Prescription Drug Expenditures for the Medicare and Medicaid Dually Eligible

A Study Conducted in the Context of the Medicare Prescription Drug Benefit and Its Corresponding Policies for State Governments

A Thesis
Submitted to the Faculty of the Graduate School of Arts & Sciences Of Georgetown University In partial fulfillment of the requirements for the Degree of Master of Public Policy In the Georgetown Public Policy Institute

By

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Abstract

**Context:** Although the new Medicare drug benefit moves individuals dually eligible for Medicare and Medicaid from states to the federal program, a significant administrative and financial burden will remain for states.

**Objective:** To examine total and personal out-of-pocket spending of Medicare beneficiaries on prescription medications to determine the effects of having different coverage sources as compared to those beneficiaries who have not had prescription drug coverage.

**Sample and Design:** Utilizing data from the 2001 Cost & Use Medicare Current Beneficiary Survey, a sample of 8,988 Medicare beneficiaries were examined to find effects drug coverage through Medicaid, Employer Sponsored Insurance, HMOs, or Private plans as compared to beneficiaries without coverage. All analyses also controlled for demographic and health characteristics.

**Outcome Measures:** The four dependent variables examined were total annual prescription drug spending, total annual prescription drug spending in log form, total annual out-of-pocket prescription drug spending, and out-of-pocket spending as a percentage of total spending.

**Results:** Holding other factors constant, beneficiaries with Medicaid prescription drug coverage spent $652 more in total prescription expenditures and almost $900 less out-of-pocket as compared to those without drug coverage (p < .0001). Those with diabetes or mental illness spent a total of $681 and $651 more than those without the respective conditions (p < .0001).

**Conclusion:** With higher incidences of medical conditions and significantly higher spending on pharmaceuticals, the dually eligible population will represent a significant administrative and financial burden for state governments as these beneficiaries are moved into Medicare Part D.
Acknowledgements

I would like to thank everyone who helped along the way

I would also like to give
special acknowledgement to the following individuals:

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*Your persistence and insightfulness kept me on course*

To My Parents, Edward Louis & Aurora Maria
And My Sisters, Elizabeth Lee & Anne Catherine
*You are my strength*
*Without you none of this would be possible*
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I. Introduction

a. After decades of national debate, President George W. Bush signed the Medicare Prescription Drug, Improvement, and Modernization Act (MMA) into law on December 8, 2003 representing the most comprehensive changes to the Medicare and Medicaid programs since their inception. MMA (or Part D of Title XVIII of the Social Security Act) provides Medicare coverage of outpatient prescription drugs for Medicare beneficiaries; a service not originally included in the program. Beyond the obvious health gains for Medicare beneficiaries, Part D will have special policy implications for the federal and state governments in regards to those individuals that are dually eligible for both the Medicare and Medicaid programs. Up until now, Medicaid has provided prescription drug coverage for these individuals at the expense of state budgets. On January 1, 2006, Part D will assume responsibility for this service and could represent the removal of an enormous financial burden from the states. However, the exact provisions concerning dually eligible individuals in MMA are complicated and, in the end, state budgets may not fully realize the potential savings. This paper will seek to analyze dually eligible prescription drug spending trends retrospectively and then apply the results to understand the implications of Part D implementation as it stands in statute and policy debates.

Medicare and Medicaid were enacted on July 30th, 1965 as Titles 18 and 19, respectively, of the Social Security Act to provide health care services for the aged and the underprivileged. Medicare is a federally funded and federally administered
program that provides health coverage for Americans aged 65 years and older; in 1972 Medicare eligibility was extended to individuals with long-term disabilities and end-stage renal disease (ESRD). Medicaid is a state administered program co-funded by both state and federal governments to provide coverage for certain individuals in low income brackets, primarily children, elderly, the blind, and the disabled. Certain elderly and disabled individuals qualify for both programs and are commonly known as “dually eligible” or “duals”. For these individuals, Medicare acted as their primary health care coverage with Medicaid providing for “wrap-around” by covering premiums, deductibles and services not covered by Medicare including outpatient prescription drugs. Under Medicaid, duals have had essentially unrestricted access to the drugs they need\(^1\) with prescription co-pays that according to federal statute cannot exceed $1 for generic drugs and $3 for brand-name drugs.\(^2\) This rule will change under the new Medicare laws.

Under Part D, Medicare beneficiaries’ drug benefits will be administered through privately run organizations that choose to participate on either a regional or

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\(^1\) Under Medicaid law, states must cover all FDA approved (Food & Drug Administration) prescription medications; however, this does not prevent state programs from creating lengthier approval protocols for medications that are deemed too expensive or less effective than alternatives. These protocols take many forms that will be discussed again later. One of the more popular routes is known as “prior authorization” where a physician must fill out a detailed questionnaire outlining a patient’s diagnosis and the clinical justification for the particular medication. Depending on the patient, physician’s office, pharmacy, and insurance provider involved this process can take anywhere from an hour to a number of weeks. Ultimately, however, traditional fee-for-service Medicaid must pay for all medications.

\(^2\) For the purposes of this paper, a brand-name drug is defined as a single-source medication that is distributed and marketed solely by the innovator manufacturing company that developed it. A generic medication (or multi-source drug) is a medication where the patent protection held by the innovator has expired and any number of manufacturers can manufacture and distribute the drug after proving equivalence to the original product through the FDA.
national basis. Unlike Medicaid, these plans do not necessarily have to cover every FDA approved medication and beneficiary cost-sharing is no longer a simple generic/brand tier structure. Instead, the new structure involves monthly premiums, a deductible, percentage cost-sharing, a “donut-hole”, and catastrophic limits. The situation may not be as dire as it sounds, but it is, however, as complicated as it sounds, especially in the case of the dually eligible. At any given point in the structure, it is not certain who will be paying (the patient, the state, or the Fed), or when, or how much. Moreover, it is unclear who will be responsible for guiding duals through this process.

The states have been eager for the federal government to take a more dominant role in dual eligible care to ease administration and the purses of the states. As decisions continue to roll out with Part D implementation in 2006, however, parties involved have been less enthusiastic with the details and it seems the light at the end of the tunnel may be further down the pike than originally thought. To fully comprehend the question at hand and the resulting complications this paper will first seek to define dually eligible beneficiaries and their prescription habits through data available in the Medicare Current Beneficiary Survey (MCBS).

