

# HOW DO PRESCRIPTION DRUGS AFFECT THE USE OF OTHER HEALTH SERVICES?

BY GAL WETTSTEIN\*

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## Introduction

Over the past decade, the availability of prescription drugs has increased, particularly for the elderly. Medicare Part D expanded coverage to include prescription drugs, and the Affordable Care Act (ACA) enhanced Part D's coverage. While lowering the cost of prescription drugs would obviously encourage more use of medications, the implications of such changes for the rest of the health care market are less clear.

The answer depends on whether drugs are “substitutes” for other care or “complements.” Drugs could be substitutes if they prevent deterioration in health conditions that would otherwise require more intensive care, such as surgery. However, in many ways, drugs may be complements to other care, adding value to other tools in the clinician's toolbox. To explore this issue, this *brief* examines the use of health services before and after the introduction of Part D.

The discussion proceeds as follows. The first section provides background on Part D and summarizes previous research on how it affects the use of other health services. The second section explains the data and methodology used in this study. The third section shows the main results. The final section concludes that broadening the availability of drugs increases the use of office-based health care, with a possible decline in the use of inpatient facilities.

## Medicare Part D and Health Care Usage

Medicare has provided health insurance to Americans ages 65 and over since 1966. However, in its first 40 years, the program did not generally provide prescription drug insurance.<sup>1</sup> The Medicare Prescription Drug, Improvement and Modernization Act of 2003, which became effective in 2006, expanded Medicare to cover prescription drugs through the Part D program.

In practice, only a quarter of those gaining Part D coverage acquired *new* drug insurance; three quarters used Part D to *replace* drug coverage from other sources.<sup>2</sup> Individuals simply replacing drug coverage were likely not affected much by Part D, so they are excluded from this analysis. For those who did gain coverage, Part D's generosity will increase further in the near future, as the ACA reduces costs for those who spend more than a moderate amount on prescriptions.<sup>3</sup>

It is already well-established that drug insurance in general, and Part D specifically, leads to greater use of prescription drugs.<sup>4</sup> However, with respect to drug coverage's impact on other health services, the evidence has been mixed; some estimates show drug insurance increased use while others show a decline or no effect.<sup>5</sup> This analysis expands upon these previous studies of Part D by considering a broader population

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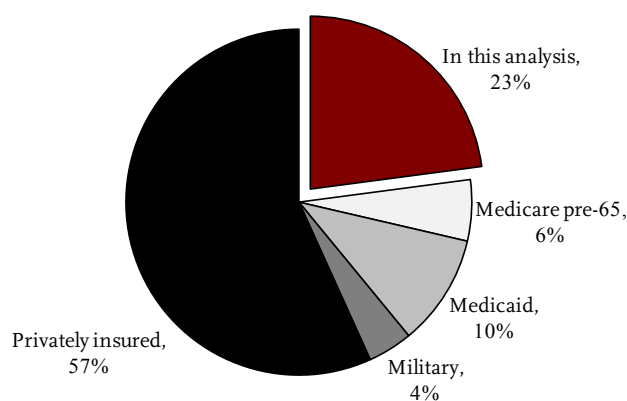
and explicitly separating hospital use from office visits, recognizing that these services may interact with increased drug availability in different ways.

## Data and Methods

The data are from the *Medical Expenditure Panel Survey* (MEPS). The MEPS provides information on health care use, health insurance, health status, and demographic characteristics for the U.S. civilian, noninstitutionalized population. The focus here is on individuals ages 60-70.<sup>6</sup>

As mentioned above, some individuals are excluded from the analysis because they would not stand to gain new drug insurance: those with Medicaid, Tricare, or Veterans Administration (VA) coverage are excluded because they would have had drug insurance before Part D. Also excluded are those below age 65 who had Medicare coverage (likely due to disability). Since private insurance almost always covers prescription drugs, individuals who had private coverage were excluded as well.<sup>7</sup> Figure 1 shows that only about 23 percent of the original full sample could have been affected by Part D.<sup>8</sup>

FIGURE 1. PERCENTAGE OF SAMPLE AGES 60-70 BY INSURANCE COVERAGE



Note: See endnote 9.

