated with an increase in use of prescription drugs. However, studies have provided a wide range of estimates of the magnitude of this increase. Significantly less research has studied whether prescription drug use is associated with decreased use of other health care services and/or the ultimate goal, improved health.

In *Medicare Part D and its Effect on the Use of Prescription Drugs, Use of Other Health Care Services and Health of the Elderly* (2010), Robert Kaestner and Nasreen Khan found that gaining prescription drug insurance through Medicare Part D was associated with a 70 percent increase in the number of annual prescriptions filled. However, the data showed that obtaining prescription drug insurance was not significantly related to use of other health care services (either



Volume 23, Issue 1
October 2010

About the Authors

Robert Kaestner is a Professor with appointments in the University of Illinois Institute of Government and Public Affairs and the University of Illinois at Chicago Department of Economics.

Kelsey McCoy is Communications Assistant at the University of Illinois Institute of Government and Public Affairs.

Policy Forum is an occasional publication of the Institute of Government and Public Affairs at the University of Illinois. It examines crucial issues facing the state of Illinois.

outpatient or inpatient) or to several measures of health.

Given the heightened importance of prescription drugs for those with chronic illness, Kaestner and Khan separated out Medicare enrollees in poor health, for whom gaining prescription drug insurance was associated with a 60 percent increase in the number of annual prescriptions. However, for this group too, the study found relatively small and insignificant associations between prescription drug insurance and outpatient or inpatient services and overall health.

The Study in Detail

Data

The Medicare Current Beneficiary Survey (MCBS), conducted by the Centers for Medicare and Medicaid Services (CMS), constitutes a nationally representative sample of Medicare enrollees from 2000 to 2007. Individuals are selected by stratified random sampling from an enrollment list of persons entitled to Medicare, to ensure that the sample is representative of all geographical areas and age groups. Each year, a supplemental sample is added to account for attrition, maintain an average sample size of 12,000 individuals, and to ensure that the sample remains representative of the current Medicare population.

Each sampled individual is interviewed face-to-face three times per year for four years. Because few individuals spanned the period pre- and post-Medicare Part D, Kaestner and Kahn ignored the longitudinal aspect of the MCBS, instead treating each year's data from 2000 to 2007 as an independent cross-sectional sample. Notably, post 2005, almost all persons in the sample had prescription drug insurance as part of Medicare Part D.

A particular strength of the MCBS is the validity checks performed by CMS: respondents are asked to show receipts, bills, drug vials, and any related paperwork to document prescription drug use and drug insurance.

Kaestner and Khan examined data for those respondents who were 65 to 85 years of age, non-institutionalized, and had a complete year of information. The researchers omitted the year 2005 because they were unable to identify seniors who

received a prescription drug discount card, which was distributed to bridge the gap in prescription drug insurance coverage prior to full implementation of Medicare Part D.

The researchers also omitted people who were ever on Medicaid or had end-stage renal disease, as these groups are quite dissimilar to other respondents. They also examined a sub-sample of relatively sicker individuals, referred to here as the "poor-health" sample. These are persons who reported three or more chronic illnesses (e.g., hypertension, asthma, arthritis).

MCBS respondents report up to five sources of non-Medicare insurance and prescription drug coverage. Each respondent reported the start and stop dates of the insurance, and whether this source of insurance provided prescription drug coverage. Based on this information, the researchers assigned each respondent to either an "insured" or "uninsured" category for each month in the survey. If they had prescription drug insurance for at least six months in a year, the researchers classified them as insured.

Prescription drug use was measured by the self-reported, annual total number of prescription drugs dispensed. Kaestner and Khan measured outpatient visits by the annual total number of outpatient visits. Use of inpatient services was measured by whether or not the respondent had been hospitalized in the past year.

To measure participants' overall health, the researchers used self-reported measures such as general health status (excellent to poor) and also looked at how easily individuals engaged in activities of daily living (eating, dressing, etc.), and instrumental activities of daily living (making meals, going shopping, etc.).