The remainder of this thesis is organized as follows: Section II describes how duals will be treated under MMA; Section III presents a review of relevant literature; Section IV contains a description of the Medicare Current Beneficiary Survey Data and inclusion/exclusion criteria used to construct the analytical sample. Section V reports descriptive statistics and results from an analysis of prescription drug spending.
categorized by types of prescription drug benefit coverage. The final section integrates the data results into the current policy debate

II. Treatment of Duals Under the Medicare Modernization Act

To gain a fuller picture of the implications of MMA, it is important to look at the benefit structure proposed, its application to low-income beneficiaries, and the calculation currently proposed for state contribution to Medicare Part D fund. Table 1 outlines the basic drug benefit structure for all qualified Medicare beneficiaries. Beneficiaries pay a monthly premium to participate in the program and must first pay out a deductible before reaching any cost-sharing assistance. Before individuals qualify for catastrophic coverage they first hit a coverage gap (referred to as “the donut hole”). Once they have spent through this gap, Medicare will cover over 90% of

<table>
<thead>
<tr>
<th>Table 1: Standard Drug Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beneficiary Cost-Sharing</strong></td>
</tr>
<tr>
<td>Annual Deductible $0-$250</td>
</tr>
<tr>
<td>Initial Benefit $250.01-$2,250</td>
</tr>
<tr>
<td>“Donut-Hole” Coverage Gap $2,250-$5,100</td>
</tr>
<tr>
<td>Catastrophic Coverage ~$5,100.01</td>
</tr>
</tbody>
</table>

the cost of the beneficiary’s prescriptions. Assistance for cost sharing increases as individuals slide down the income scale. The beneficiaries that receive full assistance with no out-of-pocket costs are those ranked as “full dual eligibles” and reside in nursing homes as shown in the example in Table 2. These are individuals at or below 100% of the Federal Poverty Level\(^3\) and qualify for full Medicare and Medicaid benefits. The complications arrive with how these benefits will be paid for.

Through Title 19, states receive federal matching funds through a calculation called the Federal Medical Assistance Percentage (FMAP). States can receive federal matching for anywhere from a minimum of 50% to a maximum 83% of their Medicaid expenditures. The FMAP for each state is determined by a calculated average of the state’s per capita income. In other words, the percentage paid by the federal government is driven by the average income of the individual state, but the actual federal dollar amount is driven by state Medicaid spending; states with lower per capita incomes and those with higher Medicaid spending receive more federal dollars. The implementation of Part D will lower the amount of money states will receive in these calculations.

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\(^3\) 2005 FPL is $9,570 for individuals, $12,830 for couples, except in AK and HI which have slightly higher levels (source: “Annual Update of the HHS Poverty Guidelines”; Federal Register; Department of Health and Human Services; Vol. 70.33 (18 Feb 05); 8373)
Table 2: Cost-Sharing Assistance Comparison Assuming $10,000 Annual Drug Spending*

<table>
<thead>
<tr>
<th>Beneficiary Category</th>
<th>Annual Spending (Full Retail Price)</th>
<th>Beneficiary Out-of-Pocket</th>
<th>Percentage Savings After Premium</th>
<th>Dollar Savings After Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>At or above 150% FPL</td>
<td>$10,000</td>
<td>$3,770.00</td>
<td>58%</td>
<td>$5,790</td>
</tr>
<tr>
<td>Under 150% FPL with low assets</td>
<td>$10,000</td>
<td>$990.58</td>
<td>88%</td>
<td>$8,789.42</td>
</tr>
<tr>
<td>Under 135% FPL and low assets or dually eligible above 100% FPL regardless of assets</td>
<td>$10,000</td>
<td>$274.62</td>
<td>97%</td>
<td>$9,725.38</td>
</tr>
<tr>
<td>Full Dually Eligible Beneficiary at or below 100% FPL</td>
<td>$10,000</td>
<td>$156.92</td>
<td>98%</td>
<td>$9,843.08</td>
</tr>
<tr>
<td>Full Dually Eligible Beneficiary and a nursing home resident</td>
<td>$10,000</td>
<td>$0</td>
<td>100%</td>
<td>$10,000</td>
</tr>
</tbody>
</table>

Explanatory Notes: Beneficiary out-of-pocket and percentage savings assume 15% cost management by Part D plans, through price discounts and utilization management. Premiums and out-of-pocket dollars represent assumed averages of income groups represented.*


Through calculations for the Medicare Prescription Drug Benefit, full dually eligibles will no longer be included in the FMAP calculation of state Medicaid spending. They will be deducted through a calculation of 1/12 of the state’s share of Medicaid spending on Part D drugs for those individuals who are Medicare eligible and qualify for full Medicaid benefits [Product 1]. This product is then multiplied by the number of dual eligibles identified by the state for the specified month [Product 2]. Further, the calculation will be phased down by a phase-out factor (set at 90% for 2006) to be reduced by 1.67 percentage points per year over ten years until 2014 to
equal 75% of Product 2 (Product 3). While they are being phased out, however, the products will be increased according to increases in the index for National Health Expenditures (NHE). (Figure 1) The total of these calculations have come to be known as the Medicare “claw-back”. The state contributions will be paid directly towards the Medicare Part D benefit and the Health Insurance (HI) federal trust fund. These calculations are exclusive only to dollars spent for beneficiaries who qualify for full benefits under both Medicare and Medicaid. The states are also shouldered with the additional burden of determining the eligibility status of individuals and reporting these figures regularly to CMS.4 Failure to comply with payment and reporting can result in

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Figure 1: State Contribution (Claw-Back) Calculation

\[
\text{Product 1} = \left(\frac{1}{12}\right)(1.0 - \text{FMAP}) \times (\text{Medicaid $ Part D Rx for Dually Eligible})
\]

\[
\text{Product 2} = (\text{Product 1}) \times (# \text{ of dually eligible for month } i)
\]

\[
\text{Product 3} = (\text{Product 2}) \times (\text{phase-out factor for month } i) \times (\text{indexed growth factor})
\]

Yearly Defined Phase-Out Factor:
- 2006 = 90%
- 2007 = 88.33%
- 2008 = 86.67%
- 2009 = 85%
- 2010 = 83.33%
- 2011 = 81.67%
- 2012 = 80%
- 2013 = 78.33%
- 2014 = 76.67%
- 2015 = 75%

Source: 42 USC 1396u-5; SSA Title XIX Section 1935(c). Web accessible: [http://www.ssa.gov/OP_Home/ssact/toc.htm](http://www.ssa.gov/OP_Home/ssact/toc.htm)

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4 The Social Security Administration is also given authority to determine eligibility under Part D, but presumably states will remain the primary determinant.
the withholding of a state’s FMAP funds. Even though Medicare will be paying health plans directly to provide the benefit, money is still changing through many hands increasing the risk of calculation, payment, and administration errors.

III. Literature Review

State Medicaid programs and policy makers have acknowledged that dually eligible beneficiaries constitute a significant administrative and financial burden for the states, especially in the category of pharmaceutical expenditures. Despite this acknowledgement, few researchers have sought to examine pharmaceutical spending for this population and its full implications for pending and future state and federal health policy and programs. Below descriptive evidence, case study reports and multivariate analyses related to the population of dually eligibles are reviewed.

a. Descriptive Research

Baugh et al. examined the trend in Medicaid expenditures for prescription medications through the 1990s. Although not the primary focus of the study, the researchers also documented prescription expenditures for dually eligible individuals for FY 1998. Medicaid spending on prescription drugs increased by almost five fold over this decade due in large part to a boom of drug discovery in the pharmaceutical industry. The authors sought to identify which drug categories, if any, were driving the spending in particular. The authors utilized data from the Medicaid Statistical Information System (MSIS) tables, the HCFA-2082 and CMS-64 forms, the National Health Expenditure estimates and State Medicaid Research Files (SMRFs). As is
perhaps reflective by the selection of data, it is difficult to obtain a complete picture of Medicaid spending. Results show that Medicaid had the highest expenditures in medications to treat the Central Nervous System (CNS) and the beneficiaries with the highest spending were those that were disabled – a group that often falls into Medicare eligibility as well.