Source: Author's estimates from Agency for Healthcare Research and Quality, *Medical Expenditure Panel Survey* (MEPS) (2000-2005 and 2007-2009).

To answer the question of how drugs interact with other health care, the analysis compares the change in health care use at age 65 before and after 2006. The change at age 65 before 2006 captures the effect of aging another year, as well as eligibility for Medicare Parts A and B. The change after 2006 includes all those same effects, plus the effect of acquiring drug coverage through Part D. The difference in those changes isolates the effect of Part D coverage on usage of the health services of interest.

In addition to the simple comparison of the change in usage at 65 before and after 2006, the analysis also includes a regression to control for personal characteristics that could affect medical spending. The equation is:

$$\text{Health care expenditures} = f(\text{Over65} \times \text{Post2006}, \text{age}, \text{year}, \text{personal characteristics}).$$

The same equation is estimated for three kinds of health expenditures: drugs, office visits, and inpatient facilities.<sup>10</sup> The main independent variable in the regression identifies whether the individual was over 65 and observed post 2006. The coefficient on this variable simply compares the change in the dependent variable at age 65, before and after 2006. If this coefficient is positive, it would mean increased drug coverage led to increased spending on the category being considered.

The control variables are age, year, gender, marital status, education, and health status, including self-reported health, and the presence of specific health conditions.<sup>11</sup> To compare the effects of Part D overall to the effects only on those with poorer health, the regression is also estimated separately for those with below average health.<sup>12</sup>

## Results

Before turning to the regression results, it may be useful to first look at whether the raw data indicate any potential connection between Part D and spending on the various health services. Consistent with the literature, the analysis finds an increase in total drug expenditures after age 65 once Part D was implemented. Figure 2a on the next page depicts a similar increase in spending on office-based visits.

FIGURE 2. ANNUAL SPENDING PER PERSON ON HEALTH SERVICES BY AGE, PRE- AND POST-PART D, 2009 DOLLARS



Note: To reduce sampling error, ages represent two-year age groups.  
 Source: Author's estimates from the 2000-2005 and 2007-2009 MEPS.

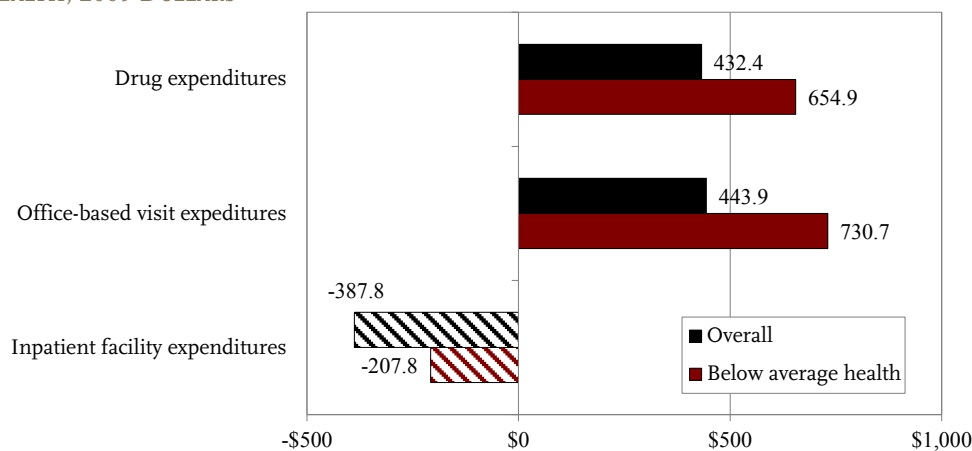
In contrast, Figure 2b shows a small, but less noticeable, reduction in total annual spending on inpatient facilities. Drug expenditures increased after age 65 by \$486 more after 2006 relative to before 2006; office-based visits increased by \$407; and inpatient facility expenditures declined by \$127.

While the figures clearly suggest that Part D may have had an impact on other health services, the data are merely descriptive. The displayed amounts do not control for individual characteristics, nor can statisti-

cal significance be easily assessed. These limitations are addressed in the regression analysis, with the main results displayed in Figure 3.

