

State Variation in Medicaid Pharmacy Benefit Use Among Dual-Eligible Beneficiaries

Prepared by

Jennifer Schore, M.S., M.S.W.
Randall Brown, Ph.D.
Mathematica Policy Research, Inc.

for

The Henry J. Kaiser Family Foundation

March 2002

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Acknowledgments

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Executive Summary

Medicaid plays a critical role in providing prescription drugs to low-income elderly and disabled people on Medicare. In 1995, Medicaid provided prescription drug coverage to 11 percent of all Medicare beneficiaries. Individuals covered by both Medicare and Medicaid—known as the “dual-eligible” population—are generally among Medicare’s poorest and are also considerably sicker and more frail, on average, than others on Medicare. For these beneficiaries, the Medicaid pharmacy benefit removes significant financial barriers to prescription drugs.

This study explores the nature and extent of variation in Medicaid pharmacy benefit use and spending for dual-eligible beneficiaries in 1995. Little is known about how prescription drug use and spending among dual eligibles vary across beneficiary characteristics and states. Variations in drug use across different segments of the dual-eligible population reflect the diversity of this group of beneficiaries in terms of both health needs and access to care. Cross-state differences in pharmacy benefit use, on the other hand, are a function of the multiple factors concerning both the flexibility granted to states in designing their Medicaid programs and states’ beneficiary populations. Medicaid programs vary in their eligibility criteria, pharmacy benefit features, and the accessibility of pharmacies that accept Medicaid payment. In addition, states themselves may vary more generally in their health service environments, provider practice patterns, and the characteristics of their residents.

Over the past 20 years, Medicaid drug spending has increased markedly, focusing attention on the need to maintain and improve beneficiaries’ access to drugs while also controlling spending. Gaining a better understanding of how pharmacy benefit use among dual-eligibles varies both by beneficiary characteristics and across states will offer insight into the relationship between benefit features and access for an especially vulnerable group of Medicare beneficiaries. These comparisons can inform discussions about benefit design and other cost-control measures and contribute to the ongoing debate about how best to design a Medicare pharmacy benefit.

This study uses a 12-state database developed for the Centers for Medicare & Medicaid Services (CMS) by Mathematica Policy Research, Inc., linking Medicaid and Medicare data for dual-eligible beneficiaries. Due to the complexities of linking data for both programs, 1995 was the most recent year for which the composite database had been constructed at the time of the study. The study sample includes all dual-eligible beneficiaries in 1995 in 10 of the 12 states included in the database: California (restricted to 16 counties), Colorado, Florida, Georgia, Indiana, Kentucky, Michigan, New Jersey, Washington, and Wisconsin. Although states were selected for the CMS database based on the availability and quality of their Medicaid data rather than on national representativeness, the 10 states in this study include a geographically diverse mix of large and small states and roughly a third of the national dual-eligible population.

This study examines 1995 per-beneficiary average monthly Medicaid prescription drug reimbursement and average monthly number of prescriptions filled, as defined by the number of paid pharmacy claims. Unlike aggregate Medicaid spending data available through HCFA-2082 reporting, the beneficiary-level data provided by the Dual-Eligible Database allow for cross-state comparisons of pharmacy use and spending among groups of beneficiaries defined by the presence of medical conditions and other characteristics measured by enrollment and claims data. The results presented in this report are based primarily on descriptive bivariate tabulations of pharmacy benefit reimbursement and use for dual-eligibles, by selected characteristics, living in the 10 states included in the study

sample. Regression was used to explore the extent to which measured beneficiary characteristics contributed to cross-state variation in benefit use.

The principal findings of this analysis include the following:

- n Overall, dual-eligible beneficiaries are relatively high users of the Medicaid pharmacy benefit.
 - In 1995, the mean number of prescriptions filled per beneficiary was 3.4 per month, with 88 percent of the study sample filling at least one prescription and the top 10 percent filling roughly eight or more per month.
 - Medicaid spent an average of \$96 per dual-eligible beneficiary per month on pharmacy use in 1995—or \$1,152 per year for those with Medicaid prescription drug coverage the entire year. Ten percent of the study sample spent over \$229 per month on pharmacy benefits.
- n Medicaid pharmacy benefit use and spending among dual-eligibles vary by beneficiary characteristics such as age, sex, race, and nursing home residence.
 - The mean number of prescriptions filled per month among the study sample ranged from 3.0 among beneficiaries under 65 with disabilities to 4.0 among those ages 85 and older.
 - While men filled an average 2.8 prescriptions per month in 1995, the average among women was 3.6.
 - African-American dual-eligibles filled substantially fewer prescriptions per month on average (2.8) than did the white beneficiaries (3.7).
 - Those who spent the entire year in a nursing home filled twice as many prescriptions per month as those who did not spend any part of the year in a nursing home (5.4 versus 2.7).
- n Dual-eligible beneficiaries' pharmacy benefit use varies according to the nature of their eligibility for both Medicaid and Medicare.
 - Beneficiaries in the study who qualified for Medicaid coverage due to their enrollment in cash-assistance programs filled fewer prescriptions on average per month (2.8) than did those who qualified by spending down their assets on health-care expenses (4.3).
 - In terms of Medicare eligibility, aged dual-eligibles were higher users of prescription drugs than were under-65 duals with disabilities—filling an average 3.6 prescriptions per month versus 2.9 among duals with disabilities. Nonetheless, under-65 duals had drug costs that were higher than those of aged duals—\$102 per month versus \$91, implying that the medications taken by under-65 duals are more expensive. Those who qualified due to a diagnosis of end-stage renal disease (ESRD) filled an average 5.3 prescriptions per month.
- n Medicaid pharmacy benefit use and spending were highly skewed and varied considerably across states for dual-eligible beneficiaries.

- The mean number of prescriptions filled per beneficiary varied widely across the states, from 1.9 per month in California to 5.1 in Indiana.
- Mean pharmacy benefit spending ranged from \$62 per month in California to more than twice that amount in Indiana (\$131). New Jersey’s mean pharmacy spending of \$113 per month was also considerably higher than the overall mean.
- Reimbursement per prescription ranged from \$25 in Kentucky to \$36 in New Jersey.

There are a variety of factors that may play a role in cross-state variation in pharmacy benefit use. In addition to beneficiaries’ health needs, other factors could include the amount of contact beneficiaries have with their physicians, differences in Medicaid eligibility criteria, pharmacy benefit features, provider behavior, or other unmeasured beneficiary characteristics.