Baugh, et al. examined expenditures for the dually eligible population by age group. Although dual beneficiaries under age 65 incurred the highest expenditures in drugs per recipient there was little variation in drug expenditures across age groups for those over age 65. This study is useful as an examination of the explosion of prescription drug spending that occurred in the 1990s, however, the authors do not delve into any great depth of the dually eligible population despite identifying the concerns associated with implementing a Medicare prescription drug benefit.

b. Case Study

Recognizing the challenges associated with managing health care benefits for dually eligible individuals, Walsh & Clark (2002) evaluated how well managed care plans contracted through either Medicare or Medicaid handled these recipients. The managed care option has been available through Medicare under Medicare Part C (also called Medicare+Choice or M+C) and through Medicaid via provisions of section 1915(a) of Title XIX of the Social Security Act and section 1115 waivers. Though this option was touted by policy-makers at their inception, there has been limited evidence that managed care plans have been effective at managing benefits for beneficiaries of
both entitlement programs. (Walsh & Clark, 64-65) The authors conducted a qualitative review to describe managed care plans that are available and identify problems encountered in handling the benefits of the dual population.

To make their assessments, Walsh & Clark reviewed a spectrum of available data including: the 1998 Medicare Denominator File, the CMS Enrollment Database, Group Health Program Data, State data, and enrollment and eligibility from “selected states’ web sites in 1999”. (65) They confined their analysis to markets of the country with a significant managed care penetration for both Medicare and Medicaid: Los Angeles, Portland, Miami, and Philadelphia. The authors conducted site visits with plan representatives from each market and eleven focus groups with dually eligible beneficiaries. They also reviewed informational material about benefits coordination.

The authors identified several problems in coordinating care for dually eligibles including: beneficiaries lacked adequate knowledge of their benefits; health plans do not have timely access to enrollment and eligibility status from the government; and government policies and practices can be unintended barriers to assistance.

The article provides a useful summary of dually eligible population characteristics and the hurdles and challenges that exist in providing adequate health care for these individuals. Further, they conducted a comprehensive review of how Medicare and Medicaid interact with each other and the plans in the selected regions. However, the majority of the evidence cited by the authors from their survey work is anecdotal and suggestive of problems encountered rather than providing a complete
picture of dually eligibles in managed care plans. Being a mostly qualitative review, they do not engage in identifying any trends for the successful management of duals. The data that is presented is used for descriptive purposes.

**c. Multivariate Studies**

c1. Phillips & Atherly examine Medicaid pharmaceutical claims of individuals that are enrolled in Medicare and also enrolled in a Medicaid Home and Community-Based Services (HCBS) program in the state of Georgia. The authors examined whether a voluntary program could lead to adverse selection of only the sickest individuals enrolling in the new benefit. HCBS included beneficiaries that were automatically enrolled and some that voluntarily opted in. Those that voluntarily enrolled paid an extra premium for the plan.

The data consists of two randomly selected samples of Medicaid beneficiaries with drug expenditures between August 1, 1996 and July 31, 1997 and between August 1, 1995 and July 31, 1996, respectively. The dependent variable of interest was prescription drug expenditures.

The results show that individuals who self-selected into the program, those placed in a nursing home, those that died in the survey periods, and those aged less than 65 years old incurred significantly higher pharmacy expenditures. (The reason why the younger population had a greater spending was that these individuals have qualified for Medicare and Medicaid via the fact that they preexisting disabilities or health conditions that legally entitled them to these benefits.) Those that self-selected
spent just over $41 more per month (or 31.7% more) on prescriptions over those that did not self-select. Those that died or placed in a nursing home spent $24 (18.9% more) and $19 more (14.9% more), respectively, as compared to those who did not die or were placed in a nursing home.

The results do not support the contention that a program that allows voluntary participation can potentially create the adverse selection risk of enrolling those that are either more sick or at least have a greater tendency to utilize the benefit (the “If I pay for it, I will use it” attitude). The study has shortcomings that raise concerns about the validity of the findings. Failure to adequately recognize the selection bias associated with voluntary enrollment can bias the results. It can also be speculated that spending for these populations has grown even further since the analyses were conducted. The major shortcoming of this study is that the author’s fail to control for the potential selection bias that stems from voluntary enrollment in the program. Second, the authors do not examine characteristics of those who self select and how they differ from those automatically enrolled.

c2. Schore & Brown were contracted by the Kaiser Foundation to examine the variation across different states in pharmacy benefit use for dually eligible beneficiaries. The study employed beneficiary specific data compiled from 12 states by Mathematica Policy Research, Inc. for CMS that linked and pooled data for dually eligible beneficiaries. The earliest data that was complete and available at the time of this study was for 1995 and the study sample was restricted to data from 10 of the 12
available states. The sample was restricted on the basis of quality and quantity of data available for each state. The states included were California (restricted to 16 counties), Colorado, Florida, Georgia, Indiana, Kentucky, Michigan, New Jersey, Washington, and Wisconsin.

The study did, in fact, find significant variation in prescription utilization across the states studied, ranging from 1.9 prescriptions ($62) per month in California to 5.1 ($131) per month in Indiana. The per-prescription reimbursement rate also varied greatly from $25 in Kentucky to $36 in New Jersey. The mean across the ten states was 3.4 prescriptions ($96) per beneficiary per month. Results show that the average of prescriptions filled per month was significantly higher for individuals with the following independent characteristics: under age 65, female, white, Indiana or Kentucky residence, diabetes, chronic obstructive pulmonary disease (COPD), HIV/AIDS, or resided in a Medicaid nursing home.

The work of Schore & Brown does an excellent job of examining variation across a panel of states that vary in demographic composition and region. Because the data was compiled from multiple sources and the quality varied considerably, the researchers cautioned that the findings may not be applicable to states where data is lacking. This is just one of the concerns that policy-makers hope to address by federal assumption of dually eligible prescription drug spending.

c3. Schore et al. (Winter 2003/2004) utilized Medicaid claims data to compare prescription utilization across different racial demographics. Their analyses
focus on Medicaid claims for dually eligible individuals for two primary reasons. First, Medicaid claims have an advantage over Medicare Current Beneficiary Survey Data in that Medicaid claims are not reported through questions answered by the beneficiary. Second, with dually eligibles, all subjects were known to have equal insurance coverage; this provides an even baseline for minorities and non-minorities.

Results show that African Americans had a statistically significant lower average usage than whites by a magnitude of 20%. On average, African Americans obtained 2.8 prescriptions per month (average cost of $83/month) whereas whites utilized 3.6 prescriptions per month (or $102/month). These disparities persisted even after controlling for presence of co-morbid conditions. Further, they also found that the decreased use of medications did not result in a corresponding reduction in the use of physician services.

In contrast to the broader spending picture focus of my research, this study looks at a specific characteristic of dually eligible spending for the purposes of identifying racial discrepancies. However, this study is important because it demonstrates some of the hurdles that can be faced in providing adequate care and access to pharmaceuticals even when different individuals have, in theory, equal opportunity for covered services in an indemnity program.

d. Non-Prescription Focused Dually Eligible Beneficiary Study

Recognizing that having Medicare and Medicaid as two separate payers for those individuals that qualify for both programs can cause administrative
complications and the potential financial loss (i.e. duplicate payments, fraud risks), some policy makers have sought solutions to simplify the handling of these beneficiaries. The Minnesota Senior Health Options program (MSHO) represents one of the first attempts to utilize managed care to pool Medicare and Medicaid funds for duals and manage their care through one payer outlet; participation in MSHO was voluntary for duals. Kane et al. (Sept 2001) examined the risks of selection bias in this pooling experiment with voluntary enrollment program.