The regression results indicate that those who gained drug coverage through Part D significantly increased their expenditures on both drugs and office-based services, particularly for those whose self-reported health is below average. This result is consistent with the idea that drugs complement physicians' office visits by making them more valuable to

FIGURE 3. ESTIMATED EFFECT OF PART D ON HEALTH SPENDING, OVERALL AND FOR INDIVIDUALS IN BELOW AVERAGE HEALTH, 2009 DOLLARS



Note: Solid bars indicate statistically significant results. Full results are available in Appendix Tables 1 and 2.  
 Source: Author's estimates from the 2000-2005 and 2007-2009 MEPS.

individuals who can now afford their prescriptions.<sup>13</sup> Meanwhile, inpatient facility use appears to have declined, although the reductions did not reach statistical significance. Such reductions are consistent with the notion that better access to drugs substitutes for inpatient care by reducing severe health conditions.

## Conclusion

The availability of drugs to the elderly is expected to increase over the coming years, as the coverage from Part D becomes more robust with its expansion under the ACA. Will this reduce spending on other health care, or will it make that health care even more valuable, increasing expenditures as the toolkit available to clinical practitioners expands?

The analysis above provides a nuanced answer: it depends on the type of health care service. The analysis shows that expanded access to drugs increased the elderly's use of office-based services, suggesting drugs and these other services are complements. On the inpatient expenditure side, the estimates are consistent with prescription drugs substituting for inpatient care, making the use of these services less necessary as people get treated before their conditions become more severe. However, this result is ultimately inconclusive, perhaps because 2009 – the last year in the analyzed sample – could be too soon to expect Part D to have a large impact on such outcomes. Future research should continue to focus on this issue.

## Endnotes

1 Medicare did cover inpatient drugs through Medicare Part A. Furthermore, Medigap and HMO plans covering drugs existed, but provided limited insurance for high premiums and were chosen by only a small minority of those eligible.

2 Engelhardt and Gruber (2011).

3 Part D's standard benefit in 2006 was a \$250 deductible, followed by spending up to \$2,250 in which individuals were responsible for 25 percent of costs. After that, there was a coverage gap (the "donut hole"): beneficiaries were responsible for all drug costs between \$2,250 and \$5,100. The ACA will gradually eliminate this donut hole by 2020. Above the \$5,100 threshold, beneficiaries received "catastrophic" coverage, where they paid 5 percent of every additional dollar of spending. The cutoffs of these ranges are adjusted annually based on average drug spending per beneficiary.

4 For example, see Engelhardt and Gruber (2011).

5 For example, see Gaynor, Li, and Vogt (2007); Goldman, Joyce, and Zheng (2007); Zhang et al. (2009); Liu et al. (2011); and Kaestner and Khan (2012).

6 The data span the years 2000-2009. Data from 2010 onward are not examined due to changes in health insurance markets with the implementation of the Affordable Care Act. Data from 2006 are not included as it was the transition year in which Part D was introduced.

7 This approach relies on the assumption that individuals who chose to drop private insurance as a result of Part D's introduction would not have had different health care usage patterns than those who were not insured to begin with. Previous work suggests that sicker individuals may leave employment, and correspondingly private coverage, disproportionately due to Part D's availability (Wettstein 2017). To account for this possibility, the regressions in this analysis control for self-reported health and a variety of specific health conditions. Excluding these controls leaves the results virtually unchanged; thus selection on health due to the exclusion of individuals with private insurance does not seem to drive the results. Unreported results show that self-reported health and the incidence of specific diagnoses does not change within the group lacking private coverage due to Part D eligibility.

8 The 23 percent included in the sample are consistent with the estimate in Engelhardt and Gruber (2011) that three quarters of those gaining Part D coverage used it to replace coverage from other sources. Individuals with missing data on certain variables used in the analysis are also excluded, leaving a sample of 5,546 observations. The MEPS samples individuals five times over two years. In this *brief*, the survey is treated as a repeated cross-section, aggregated within calendar year. Standard errors are adjusted to reflect that the sample includes only 3,666 unique individuals.