The researchers also had access to information about demographic and socioeconomic characteristics including age, sex, race, education, urban residence, census region of residence, income, marital status, and smoking status.

Methods

The authors estimated regression models to measure the association between prescription drug insurance and the outcomes described above. The key variation in prescription drug insurance used to obtain these associations was the change in insurance brought about by Medicare Part D.

Prior to Part D, approximately one-third of

seniors were uninsured. Subsequent to Part D, only 10 percent of seniors lacked insurance. Due to the cross-sectional nature of the data, the key empirical problem was identifying persons after 2005 who would likely have been uninsured had Medicare Part D not been created. To identify such respondents, the researchers used information about the relationship between prescription drug insurance and characteristics such as age, race, gender, region of residence and education in the period prior to Part D to identify those more or less likely to be uninsured in the absence of Part D. Below, the labels “least likely...”, “likely...”, “more likely...” and “most likely to be uninsured” refer to the quartiles of the distribution of the estimated probability of being without prescription drug insurance.

For the entire sample, the proportion of uninsured declined by approximately 20 percentage points between 2004 and 2006. However, for those most likely to be uninsured, the decline in the proportion uninsured was 33 percentage points. For those least likely to be uninsured, the decline in proportion uninsured was only 10 percentage points.

Results

Use of Prescription Drugs

Table 1 (below) presents data on prescription drug use by year for distinct groups based on their estimated probability of being without prescription drug insurance in the absence of Medicare Part D.

Overall, prescription use rose slightly in the years before Medicare Part D, then increased significantly in 2006, when the program was fully implemented. The last column in Table 1 compares the change in prescription drug use from 2004 to 2006 for those in the 2nd, 3rd, and 4th quartiles to the changes for those in the 1st quartile on probability of being uninsured (a “difference of differences” estimate), and shows that those most likely to be uninsured experienced a significantly larger increase than did all of the others, even though they also started with the highest 2004 level of prescriptions. By contrast, the 2004-to-2006 changes for 2nd and 3rd quartile groups are statistically indistinguishable from the change for the 1st quartile group.

Results from a more complicated statistical model indicated that the increase in prescription coverage after Medicare Part D was correlated significantly with consumption of prescription drugs. Across the sample, obtaining prescription drug insurance through Medicare Part D was associated with a 70 percent increase in the number of annual prescriptions consumed. For the poor health sample, the number of annual prescriptions increased by 60 percent after enrolling in Medicare Part D. These findings support prior research.

Use of Other Health Care Services

A prominent hypothesis related to prescription drug insurance is that it results in greater use of prescription drugs, which affects the use of other

Table 1

Number of Annual Prescriptions of Medicare Enrollees By Likelihood of Being Uninsured Before and After Creation of Medicare Part D

	2000	2001	2002	2003	2004	2006	2006-2004	Dif in Dif
Full Sample	24.32	25.02	25.76	26.57	26.59	32.00	5.41	24.32
Least Likely to be Uninsured	21.90	22.88	24.04	24.09	24.38	29.31	4.93	---
Likely to be Uninsured	24.08	25.29	25.10	26.42	25.90	31.46	5.56	0.63 (1.36)
More Likely to be Uninsured	24.89	25.26	26.70	27.70	26.66	30.85	4.19	-0.74 (1.32)
Most Likely to be Uninsured	26.05	26.39	26.07	28.09	29.64	37.08	7.44	2.51 (1.47)

(standard errors of estimated differences in parentheses)

Table 2
Probability of Hospitalization and Number of Annual Outpatient Visits of Medicare Enrollees
By Likelihood of Being Uninsured Prior to Medicare Part D