The researchers surveyed a random sample of individuals enrolled in MSHO and two control groups. One control group constituted beneficiaries with similar characteristics as the study group but were unable to enroll because MSHO was not offered in their region; this group controlled for the effect of selection. The second group had the option to enroll (i.e. lived in the same regions as the study group), but chose not to enroll; this control allows one to examine the effect of enrollment.

The survey results showed that, on average, individuals in the community setting were healthier and less disabled than those in nursing facilities. Further, those individuals enrolled in MSHO were more likely to be satisfied with their care and more likely to have obtained written advanced medical care directives. The authors speculate that those who enrolled were more satisfied with their care and generally placed a greater value on the services provided through the program. The greater prevalence of written directives could be a result of the structured requirements of managed care; however, surveyed beneficiaries did not indicate that they felt pressured
to obtain this kind of documentation. The study was unable to identify a variation in unmet needs between the study and control groups, perhaps due to small sample size.

**e. Summary**

In general, there has been very little comprehensive research that specifically examines prescription drug spending of dually eligible beneficiaries. Studies examining the dual population have been incomplete due to variation in data sources. The research has either not directly focused on dually eligible beneficiaries or it has not addressed prescription spending. Previous research has also had limited external validity due to lack of bias control (especially in selection) and the use of study populations not representative of the national population.

The data examined in these prior studies by most accounts is now outdated with post-2000 Medicaid and Medicare data now becoming available. Further, since a Medicare prescription drug benefit is only now becoming a reality, researchers have not been able to examine the spending habits of duals within the context of an actual Medicare benefit framework.

This study will present a more complete picture of prescription drug utilization and spending among duals by using the 2001 Cost & Use Medicare Current Beneficiary Survey. This survey is the most recent data available that gives health care spending information post-2000. Further, now that we have a statutory framework for the Medicare Prescription Drug Benefit, we can use this data to see where duals will likely fall within the structure. This information coupled with the state and federal
payment policy will provide a better understanding of how MMA will affect state budgets. Part D offers significant challenges through its shifting of dollars spent on dually eligibles from Medicaid to Medicare.

IV. Data and Sample Population

a. The Cost & Use Medicare Current Beneficiary Survey

This study employs data from the 2001 Medicare Current Beneficiary Survey Cost & Use data set provided through CMS. MCBS data specifically follows Medicare beneficiaries through the year combining both survey data obtained directly from the beneficiary and administrative data obtained from billed claims on-file at CMS. The combination of the two data inputs helps to correct for services that may be underreported or unreported by either the beneficiary or through the Medicare claims data. This creates a longitudinal data source that provides comprehensive descriptive data on a sample of 12,864 Medicare beneficiaries reporting demographic characteristics, health status, sources of other insurance (e.g. Medicaid, HMO), and the volume and cost of health services utilized in inpatient, outpatient, community, and institutional settings, among other descriptives. Services reimbursed by other third party payers are captured including the critical data elements for the present study (i.e. outpatient prescription medications) which was not a covered benefit under Medicare in 2001. (http://www.cms.hhs.gov/MCBS/)

The MCBS is ideal for this study because it offers a single data source to examine prescription drug utilization for Medicare beneficiaries with particular regard
to the duals population. It has been very difficult to examine Medicaid beneficiaries because data maintained by individual states will often be gathered and formatted under differing criteria. The MCBS has accounted for some of these differences.\(^5\) MCBS reports the total payment for a prescription and then classifies the payment by payer source: Medicaid, Medicare\(^6\), private HMO, Medicare HMO\(^7\), the Veteran’s Administration (VA), employer sponsored insurance (ESI), individually purchased private insurance, private insurance (unknown purchaser), patient out-of-pocket, uncollected SP liability, and Other Payers.

**b. Inclusion and Exclusion Criteria**

For the purposes of this study, the sample population was first limited to individuals who reported filling at least one prescription in the community setting (the MCBS refers to this as a “Prescribed Medicine Event”). This initial limitation reduced the MCBS sample to 10,279 beneficiaries and automatically excluded any inpatient events and institutionalized patients. These prescription events were then merged with beneficiary health status and insurance source records. Any beneficiaries with missing information for key variables including demographic, health status, and insurance variables were dropped from the sample resulting in a total of 9,999 beneficiaries.

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\(^5\) One of the important features of MMA is that prescription drug utilization of the duals will now be centrally reported through Medicare and indeed prescription drug utilization at large for the Medicare population. This will make a decided difference in examining these populations which make up a large percentage of the prescription drug consumption in the United States.

\(^6\) Payments through Medicare are referring to drugs covered under Medicare Part B (e.g. those drugs for oncology and renal dialysis support).

\(^7\) Medicare HMO refers to plans under Medicare Part C.
**Prescription Drug Coverage**

The beneficiaries in this sample were then categorized according to source of prescription drug coverage. The number of days of prescription coverage during the year was calculated by utilizing dates of coverage and insurance providers as reported by beneficiaries. Using this method, beneficiaries were categorized as: Medicaid, ESI, HMO, Private, and No Insurance. In those cases where multiple insurance sources were cited, the beneficiary was placed in the category where they reported the greatest number of days of coverage.

After this initial classification, the categories were reconciled with reported prescription expenditures in the eleven categories mentioned above. Those individuals for whom the greatest expenditures were reported through VA, Uncollected SP Liability, and Other were assigned to an “Other Rx Insurance” category (this category included 993 beneficiaries). Individuals in this group were deleted from the analysis because it was impossible to further control for variability in this group’s prescription drug spending.

Adjustments were further made to ensure that an individual’s insurance category matched the category with the source of greatest expenditures. In other words, individuals assigned to the ESI category were those who also reported the highest amount of expenditures covered by ESI; the same approach was applied to the other insurance categories, HMO and Private.
Classifying dual eligibles (i.e. those with Medicaid drug spending) required careful scrutiny, in part because Medicaid eligibility fluctuates from month to month. Another significant complicating factor is that Medicaid coverage has varying levels of qualification. Aside from those that are eligible for full Medicaid coverage, there exist categories for those who qualify for Medicare, but whose incomes are slightly above the usual Medicaid income cut-off. These individuals are classified as Qualified Medicare Beneficiaries (QMBs) and Specified Low-Income Medicare Beneficiaries (SLMBs). Because these individuals do not receive full Medicaid benefits, they typically do not have prescription drug coverage reimbursed under Medicaid.