9 Individuals are assigned a source of health insurance coverage hierarchically in the following order: 1) Medicare coverage before age 65; 2) Medicaid; 3) military coverage, including Tricare, CHAMPUS, and VA; and 4) private health insurance. If none of these sources of coverage is listed, the individual is included in the analysis.

10 All dollar amounts are inflated by the Consumer Price Index to 2009 dollars.

11 The conditions are diabetes, asthma, high blood-pressure, coronary heart disease, angina, heart attack, other heart disease, stroke, and emphysema.

12 Health is reported on a 5-point scale from 1 (excellent) to 5 (poor). In this analysis, below average health is defined as a 3 or more.

13 This finding reflects a number of potential mechanisms: first, one generally needs to see a doctor to get a prescription, so increasing prescription drug use mechanically increases office visits. Second, once one is taking a medication, one might need to see a doctor for follow-up. Third, some conditions can only be treated with medication, and individuals might forgo doctor visits if they know they cannot afford that medication. Fourth, increasing use of medication may lead to adverse drug effects that require further care. Finally, once individuals see a doctor for any of the preceding reasons, they could be diagnosed with previously undetected conditions that require additional treatment.

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# APPENDIX

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APPENDIX TABLE 1. ESTIMATED EFFECT OF PART D ON HEALTH SPENDING, FULL SAMPLE, 2009 DOLLARS

Variables	Drug exp.	Office visit exp.	Inpatient exp.
Over65xPost2006	432.4*** (158.5)	443.9** (188.5)	-387.8 (648.6)
Woman	162.8** (80.29)	288.9*** (96.95)	-83.32 (264.1)
<i>Marital status</i>			
Widowed	78.46 (121.6)	-23.38 (134.1)	-515.2** (250.6)
Divorced	-178.7* (92.41)	-129.5 (108.0)	555.8 (469.4)
Separated	-152.7 (230.3)	-131.0 (242.7)	-791.2** (334.4)
Never married	-323.4* (181.5)	238.2 (328.0)	-599.7* (357.9)
Health controls	Yes	Yes	Yes
Constant	2,450*** (530.6)	-361.0 (655.6)	6,073** (2,384)
Year fixed effects	Yes	Yes	Yes
Age fixed effects	Yes	Yes	Yes
Education fixed effects	Yes	Yes	Yes
Observations	5,546	5,546	5,546
R-squared	0.226	0.098	0.069

Notes: Robust standard errors in parentheses. Statistically significant at 10-percent (\*), 5-percent (\*\*), or 1-percent level (\*\*\*).

Source: Author's estimates from the 2000-2005 and 2007-2009 MEPS.

APPENDIX TABLE 2. ESTIMATED EFFECT OF PART D ON HEALTH SPENDING, FOR THOSE WITH BELOW AVERAGE HEALTH, 2009 DOLLARS

Variables	Drug exp.	Office visit exp.	Inpatient exp.
Over65xPost2006	654.9*** (224.4)	730.7*** (256.7)	-207.8 (889.2)
Woman	115.9 (112.8)	208.8 (130.2)	-285.1 (389.3)
<i>Marital status</i>			
Widowed	178.0 (160.0)	15.36 (176.3)	-580.0* (315.3)
Divorced	-207.6 (138.4)	-199.2 (147.0)	845.7 (681.9)
Separated	-357.0 (321.2)	-358.5 (333.1)	-1,565*** (363.5)
Never married	-428.7** (197.8)	165.1 (392.4)	-1,079*** (372.1)
Constant	-316.2 (271.2)	-462.8 (303.4)	-661.7 (973.6)
Year fixed effects	Yes	Yes	Yes
Age fixed effects	Yes	Yes	Yes
Education fixed effects	Yes	Yes	Yes
Observations	4,361	4,361	4,361
R-squared	0.057	0.046	0.018

Notes: Robust standard errors in parentheses. Statistically significant at 10-percent (\*), 5-percent (\*\*), or 1-percent level (\*\*\*).

Source: Author's estimates from the 2000-2005 and 2007-2009 MEPS.



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