As might be expected, looking across sub-groups of the dual-eligible population, those who are among the sickest beneficiaries tend to use the Medicaid pharmacy benefit more often. However, much of the demonstrated cross-state variation in pharmacy benefit use appears to persist independent of measured beneficiary characteristics. If such variation results in different health outcomes, it presents a major challenge to the equity of publicly funded health insurance programs. Additional research is needed to determine if such a link exists and if so, what type of changes might improve beneficiary health.

The “state laboratories” of the Medicaid program have much to offer in terms of how different methods of controlling benefit levels work in a publicly funded program. This information is critical for states as they attempt to gain control over their Medicaid budgets. It may also aid federal policymakers as they continue the debate over the addition of an affordable Medicare drug benefit.

Introduction

The Medicaid program provides supplemental coverage for many of Medicare's poorest beneficiaries. Those who qualify for both programs—the “dual-eligible” population—may receive assistance from the Medicaid program with Medicare's cost-sharing requirements, along with benefits not included in the standard Medicare benefit package such as prescription drugs.² While prescription drug coverage is optional under Medicaid, all states currently include it in their benefit packages.

In 1995, 11 percent of Medicare beneficiaries had prescription drug coverage through Medicaid (Poisal, et al., 1999). Medicaid pharmacy benefits are relatively generous and stable compared with prescription drug coverage available to other Medicare beneficiaries through privately purchased Medicare supplements, employer-sponsored retiree insurance, and coverage offered to Medicare+Choice participants. As in the private sector, however, over the past 20 years, Medicaid drug spending has increased markedly in both absolute and relative terms, raising concerns about how best to control costs.

While the Medicaid pharmacy benefit removes substantial financial barriers to prescription drugs for dual-eligible beneficiaries, use of the benefit may vary considerably across different segments of the dual-eligible population and across states as well. Variations in drug use across sub-groups of dual-eligible beneficiaries reflect the diversity of this population in terms of both health needs and access to care.

Cross-state variation in Medicaid pharmacy benefit use stems from a wide range of factors. States vary in their Medicaid program eligibility criteria and program generosity. These differences lead states with the most stringent criteria to enroll only the poorest and sickest individuals and those with the highest levels of disability; in other words, beneficiaries who tend to have higher expected use of the benefit. Variation in benefit features across states, as well as in the accessibility of pharmacies that accept Medicaid payment, also contributes to cross-state differences in the use of pharmacy benefits. In addition, states themselves vary more generally in their health service environments; their provider practice patterns; and the socio-demographic characteristics, health status, and care-seeking behavior of their residents. All of these factors contribute to oft-noted differences across states in the use of and spending for Medicaid-covered services.

This study explores the nature and extent of state variation in Medicaid pharmacy benefit use and spending for dual-eligible beneficiaries covered by the benefit in 1995. It is one of the first to use a database linking Medicaid and Medicare enrollment and claims data for dual-eligible beneficiaries in 12 states recently developed for the Centers for Medicare & Medicaid Services (CMS) by Mathematica Policy Research, Inc. (Brown, et al., 1998). Unlike aggregate Medicaid spending data available through HCFA-2082 reporting, the beneficiary-level data provided by the Dual-Eligible Database allow for cross-state comparison of pharmacy use and spending among groups of beneficiaries defined by the presence of medical conditions and other characteristics measured by enrollment and claims data. Such cross-state comparisons allow a preliminary investigation of the relationship between benefit features and benefit access. These data can begin to inform decisions

² In 1995, 12 percent of Medicare beneficiaries were also eligible for Medicaid. Of those, 90 percent were covered by Medicaid's prescription drug benefit. The remaining 10 percent did not have full Medicaid benefits but rather assistance only with Medicare's premiums, co-payments, or deductibles. These Medicaid beneficiaries, known as Qualified Medicare Beneficiaries (QMBs) and Specified Low-Income Medicare Beneficiaries (SLMBs), have incomes slightly higher than do those eligible for full benefits.

about potential changes to Medicaid benefits that may arise out of concern about increasing prescription drug costs, as well as contribute to the ongoing debate about how best to structure a Medicare pharmacy benefit.

Study Sample and Methods

This study was funded by The Henry J. Kaiser Family Foundation and was conducted in cooperation with CMS. It uses CMS's Dual-Eligible Database, which includes beneficiaries enrolled in both Medicare and Medicaid who were poor and either elderly (ages 65 or older) or under-65 with permanent disabilities. The Dual-Eligible Database includes data for California (restricted to 16 counties), Colorado, Florida, Georgia, Iowa, Indiana, Kentucky, Maine, Michigan, New Jersey, Washington, and Wisconsin and covers services provided between 1994 and 1996.

This study uses 1995 data from 10 of the states in the Database (excluding Iowa and Maine) and includes approximately 1.5 million beneficiaries dually eligible for Medicare and Medicaid.³ In 1998, dual-eligible beneficiaries in the 10 study states made up roughly 36 percent of the national population of dual-eligible beneficiaries, primarily because California and Florida have such large dual-eligible populations (Ellwood and Quinn, 2001). Although states were selected for inclusion in the database based on the availability and quality of their Medicaid data rather than on national representativeness, the 10 states in this study include a geographically diverse mix of large and small states. Statistics presented in the rest of this report based on the entire sample give equal weight to each state so that, for example, the experiences of California and Florida beneficiaries do not dominate the results.

The study sample has higher proportions of women and minority beneficiaries than does the overall Medicare population, as well as higher proportions of both those under age 65 with disabilities and those 85 or older (Exhibit 1). This distribution is consistent with that of the dual-eligible beneficiaries included in the Medicare Current Beneficiary Survey (MCBS). Racial composition varied considerably across states. For example, 45 percent of the study sample in Georgia and 29 percent of those in Michigan were African-American, compared with just 6 percent in Colorado and 5 percent in Washington, reflecting differences in the racial composition of the dual-eligible populations of those states.

To identify the presence of medical conditions in this analysis, we used Diagnostic Cost Groups (DCGs) (DxCG, Inc., 1999) based on primary and secondary diagnoses recorded on all types of Medicare and Medicaid service claims (including, but not limited to hospital claims). Identification of medical conditions in this way misses conditions that did not result in medical treatment, but is unlikely to miss serious conditions since most beneficiaries taking medications for a serious condition will have received some other medical treatment for it. This analysis focuses on four chronic conditions (or groups of conditions): heart disease associated with high medication costs, stroke, chronic lung disease, and diabetes and one indicator of general frailty: dehydration, malnutrition, or other metabolic disorders.

³ 1996 data were not available when the analysis was conducted. Iowa and Maine were excluded from the analysis because 1995 pharmacy data and other key data elements needed for this analysis were not reliable in those states.