These variations in Medicaid eligibility resulted in some anomalous cases. For example, nine beneficiaries had reported Medicaid coverage for the entire year but no Medicaid pharmacy claims. Under the assumption that these individuals were QMBs or SLMBs, they were recoded as having no prescription coverage. To address other anomalous cases, the first rule of thumb applied was to assign each individual to the category with the highest level of drug coverage. This rule resulted in reassigning five Medicaid cases to HMO status and ten other Medicaid cases to the private category. After this recategorization, there remained eighteen aberrant individuals who reported Medicaid coverage and, whose out-of-pocket expenditures exceeded $500 per year and this spending exceeded their total Medicaid outlays. These individuals were excluded
from the sample because this pattern was atypical of individuals who qualify for and utilize full Medicaid coverage.\textsuperscript{8,9}

These exclusions resulted in a final sample of 8,988 beneficiaries to be used in this analysis. As shown in Table 3, 1,255 (14%) were Medicaid; 2,525 (28.1%) were ESI; 1,992 (22.2%) were HMO, 1,071 (11.9%) were Private, and 2,145 (23.9%) were uninsured.

V. Specification of Models

a. Dependent Variables

In the context of the dually eligible population making the transition over to Medicare Part D prescription drug coverage, this analysis will attempt to identify factors which contribute to higher prescription drug expenditures overall and higher out-of-pocket expenditures by each Medicare beneficiary. Determining these effects will help identify populations that have a greater chance of falling into the donut-hole and catastrophic zones in Part D coverage. The analysis examines four dependent variables: total annual prescription expenditures, total annual prescription expenditures

\textsuperscript{8} As discussed earlier, a fully qualified Medicaid beneficiary cannot be charged greater than a $3 co-pay for a brand prescription and $1 for a generic prescription – some states even offer $0 cost sharing for some beneficiaries. In fact, in this final sample, approximately one quarter of all Medicaid beneficiaries reported paying $0 out-of-pocket. This makes it very difficult for a Medicaid recipient to exceed $500. The choice of $500 is somewhat arbitrary, but an individual would have to be purchasing, on average, 14 brand prescriptions per month at $3 per prescription to exceed $500 in out-of-pocket spending, this is certainly possible, though less probable. Further, since brand name drugs are usually far more than $3 per prescription, Medicaid expenditures would be expected to quickly out-pace out-of-pocket spending.

\textsuperscript{9} These same considerations for out-of-pocket spending could not be applied to other insurance sources (e.g. ESI) because these plans operate without statutory mandates and therefore have much greater flexibility in their cost-sharing structures resulting in variation not distinguishable in this study.
measured in logs, total out-of-pocket prescription expenditures, and the percentage of
total expenditures paid as out-of-pocket.

b. Explanatory Variables

The objective of this study is to examine whether the type of prescription drug
coverage affects an individual’s use of prescription medication. It is expected that
beneficiaries with prescription coverage (with Medicaid in particular) spend
significantly greater amounts on pharmaceuticals than those without prescription drug
coverage. Further, individuals with coverage are hypothesized to spend less out-of-
pocket and a lower percentage of the total expenditures overall when compared to
those who lack coverage.

Other factors may also contribute to differences in prescription drug utilization
and spending. The empirical specification includes controls to capture the effects of
gender, race, ethnicity, age, marital status, education, residential area, and various
health conditions. Race is captured by a series of dummy variables: White, African
American, and Other. A dummy variable for ethnicity distinguishes between
Hispanics and non-Hispanics. Age is measured with dummy variables that capture the
following groups: less than 65 years old, 65-69 years old, 70-74 years old, 75-79
years old, and greater than 79 years old. Marital status is controlled for using the
categories of married, formerly married (e.g. widowed, divorced), and never married.
Educational attainment is captured by the categories: less than high school, high school

\footnote{10}{Those under 65 years old are those that have qualified through disability status.}
diploma, college degree, and post-secondary degree were created. Finally, a dummy variable was included to indicate whether beneficiaries lived in metropolitan or rural residential areas.

For health conditions, it is assumed that pharmaceutical spending will vary according to the number and cost of drugs usually required to treat individual conditions. For this reason, categories were created for nine common health conditions: diabetes, mental illness, heart condition\(^{11}\), lung condition, arthritis, Alzheimer’s, Parkinson’s, stroke, and cancer. These nine dummy variables are individually compared to individuals not diagnosed with each condition (466 individuals or 5% reported having none of these conditions). Further, since it is not uncommon for elderly individuals to suffer from more than one health condition, three dummy variables were included to test for statistically significant differences in pharmacy spending for individuals who reported having two, three, or more than three of these nine co-morbid conditions to compare against those who reported one or less health condition (with 2,195, or over 24%, reported one or less conditions).

VI. Results

a. Characteristics of the Sample

Table 3 reports descriptive statistics for the sample. Total annual prescription expenditures were, on average, about $1,530 per Medicare beneficiary. The mean out-of-pocket spending per beneficiary (OOP) was $566. This out-of-pocket spending

\(^{11}\) Those beneficiaries reported as having a heart condition are those that indicated: irregular heart rhythm, problems with heart valves, angina pectoris, myocardial infarction, hypertension, or hardening of the arteries.
represented over half of their total prescription costs. Medicaid dual eligibles reported the highest total annual prescription expenditures ($2015) as well as the highest average number of prescriptions filled (41). Duals, however, reported the smallest OOP expenditures, just under $100, and the smallest percentage out-of-pocket spending on drugs, only 6.1%. Across the other coverage categories, those with employer-sponsored insurance had the second highest in total prescription spending ($2,013) with a mean OOP of $462 and an OOP of 30%. HMO and private insurance beneficiaries incurred total expenditures of $1,305 and $1,215, respectively. HMOs generally covered more of prescription costs than private plans. HMO beneficiaries paid on average 47% of their total prescription costs while those with private coverage paid 70% of total expenditures. The mean OOP spending was $500 for HMO and $750 for those with private coverage. Individuals who lacked prescription insurance coverage incurred the lowest total prescription expenditures ($1031), but the highest average OOP spending ($946.26) as well as the highest out-of-pocket percentage (93.65%). Uninsured persons also reported the smallest number of prescriptions filled (26).

More than 15% of the sample was under the age of 65 (i.e. with disability status), 14% were 65-69, 21% aged 70-74, 18% were 75-79 and just over 31% were 80-plus. About three quarters of the sample had a heart condition; more than 61% had

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12 It is difficult to ascertain a definitive reason why those without prescription coverage paid anything less than 100% of their prescription costs out-of-pocket; however, anecdotally it is possible that some individuals in this category enrolled in prescription discount programs that offered price breaks on medications or, at least briefly qualified for some form of prescription insurance coverage within the survey period.
arthritis and close to 33% reported some form of cancer. Almost 20% reported diabetes, nearly 18% had a mental illness and close to 17% had a pulmonary condition. Many respondents reported multiple conditions; 31% had two conditions, 26% had three co-morbidities and 18% had four or more conditions. More than 58% of the sample population was female and close to 85% was white. The sample for the most part had low levels of educational attainment; 86% had a high school diploma or did not graduate from high school. More than 70% of the sample resides in a metropolitan area.