	2000	2001	2002	2003	2004	2006	2006-2004	Dif.- in-Dif
Hospitalization								
Full Sample	0.18	0.18	0.18	0.18	0.16	0.16	0.00	
Least Likely to be Uninsured	0.16	0.16	0.14	0.15	0.14	0.13	-0.01	---
Likely to be Uninsured	0.18	0.19	0.18	0.18	0.16	0.18	0.02	0.02 (0.02)
More Likely to be Uninsured	0.18	0.18	0.21	0.18	0.16	0.16	0.00	0.00 (0.02)
Most Likely to be Uninsured	0.18	0.20	0.19	0.19	0.19	0.18	-0.01	-0.01 (0.02)
Annual Outpatient Visits								
Full Sample	3.53	3.75	3.87	4.00	3.93	4.09	0.16	
Least Likely to be Uninsured	2.91	3.22	3.46	3.52	3.47	3.66	0.19	---
Likely to be Uninsured	3.57	3.72	3.53	3.82	3.85	4.09	0.24	0.05 (0.43)
More Likely to be Uninsured	3.42	3.77	4.17	4.24	4.10	4.14	0.04	-0.14 (0.43)
Most Likely to be Uninsured	4.13	4.23	4.30	4.40	4.34	4.53	0.19	0.00 (0.44)

services (for example, less use of inpatient services)¹. However, this study found that a significant increase in prescription drug use did not correlate with a decrease in use of other health care services.

For the full sample, rates of hospitalization and outpatient care were similar before and after the establishment of Medicare Part D. The study also observed only modest changes over time for the poor-health sample.

Table 2 presents descriptive information. In the case of hospitalization, the figures suggest little

¹ See: Chandra, Amitabh, Jonathan Gruber, and Robin McKnight. 2007. "Patient Cost-Sharing, Hospitalization Offsets, and the Design of Optimal Health Insurance for the Elderly." National Bureau of Economic Research working Paper 12972; and, Zhang, Yuting, Julie Marie Donohue, Joseph P. Newhouse, and Judith R. Lave. 2009. "The Effects of the Coverage Gap on Drug Spending: A Closer Look at Medicare Part D." *Health Affairs* 28(2): w317-25.

change, and difference-in-difference estimates are all close to zero. For outpatient visits, there is a slight increase in the number of visits over time and those more likely to be uninsured report more visits than those less likely to be uninsured (in every year). However, the change in outpatient visits between 2004 and 2006 is similar to the change in visits between earlier years. Difference-in-difference estimates are small and not statistically significant.

Overall Health

Arguably, the most important goal of subsidizing prescription drug insurance is to provide the financial ability to purchase prescription drugs that slow the deterioration of the health of elderly persons. There are few studies of this issue. Kaestner and Khan examined the association between prescription drug insurance and several measures of self-reported health,

but did not find a significant association between gaining access to Medicare Part D and overall health.

Table 3 presents descriptive information by year and quartile of the probability of being uninsured. Overall, there seems to be a slight improvement in functional status and general health over the 2000 to 2004 period. There is also evidence that those more likely to be uninsured prior to Part D were in worse health than those less likely to be uninsured (in each year).

Changes in functional status and general health between 2004 and 2006 or between 2004 and 2007 are small—always less than 10 percent of a standard deviation (approximately 1.1) and not very different from year-to-year changes in earlier periods. Yet again, more sophisticated analyses provide very similar results.

Table 3
Number of Instrumental Activities of Daily Living (IADLs) and Activities of Daily Living (ADLs) of Medicare Enrollees By Likelihood of Being Uninsured Prior to Medicare Part D