Exhibit 1**Distribution of Beneficiaries, by Selected Beneficiary Characteristics, 1995**

	Dual-Eligible Analysis Sample
Age	
Under-65 disabled	35.1%
65 to 74	26.2%
75 to 84	22.7%
85 and older	16.0%
Sex	
Male	34.9%
Female	65.1%
Race	
African-American	17.1%
White	72.3%
Other/Unknown	10.6%
Area of Residence	
Urban	76.6%
Rural	23.3%
Type of Medicaid Eligibility	
Cash Recipient	58.0%
Non-Cash Recipient	42.0%
Current Reason for Medicare Eligibility	
Aged	67.3%
Disabled	31.4%
End-Stage Renal Disease (ESRD)	1.3%

Note: Weighted to give each state equal representation. Analysis based on 10-state study sample of approximately 1.5 million dual-eligible beneficiaries (of 37.6 million Medicare beneficiaries nationwide) in 1995.

Again, as with those surveyed in the MCBS, dual-eligibles in our analysis have high rates of these serious and chronic illnesses, as reflected in diagnoses recorded on covered service claims, with more than 60 percent having one or more of these five conditions (Exhibit 2).

Given the high prevalence of multiple chronic conditions, it is not surprising that dual-eligible beneficiaries in the study were much more likely than typical Medicare beneficiaries to go into the hospital and have higher overall health-care costs.⁴ Nearly 30 percent of study beneficiaries were admitted to the hospital during 1995, compared with 19 percent of all Medicare beneficiaries (Social

⁴ Combined Medicare and Medicaid spending per capita for the study sample in 1995 (exclusive of Medicaid pharmacy spending) was roughly \$13,200—\$6,100 for Medicare services and \$7,100 for Medicaid services, compared with an average of just under \$5,000 in Medicare spending for all Medicare beneficiaries that year (Health Care Financing Administration, 1997).

Exhibit 2

Distribution of Beneficiaries, by Prevalence of High-Cost, Chronic Conditions, and Inpatient Hospital and Nursing Home Utilization, 1995

	Prevalence Among Analysis Sample ^a
Chronic Conditions Included in Analysis^a	
Stroke, cerebrovascular and other vascular disease	29.5%
High-cost heart disease ^b	21.1%
Chronic obstructive pulmonary disease, asthma, and other chronic lung problems	19.2%
Diabetes	19.6%
Dehydration, malnutrition, and other metabolic disorders ^c	32.1%
Number of Conditions^d	
0	38.7%
1	26.0%
2	18.0%
3 or more	17.3%
Number of Inpatient Hospital Stays During Year	
0	70.9%
1	17.6%
2	6.4%
3	2.7%
4 or more	2.4%
Nursing Home Residence During Year^e	
Not in nursing home	73.3%
In a Medicare SNF only	1.6%
In a Medicaid nursing home part of the year	10.7%
In a Medicaid nursing home entire year	14.4%
Died During Year	8.3%

Note: Weighted to give each state equal representation. Analysis based on 10-state study sample of approximately 1.5 million dual-eligible beneficiaries (of 37.6 million Medicare beneficiaries nationwide) in 1995.

^a Beneficiaries may have more than one condition. For example, among the 21% with high-cost heart disease, some may also have diabetes.

^b High-cost heart diseases include congestive heart failure, acute myocardial infarction, and other acute ischemic heart disease.

^c Metabolic disorders include hypoglycemia, dehydration, malnutrition, pituitary and thyroid problems, and vitamin deficiencies.

^d Number of conditions among those listed above.

^e Nursing homes include Medicare skilled-nursing facilities (SNFs), and Medicaid intermediate-care facilities and intermediate-care facilities for people with mental retardation. Those in a Medicaid nursing home all or part of the year may also have been in a Medicare SNF during the year.

Security Administration, 1997). Just over a quarter of the analysis sample were in some type of nursing home at some time during the year; and just under 15 percent were in a nursing home for the entire year.

The study focuses on 1995 per-beneficiary average monthly Medicaid prescription drug reimbursement and average monthly number of prescriptions filled, as defined by the number of paid pharmacy claims. For each beneficiary, monthly reimbursement and number of prescriptions are averaged over those months in 1995 when the beneficiary had full Medicaid benefits in the Medicaid fee-for-service sector (with or without any pharmacy benefit use during the month). The study sample includes only beneficiaries who had at least one month of full Medicaid coverage in the fee-for-service sector in 1995, as well as Medicare coverage at some time during the year. Individual months during which a beneficiary was in Medicaid managed care or did not have Medicaid drug coverage are not included in averages of monthly reimbursement or use. Months during which a beneficiary was in Medicare managed care, however, are included in averages, since such beneficiaries may or may not have had full coverage of prescription medications as part of their managed care plan. Only about 4 percent of the study sample was in either Medicare or Medicaid managed care for some part of 1995.

The analysis described below is based primarily on descriptive bivariate tabulations and focuses on pharmacy benefit reimbursement and use for dual-eligible beneficiaries living in different states and with different demographic and health characteristics.⁵ Regression was used to explore the extent to which measured beneficiary characteristics contributed to cross-state variation in benefit use. Monthly beneficiary-level data on pharmacy benefit use and spending were weighted to account for the number of months a beneficiary had full, fee-for-service Medicaid coverage in 1995. This weighting better reflects benefit use and cost to the state, since beneficiaries at risk of having drug expenses for relatively few months may have average monthly use and costs systematically different from those of beneficiaries with longer exposure.

We also weighted observations to give each state equal representation in the analysis. As noted, the states in the Dual-Eligible Database were not meant to be representative of the U.S. population. We weighted states equally in order to depict the average experience across 10 study states, rather than the average for the population of all beneficiaries in these particular states or in the nation as a whole.⁶

Overall Use of the Medicaid Pharmacy Benefit

During 1995, 88 percent of the sample had at least one prescription filled, with an average of 3.4 prescriptions per month.⁷ Roughly 10 percent filled eight or more prescriptions per month (Exhibit 3).

Mean monthly Medicaid reimbursement for pharmacy services was \$96, compared with median monthly reimbursement of just \$58, reflecting the fact that many beneficiaries had modest monthly pharmacy spending. Nevertheless, the top 10 percent of the sample incurred \$229 or more per month

⁵ All Exhibits display non-regression-adjusted (or raw) means.

⁶ All statistics presented in this report were produced with and without the weights just described. Differences between weighted and unweighted statistics are generally small and would not have led to different conclusions about patterns of pharmacy benefit use and spending, suggesting that the results for large states are not markedly different from those for smaller states.