When compared to the other coverage categories the dually eligible had the highest incidence of diabetes (26.7% of Medicaid) and pulmonary conditions (24.4%). About 41% had a mental illness and nearly 4% had a diagnosis of Alzheimer’s. Moreover, duals reported the highest incidence of having more than 3 co-morbid conditions (26.4%). Duals were also significantly more likely to be disabled (nearly 47% compared to 15% for the overall sample) and nearly 100% of the duals had less than a college education.

b. Regression Results for Total Annual Prescription Expenditures

Regression results predicting total annual expenditures on prescription drugs are reported in Table 4. As expected, those with prescription drug coverage spent significantly more on medications per year compared to those without coverage. Duals covered by Medicaid spent $652 more than those without coverage (p<.0001). Elderly with ESI coverage spent about $900 more compared to those without drug coverage,
while those with HMO drug coverage incurred $248 higher drug expenditure than those who lacked coverage (p < .0001). Finally, those with private drug coverage had $184 higher total spending compared to those without coverage (p < .01). Further, after controlling for other factors, persons with diabetes incurred $681 more in total drug expenditures as compared to those without diabetes. Mental illness was linked to $654 higher annual drug expenditures per year (p < .0001). The variables controlling for multiple co-morbid conditions did not have a significant impact on spending. This may be due to multicollinearity with indicator variables identifying the presence or absence of specific diseases.

Drug expenditures were $165 lower for males relative to females (p < .0001) and African Americans incurred $264 less in annual drug expenditures compared to whites (p < .0001). Ethnicity matters as drug expenditures were on average $337 lower for Hispanics in comparison to non-Hispanics (p < .0001). Marital status is another significant predictor of annual drug spending. Formerly married and never married beneficiaries spend $145 and $334 less than their married counterparts (p < .01). Medicare beneficiaries under age 65 (and are disabled) spent, on average, $823 more per annum than those aged 65-69 (p < .0001). Those with higher levels of educational attainment tended to spend more on prescriptions. For example, beneficiaries with a college education spent $233 more on drugs annually compared to those with less than a high school education (p < .01).
To gauge the combination of these effects, consider the following scenario. A married, white, non-Hispanic female enrolled in Medicaid who also has both diabetes and mental illness (two diseases more likely in the Medicaid population), and a heart condition (the most prevalent condition), and under 65 years of age (again, more likely in Medicaid than other categories) is predicted to incur $3,283 more in drug spending than a married white, non-Hispanic female, aged 65-69, without Medicaid or these disease conditions. This hypothetical individual therefore would fall in the dead center of the donut-hole coverage gap.

c. Regression Results -- Total Annual Prescription Expenditures (in logs)

Model 2 expresses total expenditures in logs in order to ascertain relative differences in spending. The significant results for Model 2 are consistent with those from Model 1. Annual prescription drug expenditures were 78% and 92% higher for those with Medicaid and ESI, respectively, compared to the uninsured (p < .0001). Total annual spending on medications was almost 32% higher for HMO enrollees relative to uninsured persons (p < .0001). Relative differences in drug spending incurred by those with private insurance compared to those without drug coverage were negligible.

Diabetics incurred 60% higher drug expenditures than those without the disease (p < .0001), while those with heart disease experienced on average 95% higher spending compared to those without the disease (p < .0001). Elderly with mental illness disorders incurred 51% higher drug expenditures in comparison to persons with
mental disorders ($p < .0001$). Parkinson’s is another health condition linked to high drug costs. Annual spending was 54% higher for persons afflicted with Parkinson’s relative to those without the disease ($p < .01$). Expenditures on drugs were also higher for persons with stroke, pulmonary conditions, or arthritis. However, the magnitude of the effects associated with each of these conditions was much smaller ranging from 17% to 28% ($p < .01$). Having two co-morbid conditions relative to none or one increased annual drug expenditures by nearly 20% ($p < .01$). The corresponding percentage increase linked to having 3 co-morbid conditions was 27% ($p < .01$).

Holding other factors constant, males spent 26% less annually in drugs than females ($p < .0001$). African Americans spent 22% less than whites, while Hispanics incurred 37% lower drug expenditures than non-Hispanics ($p < .0001$). Not surprisingly, the disabled (under age 65) incurred nearly 29% higher annual drug expenditures than those age 65-69 years of age ($p < .0001$). Being married also was a predictor for increased spending with those formerly married and never married spending 15% and 25% less, respectively when compared to those who were married ($p < .0001$). Educational attainment is associated with higher annual total prescription drug spending. Compared to those without a high school diploma, high school graduates spent 7% more annually ($p < .05$) while those with a college degree and those with a professional degree each spent 19% more annually on drugs ($p < .01$).
d. Regression Results -- Total Annual Out-of-Pocket Expenditures

The dependent variable in Model 3 is actual out-of-pocket expenditures on prescription drugs. It is anticipated that those with prescription drug coverage will incur smaller out-of-pocket expenditures compared to those without prescription drug coverage. Medicaid beneficiaries spent almost $900 less out-of-pocket annually for their prescriptions relative to those without prescription drug coverage (p < .0001). Medicare beneficiaries with ESI coverage spent $504 less OOP relative to elderly who lacked drug coverage (p < .0001). The corresponding reductions in OOP spending for HMO and privately insured elderly were $455 and $205, respectively (p < .0001).

As compared to individuals without reported health conditions, the individual conditions that displayed the greatest effect on OOP were heart conditions, diabetes, and mental health increasing OOP by $165, $162, and $129, respectively (p < .0001). As compared to beneficiaries with one or less co-morbid conditions, those beneficiaries with two, three, or four or more reported co-morbid conditions respectively spent $66, $152, and $184 more OOP (p < .05). Overall in this model, there a reduction in multicollinearity was observed in the disease states which may imply that a beneficiary’s type of drug coverage has a greater impact on their OOP expenditures than their diagnosed health condition(s).

Out-of-pocket spending was significantly lower for males and African Americans relative to females and whites -- $87.44 and $110.75, respectively (p < .0001). Hispanics incurred almost $95 more in OOP spending compared to non-
Hispanics (p < .01). Not surprisingly, disabled Medicare beneficiaries (under age 65) incurred $125 higher OOP drug expenditures compared to those aged 65-69 (p < .0001). Formerly married persons spent $53 less OOP compared to married beneficiaries (p < .01). OOP spending did not vary by educational attainment except for those with a college degree. These individuals incurred $106 more in drug spending compared to those with less than a high school education (p < .01).

e. Regression Results -- Out-of-Pocket Expenditures as % of Total Expenditures

Model 4 identifies factors that impact out-of-pocket spending measured as a percentage of total drug expenditures. Type of coverage has large significant effects on OOP spending expressed as a percentage of total spending. The out-of-pocket percentage was almost 86 percentage points lower for those with Medicaid drug coverage as compared to those with no coverage (p < .0001). For ESI beneficiaries, the OOP percentage was close to 63 percentage points lower than Medicare beneficiaries who lacked drug coverage (p < .0001). For those with drug coverage through an HMO, the OOP percentage was 45 percentage points lower compared to those without coverage (p < .0001). Finally, the OOP percentage was close to 23 percentage points lower for those with private insurance relative to those who lacked coverage. There were small significant reductions in the OOP percentage associated with being male or African American and having specific health conditions (p < .01). These effects, however, were inconsequential relative to the effects linked to type of drug coverage.
VII. Conclusion

The findings from this study demonstrate how the availability and type of prescription coverage may affect total and out-of-pocket prescription drug spending. Even when they lack full benefit coverage, Medicare beneficiaries are high users of outpatient medications. Individuals without comprehensive prescription insurance, on average, still spent over $1000 per year even though this almost entirely came out of their own pockets. This utilization appears to be even higher for those with prescription drug benefits. Even though the dually eligible population will now have prescription coverage through Medicare instead of directly through the state Medicaid programs, states will still maintain responsibility for identifying and enrolling these beneficiaries in the program. In addition, states will face pressure to fill in the financial gaps in the statutory Medicare Part D framework.