ADLs	2000	2001	2002	2003	2004	2006	2007	2006-2004	Dif.-in-Dif.	2007-2004	Dif.-in-Dif.
Full Sample	0.47	0.46	0.46	0.45	0.42	0.43	0.42	0.01		0.00	
Least Likely to be Uninsured	0.34	0.37	0.37	0.38	0.33	0.38	0.31	0.05	---	-0.02	---
Likely to be Uninsured	0.43	0.44	0.44	0.43	0.44	0.44	0.38	0.00	-0.04 (0.05)	-0.06	-0.05 (0.04)
More Likely to be Uninsured	0.52	0.47	0.51	0.46	0.44	0.44	0.46	0.00	-0.05 (0.05)	0.02	0.03 (0.05)
Most Likely to be Uninsured	0.56	0.54	0.52	0.52	0.48	0.46	0.54	-0.02	-0.06 (0.05)	0.06	0.07 (0.05)
IADLs											
Full Sample	0.60	0.60	0.62	0.57	0.55	0.55	0.57	0.00		0.02	
Least Likely to be Uninsured	0.41	0.44	0.47	0.44	0.41	0.45	0.43	0.04	---	0.02	---
Likely to be Uninsured	0.55	0.58	0.60	0.54	0.58	0.55	0.53	-0.03	-0.06 (0.06)	-0.05	-0.06 (0.05)
More Likely to be Uninsured	0.64	0.61	0.68	0.60	0.63	0.56	0.61	-0.07	-0.10 (0.06)	-0.02	-0.03 (0.06)
Most Likely to be Uninsured	0.78	0.75	0.72	0.67	0.60	0.66	0.71	0.06	0.02 (0.06)	0.11	0.08 (0.06)
General Health Status											
Full Sample	2.59	2.57	2.56	2.54	2.51	2.50	2.54	-0.01		0.03	
Least Likely to be Uninsured	2.39	2.38	2.40	2.40	2.40	2.39	2.36	-0.01	---	-0.04	---
Likely to be Uninsured	2.54	2.51	2.47	2.46	2.47	2.46	2.48	-0.01	0.01 (0.04)	0.01	0.05 (0.05)
More Likely to be Uninsured	2.58	2.62	2.60	2.57	2.53	2.52	2.57	-0.01	-0.01 (0.05)	0.04	0.08 (0.05)
Most Likely to be Uninsured	2.81	2.76	2.76	2.73	2.68	2.65	2.78	-0.03	-0.02 (0.06)	0.10	0.13 (0.05)

Net Benefits?

One of the strongest cases for implementing Medicare Part D was the possibility that financial and health benefits stemming from a decrease in use of other medical services would follow from gaining prescription drug coverage. The Kaestner and Khan study compared the change in spending on prescription drugs implied by their estimates to estimates of spending on other health care services.

The Centers for Medicare and Medicaid Services (CMS) reported that elderly patients spent, on average, \$1,600 per person on prescription drugs in 2004. The researchers estimated that spending on prescription drugs increased by approximately \$670 per person, per year as a result of gaining prescription drug coverage through Medicare Part D.

Data from CMS also indicated that average spending on hospital and physician services was \$8,400 per person in 2004. If we assume that those without prescription drug insurance spent \$8,400 per year, and that Medicare Part D reduced spending on these services by 20 percent (which is the largest potential improvement that implied by the study's estimates) then spending on these services would decrease by approximately \$1,200. If we assume only a 10 percent improvement instead of 20 percent, then spending on these services would decrease by approximately \$600.

In sum, these estimates suggest that the increase in prescription drug spending as a result of Medicare Part D is likely to have caused a net increase in total spending on health care.

Conclusions

It is not surprising to find that prescription drug insurance is associated with an increase in prescription drug use, although the magnitude of the increase may be somewhat surprising. Arguably the more interesting questions are whether this relatively large increase in prescription drug use associated with

gaining prescription drug insurance was associated with changes in the use of other health care services and changes in health.

Kaestner and Khan found little evidence that prescription drug insurance was strongly associated with outpatient services, hospitalization, functional status and general health. Estimates of associations between prescription drug insurance and these outcomes were usually small—10 to 15 percent of the mean or of a standard deviation—and not statistically significant.

In addition, in most cases, estimates of the effect of prescription drug insurance were not consistent with a decrease in use of inpatient and outpatient services, or of an improvement in health.

The findings from this study raise serious doubts about the value of the large increase in prescription drug use that was associated with Medicare Part D. While researchers cannot rule out small beneficial health effects, the absence of any pattern of improvement should motivate future research on the effects of Medicare Part D so as to better inform policy. Given the high cost of the program, it is imperative to know if benefits are, indeed, negligible.

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IGPA
UNIVERSITY OF ILLINOIS
Urbana-Champaign • Chicago • Springfield
1007 West Nevada Street
Urbana, Illinois 61801