⁷ The average beneficiary was eligible for pharmacy benefits for 10 months of the year. A beneficiary would not have been eligible for the fee-for-service pharmacy benefit *for the entire year* if he or she was not eligible for Medicaid the entire year, had died during the year, was eligible under the QMB/SLMB-only criteria, or was in Medicaid managed care for part of the year. In addition, for Indiana and Wisconsin, drug claims appeared to be missing from the Dual-Eligible Database for three calendar months. These months were excluded from the analysis and, in particular, from the average number of months eligible for the benefit.

Exhibit 3**Number of Medicaid-Covered Prescriptions Filled per Beneficiary per Month, 1995^a**

	Dual-Eligible Analysis Sample
Had at Least One Prescription Paid for by Medicaid During the Year	87.6%
Mean Monthly Number of Prescriptions	3.4
Median Monthly Number of Prescriptions	2.5
90th Percentile for Monthly Number of Prescriptions	7.7
Distribution of Number of Prescriptions per Month	
None	12.4%
1	23.0%
2 to 3	25.8%
4 to 6	24.0%
7 to 9	9.1%
10 or more	5.7%

^aExcludes payers other than Medicaid. Includes drugs delivered to beneficiaries in nursing homes, but excludes those delivered in hospitals.

Note: Weighted to give each state equal representation and weighted for beneficiary months with full, fee-for-service Medicaid. Analysis based on 10-state study sample of approximately 1.5 million dual-eligible beneficiaries (of 37.6 million Medicare beneficiaries nationwide) in 1995.

Exhibit 4**Monthly Medicaid Pharmacy Benefit Reimbursement per Beneficiary, 1995**

	Dual-Eligible Analysis Sample
Mean Monthly Pharmacy Reimbursement	\$96
Median Monthly Pharmacy Reimbursement	\$58
90th Percentile for Monthly Pharmacy Reimbursement	\$229
Distribution of Mean Monthly Pharmacy Reimbursement	
\$0	12.4%
\$1 to \$50	34.1%
\$51 to \$100	19.9%
\$101 to \$150	12.8%
\$151 to \$200	7.8%
\$201 to \$300	7.5%
\$300 or more	5.4%

Note: Weighted to give each state equal representation and weighted for beneficiary months with full, fee-for-service Medicaid. Analysis based on 10-state study sample of approximately 1.5 million dual-eligible beneficiaries (of 37.6 million Medicare beneficiaries nationwide) in 1995.

in Medicaid pharmacy spending (Exhibit 4). The average cost of a prescription during the year was \$28 (\$96 divided by 3.4 prescriptions per month). Medicaid spent \$970 during 1995 for the typical beneficiary in the analysis sample (\$96 per month times 10.1 months with full, fee-for-service Medicaid), but spent \$1,152 for those beneficiaries with full, fee-for-service benefits for the entire year (\$96 times 12 months).

These numbers vary considerably from those often cited based on the Medicare Current Beneficiary Survey (MCBS) (Poisal, et al., 1999). These differences are attributable to the inclusion in the analysis sample of beneficiaries residing in nursing homes for the entire year; the use of claims data rather than self-reports; and the fact that, unlike the MCBS sample, this study sample is not intended to be nationally representative.

Variations in Pharmacy Benefit Use by Beneficiary Characteristics

Medicaid provides relatively stable and generous prescription drug coverage for dual-eligible Medicare beneficiaries. Use of the pharmacy benefit is generally higher among this population than among the Medicare population at large due primarily to the higher prevalence of chronic conditions, which are often treated with prescription medications (see, for example, Poisal, et al., 1999). Pharmacy benefit use also varies by beneficiary characteristic within this population, however.

Demographics. Compared with dual-eligible beneficiaries ages 65 and older, under-65 duals with disabilities fill fewer prescriptions per month on average (3.0 versus 3.6), but incur higher drug bills nonetheless due to the higher average cost of their medications. In 1995, while under-65 dual-eligibles incurred an average \$106 per month in drug bills, those ages 65 and over incurred an average \$91 per month.

Among the elderly, those ages 75 to 84 have the highest drug costs (\$95 per month on average), but those ages 85 and over fill the most prescriptions (4.0 per month). Female dual-eligibles in this study sample fill more prescriptions (3.6 versus 2.8 per month) and incur higher drug costs (\$98 versus \$92 per month) than do the males (Exhibit 5).

White beneficiaries in the study sample have substantially higher pharmacy use and costs than do African-American beneficiaries and beneficiaries of other races. White beneficiaries fill an average of 3.7 prescriptions per month at a monthly cost of \$103. This level of use and spending is roughly 30 percent higher than it was for African-American beneficiaries and 40 percent higher than it was for beneficiaries of other races. (The nature of these racial differences in pharmacy benefit use and costs is explored further in a forthcoming report.)

Hospital and Nursing Home Utilization. Variations in utilization of inpatient care generally reflect underlying differences in health status. Thus, it is not surprising that pharmacy benefit use varies considerably according to whether a beneficiary has had an inpatient hospital or nursing home stay. Beneficiaries in the study sample who had not been hospitalized at any point during the year in 1995 had levels of pharmacy benefit use and cost that were well below the overall average and, among those who had been in the hospital, prescription drug use and cost rose with each additional admission (Exhibit 6). Those with four or more hospital stays, for instance, filled an average 5.9 prescriptions per month and incurred average monthly drug costs of \$202, compared with 2.9 prescriptions for an average \$81 among those without an inpatient hospital stay during the year. Drug use and costs were also considerably higher among dual-eligibles in the study sample who had spent the entire year in a

Exhibit 5**Monthly Reimbursement and Number of Prescriptions, by Selected Beneficiary Characteristics, 1995**

	Mean Rx Reimbursement per Beneficiary per Month (Dollars)	Mean Number of Prescriptions per Beneficiary per Month
Overall	\$96	3.4
Age		
Under 65	\$106	3.0
65 or older	\$91	3.6
65 to 74	\$88	3.1
75 to 84	\$95	3.8
85 and over	\$89	4.0
Sex		
Male	\$92	2.8
Female	\$98	3.6
Race		
African-American	\$81	2.8
White	\$103	3.7
Other/Unknown	\$73	2.2
Area of Residence		
Urban	\$95	3.2
Rural	\$99	3.8

Note: Weighted to give each state equal representation and weighted for beneficiary months with full, fee-for-service Medicaid. Analysis based on 10-state study sample of approximately 1.5 million dual-eligible beneficiaries (of 37.6 million Medicare beneficiaries nationwide) in 1995.

nursing home. These beneficiaries filled an average 5.4 prescriptions per month at a cost of \$124, compared with 2.7 prescriptions per month at a cost of \$87 among those who had not been in a nursing home at all during the year.