The duals in this study show a very real need for adequate prescription drug coverage. This subset of the total sample displayed the highest incidence of conditions such as diabetes, mental illness, and disability that correlate with significantly higher overall prescription drug spending. Without a stable and adequate source of prescription drug coverage, it is a very real possibility that this low-income population would be forced to forgo medications vital to their health. The results of the models for total prescription drug spending show a clear trend of how the addition of a co-morbid condition can dramatically increase spending on needed medications. Further, the models on out-of-pocket expenditures show how inadequate prescription drug
coverage could quickly drain personal financial resources. This combination of factors points to the necessity of maintaining coverage for the dually eligible population and also the vital and vulnerable role played by the states in helping provide that coverage.

With the implementation of Part D, the federal government has taken a much larger role in the management of prescription coverage for the dually eligible. This increased role was part of the reasoning behind the clawback policy that will gradually reduce the federal matching funds given to states for Medicaid. However, states will still be contributing towards these beneficiaries’ premiums, deductibles, and cost-sharing. On the surface it may have seemed to constitute substantial relief for state Medicaid budgets; state Medicaid budget growth still hinges on the size and health of the Medicaid population – including the dually eligible. Average total annual drug expenditures for duals in this sample population reached over $2,000 (Table 3) and in the new Part D framework, beneficiaries will reach the donut-hole once they have spent $2,250 total for drugs (Table 1). Given these two considerations, it is reasonable to foresee a significant percentage of dual eligibles reaching the donut-hole and beyond in their drug spending and adding to state expenditures.

Although this study helps illuminate some of the prescription spending characteristics of these Medicare populations, one question that is still not fully answered is how the voluntary enrollment nature of the Medicare Part D benefit will affect the overall budget and long-term solvency of the program. The findings reported here show that those without prescription drug coverage, on average, utilize...
and spend the least on medications. One of the limitations of this study is that it is unable to explain why these individuals do not have coverage. Possible reasons include: they lacked adequate income to purchase a plan; their retirement plan simply did not include the option; ideologically, they may not buy into the traditional drug therapy; or they may be relatively healthy in comparison to the other beneficiaries in this study and feel that they do not need a comprehensive drug benefit. This latter explanation is possible given that those without coverage also reported some of the lowest incidences for conditions such as diabetes. This finding should be of great concern to the Medicare program. For any insurance provider, it is vital that the population they cover has a balance of beneficiaries who utilize the benefits and those who do not. Without such a balance, a plan faces the adverse selection of individuals who will over-utilize benefits and take the provider into fiscal insolvency. If healthier individuals decide to opt out of Medicare Part D, for whatever reason, Medicare will not be invulnerable to this same risk.

It is clear that states will still maintain a strong role in ensuring adequate health care is available, accessible, and affordable for those individuals who are poor, elderly or disabled. No matter how much money is spent at the federal level, the states will inevitably remain better positioned on the ground to identify and manage individual cases. It is for this reason, that as long as the public indemnity programs remain in their current form of Medicare and Medicaid that the federal and state partnership remain balanced in the distribution of financial and administrative responsibility.
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<thead>
<tr>
<th>Population Characteristics Means</th>
<th>Total Population</th>
<th>Medicaid Rx Coverage</th>
<th>ESI Rx Coverage</th>
<th>HMO Rx Coverage</th>
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<td>92.78%</td>
<td>81.76%</td>
<td>96.75%</td>
<td>95.08%</td>
<td>96.17%</td>
<td>93.94%</td>
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<td><strong>Age</strong></td>
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<tr>
<td>&lt; 65 Years old</td>
<td>15.40%</td>
<td>46.77%</td>
<td>8.24%</td>
<td>11.09%</td>
<td>6.63%</td>
<td>13.85%</td>
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<tr>
<td>65-69 Years old</td>
<td>14.17%</td>
<td>9.56%</td>
<td>15.13%</td>
<td>18.37%</td>
<td>14.01%</td>
<td>11.93%</td>
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<tr>
<td>70-74 Years old</td>
<td>21.17%</td>
<td>11.39%</td>
<td>25.11%</td>
<td>23.80%</td>
<td>23.62%</td>
<td>18.60%</td>
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<tr>
<td>75-79 Years old</td>
<td>18.00%</td>
<td>11.79%</td>
<td>19.84%</td>
<td>17.87%</td>
<td>19.79%</td>
<td>18.69%</td>
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<tr>
<td>&gt; 79 Years old</td>
<td>31.25%</td>
<td>20.48%</td>
<td>31.68%</td>
<td>28.87%</td>
<td>35.95%</td>
<td>36.92%</td>
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## Table 3 (continued)

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<th>Total Population</th>
<th>Medicaid Rx Coverage</th>
<th>ESI Rx Coverage</th>
<th>HMO Rx Coverage</th>
<th>Private Rx Coverage</th>
<th>No Rx Coverage</th>
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<td><strong>Marital Status</strong></td>
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</tr>
<tr>
<td>Married</td>
<td>49.59%</td>
<td>18.73%</td>
<td>63.29%</td>
<td>53.01%</td>
<td>50.61%</td>
<td>47.83%</td>
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<tr>
<td>Formerly Married</td>
<td>42.73%</td>
<td>53.23%</td>
<td>33.35%</td>
<td>43.17%</td>
<td>45.47%</td>
<td>45.87%</td>
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<tr>
<td>Never Married</td>
<td>7.68%</td>
<td>28.05%</td>
<td>3.37%</td>
<td>3.82%</td>
<td>3.92%</td>
<td>6.29%</td>
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<td><strong>Education</strong></td>
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<td>Less than High School</td>
<td>33.89%</td>
<td>60.56%</td>
<td>21.83%</td>
<td>29.87%</td>
<td>29.31%</td>
<td>38.56%</td>
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<tr>
<td>High School Diploma</td>
<td>52.17%</td>
<td>35.54%</td>
<td>57.62%</td>
<td>55.72%</td>
<td>56.68%</td>
<td>49.93%</td>
</tr>
<tr>
<td>College Degree</td>
<td>8.27%</td>
<td>2.39%</td>
<td>10.61%</td>
<td>9.24%</td>
<td>9.15%</td>
<td>7.59%</td>
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<tr>
<td>Post-Secondary Degree</td>
<td>5.67%</td>
<td>1.51%</td>
<td>9.94%</td>
<td>5.17%</td>
<td>4.86%</td>
<td>3.92%</td>
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<td><strong>Residential Area</strong></td>
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<tr>
<td>Metropolitan</td>
<td>71.72%</td>
<td>69.48%</td>
<td>72.91%</td>
<td>88.40%</td>
<td>66.95%</td>
<td>58.51%</td>
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<tr>
<td>Rural</td>
<td>28.28%</td>
<td>30.52%</td>
<td>27.09%</td>
<td>11.60%</td>
<td>33.05%</td>
<td>41.49%</td>
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Table 4
Model Regression Estimates (N = 8988)