Program Eligibility. Beneficiaries eligible for Medicaid through cash assistance, such as Supplemental Security Income (SSI), tend to have lower pharmacy benefit use and costs than do non-cash beneficiaries. Non-cash beneficiaries include medically needy program participants, nursing home residents who have spent down to the Medicaid eligibility level, and individuals who may have higher incomes but require a nursing home level of care. Higher benefit use and spending among non-cash beneficiaries result primarily from the higher prevalence of chronic conditions often treated with prescription drugs among this population. In 1995, non-cash beneficiaries filled an average 4.3 prescriptions per month versus 2.8 per month among those eligible through cash assistance. Spending was correspondingly higher among the non-cash population, with their monthly pharmacy spending averaging \$117, versus \$84 among those on cash assistance (Exhibit 7).

Exhibit 6**Monthly Reimbursement and Number of Prescriptions, by Selected Beneficiary Characteristics, 1995**

	Mean Rx Reimbursement per Beneficiary per Month (Dollars)	Mean Number of Prescriptions Beneficiary per Month
Overall	\$96	3.4
Number of Inpatient Hospital Stays During Year		
0	\$81	2.9
1	\$122	4.2
2	\$148	4.9
3	\$170	5.3
4 or more	\$202	5.9
Nursing Home Residence		
Not in nursing home during year	\$87	2.7
In a Medicare skilled nursing facility only	\$112	3.8
In a Medicaid nursing home part of year	\$122	4.9
In a Medicaid nursing home entire year	\$124	5.4

Note: Weighted to give each state equal representation and weighted for beneficiary months with full, fee-for-service Medicaid. Analysis based on 10-state study sample of approximately 1.5 million dual-eligible beneficiaries (of 37.6 million Medicare beneficiaries nationwide) in 1995.

Exhibit 7**Monthly Reimbursement and Number of Prescriptions, by Medicaid and Medicare Eligibility, 1995**

	Mean Rx Reimbursement per Beneficiary per Month (Dollars)	Mean Number of Prescriptions Beneficiary per Month
Overall	\$96	3.4
Type of Medicaid Eligibility for Most of Year		
Cash recipient	\$84	2.8
Non-cash recipient	\$117	4.3
Current Reason for Medicare Entitlement		
Age	\$91	3.6
Disability	\$102	2.9
ESRD or ESRD/Disabled	\$240	5.3

Note: Weighted to give each state equal representation and weighted for beneficiary months with full, fee-for-service Medicaid. analysis based on 10-state study sample of approximately 1.5 million dual-eligible beneficiaries (of 37.6 million Medicare beneficiaries nationwide) in 1995.

Differences in benefit use and costs for those eligible for Medicare under the aged versus disabled criteria are consistent with the age-based variations discussed above. Not surprisingly, the relatively few beneficiaries with end-stage renal disease (ESRD) have much higher pharmacy benefit use and costs (5.3 prescriptions and \$240 per month) than do those in the other two entitlement groups. Average pharmacy use and spending among aged dual-eligibles in the study sample were 3.6 prescriptions and \$91 per month, compared with 2.9 prescriptions and \$102 per month among those who have disabilities.

Variations in Pharmacy Benefit Use by State

While average monthly pharmacy benefit use and spending for 7 of the 10 study states tended to cluster around the overall sample means, those of the states with the highest and lowest use differed considerably. California stands out as having had the lowest use and spending, 35 percent below the overall monthly average for reimbursement and about 45 percent below the overall monthly average for number of prescriptions filled. Indiana and New Jersey, on the other hand, had monthly reimbursement levels considerably above the sample average (36 and 18 percent, respectively). Beneficiaries in Indiana also filled about 50 percent more prescriptions per month than the overall sample. However, New Jersey's average monthly number of prescriptions filled was slightly below the overall average, implying that Medicaid paid more per prescription in New Jersey than in the other study states (Exhibit 8). Reimbursement per prescription ranged from \$25 in Kentucky to \$36 in New Jersey.

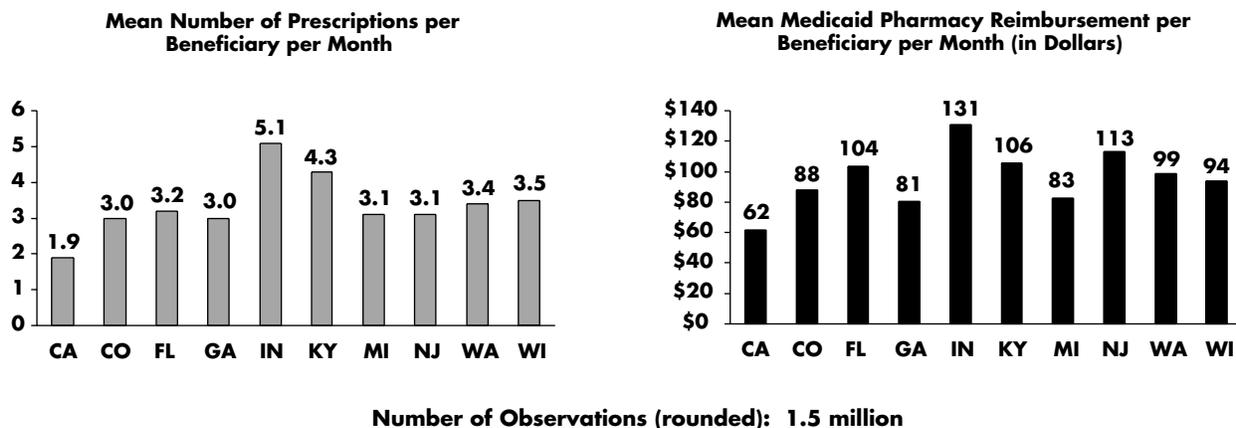
Many factors are likely to have contributed to the observed cross-state differences in Medicaid pharmacy benefit use and spending. State Medicaid pharmacy benefits differ in both structure and the extent of coverage they provide. This variation is likely to lead to differences in benefit use and cost across states. Exhibit 9 provides an overview of the 10 study states' Medicaid prescription drug benefits in 1995. During that year, only California, Florida, and Georgia had limits on the numbers of prescriptions that could be filled each month without prior approval. For beneficiaries reaching those limits, physicians would have to consider all the prescription drugs the beneficiary was taking before going through the approval process to add a new one. Five states (Colorado, Georgia, Indiana, Michigan, and Wisconsin) required modest co-payments. Seven (Colorado, Georgia, Kentucky, Michigan, New Jersey, Washington, and Wisconsin) had limits on the number of refills allowed or doses dispensed during a six-month period. These restrictions were unlikely to limit access to needed drugs for most beneficiaries, however, as these limits are generally aimed at discouraging excessive use of the pharmacy benefit.

State Medicaid programs can also manage their benefits through the use of formularies—lists of preferred prescription medications. A benefit with a closed formulary limits coverage to medications on the list, while one with an open formulary covers medications on and off the list. Unlike closed formularies under many private-sector prescription drug plans, however, under Medicaid closed formularies, most excluded prescription drugs must be made available with prior approval. The exceptions to this include certain classes of drugs, like barbiturates, and drugs for hair growth, fertility, or smoking cessation, which may be excluded altogether. In 1995, four of the study states (California, Kentucky, Michigan, and Washington) had closed formularies.

Prior authorization procedures, another management tool, require physicians to request and receive permission before a particular medication can be dispensed. The intent of these procedures is to allow states to control the use of medications that have relatively few and clearly defined purposes or high potential for abuse. At the time of our study, all of the states except Indiana had prior authorization.

Exhibit 8

Monthly Medicaid Reimbursement and Number of Prescriptions, by State of Residence, 1995



Note: All means weighted for beneficiary months with full, fee-for-service Medicaid.

Although this analysis does not permit determination of the extent to which particular benefit features affect benefit use, it is likely that the multiple strategies that states have adopted in structuring their Medicaid pharmacy benefits impact both benefit use and spending. For instance, California was the only study state that used what appear to be three of the most stringent management features: a monthly prescription cap, a closed formulary, and prior authorization. This multifaceted approach almost certainly contributed to California's having the lowest mean number of prescriptions filled per beneficiary each month. Indiana used none of these approaches and had the highest benefit use, even after controlling for beneficiary characteristics. The relationship between benefit features and pharmacy use in the other states was less clear, however.

There are almost certainly differences in how states implement these approaches that could affect both pharmacy spending and the extent to which beneficiaries get the medications they need. For example, four states in our study had closed formularies, but permitted physicians to use prior approval procedures to request medically necessary drugs outside the formulary. The effectiveness of closed formularies in controlling costs while maintaining care quality depends in part on how burdensome these procedures are to physicians, how long it takes for a request to be processed, and how likely it is that a request will be accepted.

Many other factors could have contributed to observed differences in benefit use across states. These include factors related to beneficiary health and behavior and the health service delivery system itself (including characteristics of physicians, pharmacists, and the service environment).

- *Beneficiaries* may differ across states in their health-care needs, their preferences concerning health service use, and their adherence to medication regimens. The populations enrolled in Medicaid in each of the study states differ in the prevalence and severity of various conditions, in part because of differences in Medicaid eligibility criteria.

Exhibit 9

Features of Medicaid Prescription Drug Benefits, by State, 1995

State	Limit on Prescriptions	Supply Restrictions	Co-Payment	Formulary
California	6 per month for community residents	None	None	Closed
Colorado	None	100-day supply for maintenance medication	\$.50 for generics, \$2 for single source or name brand	Open
Florida	8 per month for nursing home residents; 6 per month for community residents	None	None	Open
Georgia	5 per month	30-day supply	\$.50	Open
Indiana	None	None	\$.50 to \$3.00	Open
Kentucky	None	5 refills in 6 months	None	Closed
Michigan	None	100-day supply	\$1	Closed
New Jersey ^a	None	60-day supply/100-unit doses for most drugs; 5 refills in 6 months	None	Open
Washington	None	1-month supply; 2 refills per month	None	Closed
Wisconsin	None	5 refills in 6 months; 34-day supply for most drugs	\$1 for prescription, \$.50 for over-the-counter medications	Open

^a In New Jersey, beneficiaries eligible for Medicaid under the medically needy program do not have prescription drug coverage. All other states except Colorado and Indiana had medically needy programs in 1995 and provided prescription drug coverage for beneficiaries eligible under that program.

Source: National Pharmaceutical Council survey (1996 and 2000); Commerce Clearing House (1993 and updates); personal communication with Medi-Cal staff.

- *Physicians* may differ across states in their prescribing patterns, and both *physicians* and *pharmacists* may differ in their ability or inclination to check for polypharmacy or to educate patients about chronic illness and treatment adherence. (In particular, they may differ in their ability to provide this education in a culturally sensitive way and in language the patient can understand.) They may also differ in whether they keep up with information about newer, more effective (and perhaps more expensive) medications. Such provider-level differences may result from variations in

Medicaid payment, the amount of paperwork required, or other factors that may deter some of the best providers from participating in the Medicaid program.

- *Local service environments* may differ in a number of ways, including the level of managed care penetration (which can influence prescribing practices) or the availability of pharmacies participating in the Medicaid program.

The administrative data available for this analysis can measure only a small number of the factors that may contribute to the substantial differences in pharmacy benefit use and costs observed for the dual-eligible beneficiaries living in the 10 study states. Among these are personal differences in health and preferences for use of health care. These attributes are reflected, albeit imperfectly, in the study's measures of the prevalence of medical conditions and comorbidity and in (combined Medicare and Medicaid) reimbursement for physician services. Although the diagnosis data are useful in describing the types and numbers of conditions beneficiaries have, the severity of those conditions remains unmeasured. Average per-beneficiary physician reimbursement is a potentially useful indicator because it reflects differences in personal preferences for health service use to the extent that beneficiaries who prefer minimal contact with the health-care delivery system shun physicians, even when moderately ill. Moreover, since most individuals get their prescriptions from physicians, those who avoid physician contact are less likely to have medications prescribed. However, differences across states in average per-beneficiary physician reimbursement also reflect differences in per-visit payment rates and patients' health.

We observe marked differences in the prevalence of selected high-cost chronic conditions across the 10 study states (Exhibit 10). In particular, California and Indiana—the states with the lowest and highest pharmacy benefit use, respectively—also had the lowest and highest prevalence of chronic illness. Prevalence rates for the five key chronic conditions for beneficiaries in Indiana were generally twice those for beneficiaries in California. Moreover, California beneficiaries with any one of the five key conditions were also much less likely than their counterparts in Indiana to have more than one of these conditions. For example, among California beneficiaries with diabetes, 68 percent also had one of the other four conditions, compared with 84 percent of their counterparts in Indiana (Exhibit 11).

Part of the difference between the health of beneficiaries in California and Indiana is likely due to Indiana's relatively strict Medicaid eligibility criteria in 1995.⁸ However, Indiana's eligibility criteria would not explain why the prevalence of high-cost conditions in California was so much lower than in other states as well. It may be that California's population is, for some reason, simply healthier in general.