<table>
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<tr>
<th>Dependent Variable</th>
<th>Model</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
</table>
| Total Annual Rx $  
Expenditures | 651.81***  
(69.73) | 0.7809*** | -897.29***  
(25.53) | -0.8569***  
(0.008) |
| Expenditures† | 0.9127***  
(53.76) | -504.03***  
(19.69) | -0.6266***  
(0.006) |
| Total Annual Out-  
of-Pocket $  
Expenditures | 248.43***  
(57.25) | 0.3177*** | -455.06***  
(20.96) | -0.4517***  
(0.007) |
| Out-of-Pocket as  
% of Total | 183.76**  
(67.13) | 0.0524 | -205.26***  
(24.58) | -0.2279***  
(0.008) |

Prescription Coverage Insurance Source

| Medicaid | 651.81***  
(69.73) | 0.7809*** | -897.29***  
(25.53) | -0.8569***  
(0.008) |
| Employer Sponsored | 903.26***  
(53.76) | 0.9127*** | -504.03***  
(19.69) | -0.6266***  
(0.006) |
| HMO | 248.43***  
(57.25) | 0.3177*** | -455.06***  
(20.96) | -0.4517***  
(0.007) |
| Private | 183.76**  
(67.13) | 0.0524 | -205.26***  
(24.58) | -0.2279***  
(0.008) |

Health Conditions

| Diabetes | 681.30***  
(71.79) | 0.6040*** | 162.20***  
(26.28) | -0.0393***  
(0.009) |
| Mental Illness | 651.15***  
(74.18) | 0.5095*** | 129.27***  
(27.16) | -0.0340***  
(0.009) |
| Heart Condition | 564.99***  
(69.45) | 0.9531*** | 165.58***  
(25.43) | -0.0387***  
(0.008) |
| Pulmonary Condition | 429.08***  
(72.76) | 0.2798*** | 76.28**  
(26.64) | -0.0259**  
(0.009) |
| Arthritis | 270.77***  
(68.09) | 0.1725** | 29.02  
(24.93) | -0.0216**  
(0.008) |
| Alzheimer’s | 110.48  
(120.12) | -0.0112 | 6.62  
(43.97) | -0.0174  
(0.014) |
| Parkinson’s | 540.29**  
(168.18) | 0.5443** | 150.88*  
(61.57) | -0.0603**  
(0.020) |
| Stroke | 337.68***  
(76.10) | 0.2370*** | 91.64**  
(27.86) | -0.0138  
(0.009) |
| Cancer | 145.77*  
(67.68) | 0.0343 | -9.99  
(24.78) | -0.0172*  
(0.008) |
| 2 Co-Morbid Conditions | -85.91  
(85.07) | 0.1971** | 65.74*  
(31.14) | 0.0152  
(0.010) |
| 3 Co-Morbid Conditions | -89.26  
(132.34) | 0.2733** | 152.52**  
(48.45) | 0.0344*  
(0.016) |
| >3 Co-Morbid Conditions | -89.25  
(202.66) | 0.2248 | 184.29*  
(74.19) | 0.0550*  
(0.024) |
<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>1</th>
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<td><strong>Gender</strong></td>
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<td></td>
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</tr>
<tr>
<td>Male</td>
<td>-164.61***</td>
<td>-0.2580***</td>
<td>-87.44***</td>
<td>-0.0145**</td>
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<tr>
<td>(41.30)</td>
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<td>(15.12)</td>
<td>(0.005)</td>
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<tr>
<td><strong>Race</strong></td>
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<tr>
<td>African American</td>
<td>-263.96***</td>
<td>-0.2175***</td>
<td>-110.75***</td>
<td>-0.0244***</td>
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<td>(64.75)</td>
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<td>(23.70)</td>
<td>(0.008)</td>
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<tr>
<td>Other</td>
<td>-31.41 (89.20)</td>
<td>-0.1381*</td>
<td>-20.38(32.66)</td>
<td>-0.0005 (0.011)</td>
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<tr>
<td><strong>Ethnicity</strong></td>
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<tr>
<td>Hispanic</td>
<td>-337.44***</td>
<td>-0.3737***</td>
<td>-94.68**</td>
<td>0.0032</td>
</tr>
<tr>
<td>(76.39)</td>
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<td></td>
<td>(32.66)</td>
<td>(0.009)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
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</tr>
<tr>
<td>&lt; 65 Years old</td>
<td>823.25***</td>
<td>0.2896***</td>
<td>125.04***</td>
<td>-0.0226*</td>
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<td>(78.04)</td>
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<td>(28.57)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>70-74 Years old</td>
<td>42.77 (64.66)</td>
<td>0.0741</td>
<td>13.63(23.67)</td>
<td>-0.0089 (0.008)</td>
</tr>
<tr>
<td>75-79 Years old</td>
<td>55.36 (67.39)</td>
<td>0.1000*</td>
<td>12.64(24.67)</td>
<td>-0.0049 (0.008)</td>
</tr>
<tr>
<td>&gt; 79 Years old</td>
<td>-14.63 (62.83)</td>
<td>0.0420</td>
<td>39.32(23.00)</td>
<td>0.0122 (0.008)</td>
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<tr>
<td><strong>Marital Status</strong></td>
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<tr>
<td>Formerly Married</td>
<td>-145.48**</td>
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<td>0.0127*</td>
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<td>(43.93)</td>
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<td>(16.08)</td>
<td>(0.005)</td>
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<tr>
<td>Never Married</td>
<td>-333.50***</td>
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<td>-54.70</td>
<td>0.0087</td>
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<td>(83.52)</td>
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<td>(30.57)</td>
<td>(0.010)</td>
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<tr>
<td><strong>Education</strong></td>
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<td></td>
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<tr>
<td>High School Diploma</td>
<td>87.53*</td>
<td>0.0702*</td>
<td>8.65 (16.10)</td>
<td>-0.0049 (0.005)</td>
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<tr>
<td>(43.99)</td>
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<tr>
<td>College Degree</td>
<td>233.04**</td>
<td>0.1854**</td>
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<td>(75.47)</td>
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<td>(27.63)</td>
<td>(0.009)</td>
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<tr>
<td>Post-Secondary Degree</td>
<td>319.93**</td>
<td>0.1896**</td>
<td>47.17 (32.37)</td>
<td>-0.0086 (0.011)</td>
</tr>
</tbody>
</table>
| Table 4  
| (continued) |
| Model | 1 | 2† | 3 | 4 |
| Residential Area |
| Metropolitan | -16.49 | -0.0248 | -53.05** | -0.0342*** |
| | (43.50) | (15.93) | (0.005) |

The reference categories are: No Rx Insurance, female, white, non-Hispanic, 65-69 year old age group, married, less than high school education, rural residential area.

† Reported as transformed log values

* Significant at (.01 < p ≤ .05)

** Significant at (.001 ≤ p ≤ .01)

*** Significant at p < .0001

(standard deviation in parenthesis)
References


Schore, Jennifer; Randall Brown; “State Variation in Medicaid Pharmacy Benefit Use Among Dual-Eligible Beneficiaries”; A study prepared for the Henry J. Kaiser Family Foundation; March 2002.


Walsh, Edith G. and William D. Clark; “Managed Care and Dually Eligible Beneficiaries: Challenges in Coordination”; Health Care Financing Review; 24.1 (Fall 2002): 63.