State differences in pharmacy benefit use persist even when the study sample is restricted to beneficiaries who have the same conditions (Exhibit 12). Among groups of beneficiaries with high-cost heart conditions, chronic lung disease, diabetes, stroke, or dehydration/malnutrition, benefit use in California is only half that in Indiana and Kentucky. This is likely due at least in part to lower levels of comorbidity among California beneficiaries who have any one of these conditions.

The lower pharmacy benefit use observed in California does not seem to stem from less use of physician services. Given the lower rates of comorbidity among California beneficiaries with these

⁸ For example, in 1995, in order to qualify for Indiana Medicaid as a person with disability, one had to demonstrate that one had a condition that would not improve enough with medical treatment to permit employment (informal communication with James Verdier, former Indiana State Medicaid Director).

Exhibit 10

Prevalence of High-Cost, Chronic Conditions, by State, 1995

	High-Cost Heart	Chronic Obstructive Pulmonary	Diabetes	Stroke	Dehydration, Malnutrition, and Other Metabolic Disorders ^a
California	11.0%	12.7%	12.4%	15.8%	18.7%
Colorado	20.1%	19.0%	16.8%	23.1%	30.5%
Florida	22.7%	23.2%	19.4%	35.0%	34.9%
Georgia	23.0%	18.9%	25.1%	36.5%	36.3%
Indiana	27.2%	21.7%	24.1%	41.1%	38.5%
Kentucky	22.7%	24.5%	20.3%	29.6%	34.0%
Michigan	21.0%	18.7%	21.9%	24.3%	35.4%
New Jersey	24.1%	19.1%	21.9%	38.0%	34.5%
Washington	19.0%	19.0%	16.5%	25.1%	27.4%
Wisconsin	20.3%	15.2%	18.0%	26.3%	30.9%
Overall	21.1%	19.2%	19.6%	29.5%	32.1%

Note: Overall means weighted to give each state equal representation.

^aMetabolic disorders include hypoglycemia, dehydration, malnutrition, pituitary and thyroid problems, and vitamin deficiencies.

conditions, it is somewhat surprising that average physician reimbursement for beneficiaries with each of these conditions is much higher in California than in Indiana (Exhibit 11). The number of visits to physicians and per-visit reimbursement rates both affect physician reimbursement. While we do not have a measure of physician visits *per se* for this analysis, it seems unlikely that the large differences between California and Indiana in physician reimbursement are due to differences in reimbursement rates alone. In fact, published data show that California *Medicare* beneficiaries visit their physicians more frequently than do those in Indiana. In 1994, California *Medicare* beneficiaries had an average of 5.9 physician office visits, nearly 30 percent more than the average 4.6 visits for Indiana *Medicare* beneficiaries (AARP, 1997). Thus, the difference in pharmacy benefit use between the two states does not appear to be due to greater contact with physicians among Indiana's dual-eligible beneficiaries.

Despite the striking difference in health between California and Indiana beneficiaries in the study sample, regression analysis controlling simultaneously for state and the presence of medical conditions, as well as for other beneficiary characteristics, suggests that all of these factors taken together controlled for only about half the difference in pharmacy use and spending between California and Indiana. (See Appendix Table A.1.) This suggests that unmeasured characteristics made a substantial contribution to the cross-state variation in benefit use.

Conclusions

We observe wide variations in Medicaid pharmacy benefit use and spending among dual-eligible beneficiaries across both beneficiary characteristics and the 10 study states, as well as wide variation

Exhibit 11

Prevalence of Selected High-Cost, Chronic Conditions and Mean Total Medicare and Medicaid Physician Reimbursement for Beneficiaries with These Conditions in California and Indiana, 1995

	California			Indiana		
	Has Condition	Has Another of These Four Conditions	Mean Physician Reimbursement	Has Condition	Has Another of These Four Conditions	Mean Physician Reimbursement
High-Cost Heart Conditions	11.0%	81.3%	\$2,172	27.2%	91.3%	\$1,156
Chronic Obstructive Pulmonary Disease	12.7%	68.0%	\$1,906	21.7%	82.2%	\$1,203
Diabetes	12.4%	68.1%	\$1,676	24.1%	84.1%	\$1,051
Stroke and Cerebrovascular Disease	5.8%	68.5%	\$1,825	41.1%	77.9%	\$942
Dehydration, Malnutrition, and Other Metabolic Disorders	18.8%	66.9%	\$1,985	38.5%	79.7%	\$1,179

Note: Means are not weighted. Analysis based on approximately 350,000 dual-eligible beneficiaries in California and approximately 92,000 dual-eligible beneficiaries in Indiana.

in beneficiary health across the 10 states. Looking across sub-groups of the dual-eligible population, those who are among the sickest beneficiaries tend to use the Medicaid pharmacy benefit more often. However, much of the demonstrated cross-state variation in pharmacy benefit use appears to persist independent of beneficiary characteristics, raising concerns that significant proportions of beneficiaries living in states with lower-than-average pharmacy benefit use may not be getting needed medications. Thus, the Medicaid “safety net” may need some mending in those states. States with higher-than-average levels of benefit use, on the other hand, may not be using their Medicaid dollars efficiently and might consider heightened use of prior authorization requirements and other strategies for controlling costs without jeopardizing quality of care.

Along with the diverse health needs of beneficiaries living in different states, it is likely that some of the variation in pharmacy benefit use is due to unmeasurable beneficiary characteristics (such as their degree of adherence to recommended treatments); as well as providers’ knowledge and skill regarding prescribing, monitoring for polypharmacy, and providing patient education. As none of these traits can be measured with administrative data, we do not know if they vary across states and, if they do vary, why.

Exhibit 12

Number of Medicaid-Covered Prescriptions Filled per Beneficiary per Month, by State of Residence and Presence of Selected High-Cost Conditions, 1995

	Beneficiaries with:					
	All Beneficiaries	High-Cost Heart Disease	Chronic Obstructive Pulmonary Disease	Diabetes	Stroke	Dehydration, Malnutrition, and Other Metabolic Disorders
California	1.9	3.3	3.2	3.0	2.9	2.8
Colorado	3.0	5.0	4.7	4.5	4.4	4.1
Florida	3.2	4.8	4.5	4.7	4.2	4.2
Georgia	3.0	4.5	4.2	4.2	4.0	3.8
Indiana	5.1	7.1	6.7	6.7	6.7	6.2
Kentucky	4.3	6.8	5.8	6.2	6.6	5.7
Michigan	3.1	5.2	4.8	5.0	4.6	4.5
New Jersey	3.1	4.5	4.5	4.3	3.9	4.0
Washington	3.4	5.4	5.0	5.2	4.7	4.5
Wisconsin	3.5	5.6	5.2	5.4	4.8	4.7
All States	3.4	5.4	5.0	5.0	4.8	4.5

Note: All means weighted for beneficiary months with full, fee-for-service Medicaid. All-state means also weighted to give each state equal representation.

As for the implications of variation in pharmacy benefit design, the state with the lowest benefit use also had the most restrictive benefit—including a monthly prescription cap, a closed formulary, and prior authorization—while the state with highest use had none of these features. As the relationship between benefit features and benefit use in other states was less clear, however, this analysis does not allow for the determination of the way in which particular benefit features affect benefit use.

As often happens with exploratory studies of new data sets, this analysis of CMS’s Dual-Eligible Database has raised many additional questions that are beyond the scope of this report. For example, although Medicaid programs have continued to adjust their pharmacy benefit features in response to increasing costs, a comparison of pharmacy benefit features between 1995 and 2000 suggests that the study states have not made as many changes as might be expected.⁹ With this in mind, has the variation evident in 1995 persisted into more recent years and across other states? If so, to what extent is this ongoing variation explained by specific benefit features, provider practice patterns, beneficiary behavior, or other factors?

⁹For example, Colorado and Georgia moved from open to closed formularies between 1995 and 2000, while Washington moved from a closed to an open formulary. In addition, in July 2001, the *Atlanta Journal-Constitution* reported that Georgia was increasing the co-payment for its Medicaid pharmacy benefit from \$.50 to \$3.00 for community residents. None of the states had changed their policy on limiting the number of prescriptions filled each month between 1995 and 2000, however.

In addition, future research should address the question of whether differences in benefit use across both specific beneficiary groups and states affect beneficiary health and use of health services. If this link can be established, a corollary question is whether states can redesign and administer their pharmacy benefit in ways that improve beneficiary health and reduce overall health-care spending, even if such changes increase the cost of the pharmacy benefit itself.

In sum, our results pose important questions for both the Medicaid and Medicare programs. If the observed variation in Medicaid pharmacy benefit use results in poorer health outcomes for substantial numbers of beneficiaries, it represents a major challenge to the equity of publicly funded health insurance programs. If future research shows that such a link does exist, states should try to determine whether disparities in benefit use are due to differences in provider practices, access to pharmacies participating in the Medicaid program, beneficiary knowledge, or other factors amenable to intervention. On the other hand, if no link exists between pharmacy benefit use and health outcomes, states with high levels of benefit use may not be using their Medicaid dollars as efficiently as they might. This potential inequity also raises some important lessons for policymakers and planners considering the addition of a prescription drug benefit to the Medicare program.

The “state laboratories” of the Medicaid program have much to offer in terms of how different methods of controlling benefit levels work in a publicly funded program. This information is critical for states as they attempt to gain control over their Medicaid budgets. It may also aid federal policymakers as they continue to debate how to implement an affordable Medicare drug benefit.

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Table A.1

Control Variable Means and Regression Coefficients in Model (with Mean Number of Prescriptions Filled per Beneficiary per Month in 1995 as Dependent Variable)

Control Variables Measured in 1995	Mean (Percent)	Coefficient	t-Statistic
Age			
Under 65	35.1	0.24***	11.3
65 to 74	26.2	Omitted	NA
75 to 84	22.7	-0.09***	-10.6
85 and older	16.0	-0.48***	-43.0
Sex			
Male	34.9	Omitted	NA
Female	65.1	0.65***	95.2
Race			
African-American	17.1	-0.49***	-65.5
White	72.3	Omitted	NA
Other/Unknown	10.6	-0.28***	-33.0
State			
California	23.6	-0.69***	-62.9
Colorado	3.2	-0.32***	-19.3
Florida	19.9	-0.19***	-17.1
Georgia	10.5	-0.41***	-36.4
Indiana	6.2	0.99***	57.2
Kentucky	6.9	0.84***	52.5
Michigan	7.4	0.08***	6.1
New Jersey	9.3	-0.46***	-35.6
Washington	5.7	0.09***	6.1
Wisconsin	7.4	Omitted	NA
Urban/Rural Beneficiary Residence			
Urban	76.0	-0.04***	-4.9
Rural	23.1	Omitted	NA
Urban/Rural Indicator Missing			
	0.9	-0.60***	-18.0
Chronic Conditions and Comorbidity			
Diabetes	19.6	1.31***	126.9
Stroke, cerebrovascular, and other vascular disease	29.5	0.54***	52.6
Dehydration, malnutrition, and other metabolic disorders	32.1	0.67***	73.6
Chronic obstructive pulmonary disease	19.2	1.25***	116.2

continued on next page

Table A.1 (continued)**Control Variable Means and Regression Coefficients in Model (with Mean Number of Prescriptions Filled per Beneficiary per Month in 1995 as Dependent Variable)**

Control Variables Measured in 1995	Mean (Percent)	Coefficient	t-Statistic
High-cost heart disease	21.1	1.28***	113.9
Has two or more of these conditions	35.3	0.02***	1.23
Has HIV/AIDS	0.7	2.36***	40.2
Died During 1995	8.3	0.32***	18.3
Type of Medicaid Eligibility for Most of Year			
Cash recipient	58.0	Omitted	NA
Medically needy	6.9	0.16***	10.9
Non-cash recipient	35.1	0.12***	12.7
Current Reason for Medicare Entitlement			
Aged	NA	67.3	Omitted
Disabled	31.4	0.11***	5.1
End Stage Renal Disease (ESRD) or ESRD/Disabled	1.3	1.67***	38.6
Managed Care Participation			
In Medicare managed care for at least one month during year	3.0	-0.32***	-18.9
In Medicaid managed care for at least one month during year (but less than 12 months)	0.9	-0.11***	-4.0
In both Medicare and Medicaid managed care for at least one month during year	0.2	-0.31***	-4.0
Not in Medicare or Medicaid managed care during year	95.9	Omitted	NA
Nursing Home Residence			
Not in nursing home during year	73.3	Omitted	NA
In a Medicare skilled nursing facility only	1.6	-0.64***	-20.0
In a Medicaid nursing home part year	10.7	1.04***	66.4
In a Medicaid nursing home entire year	14.4	2.13***	158.8
Number of Observations			1,482,136

Note: Observations for this regression were weighted to give each state equal representation and weighted for beneficiary months with full, fee-for-service Medicaid. SUDAAN software was used to generate t-statistics that account for this weighting.

* Significantly different from zero at the .10 level, two-tailed test

** Significantly different from zero at the .05 level, two-tailed test.

*** Significantly different from zero at the .01 level, two-tailed test.

NA = not applicable since variable was omitted.



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