Geographic Variation in Drug Prices and Spending in the Part D Program

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Introduction and Congressional Mandate

In 2003, the Medicare Prescription Drug Improvement and Modernization Act (MMA) mandated the creation of a voluntary program for prescription drugs within Medicare, administered by the Centers for Medicare and Medicaid Services (CMS). The Part D program, launched on January 1, 2006, covered 25.2 million beneficiaries in 2007. Through CMS, the Part D program pays a direct subsidy to Part D plans, equal to a plan's risk-adjusted bid for a standardized benefit package minus the beneficiary's base premium for the standard package.

In establishing the prescription drug benefit, the MMA allowed for adjustments in the direct subsidy to account for geographic variation in prices, unless the geographic differences are too small to justify such an adjustment. Section 1860D-15(c)(2) specifies the following:

    a. In general.—Subject to subparagraph (B), for purposes of section 1860D-13(a)(1)(B)(iii), the Secretary shall establish an appropriate methodology for adjusting the national average monthly bid amount (computed under section 1860D-13(a)(4)) to take into account differences in prices for covered part D drugs among PDP regions.

    b. De minimis rule.—If the Secretary determines that the price variations described in subparagraph (A) among PDP regions are de minimis, the Secretary shall not provide for adjustment under this paragraph.

    c. Budget neutral adjustment.—Any adjustment under this paragraph shall be applied in a manner so as to not result in a change in the aggregate payments made under this part that would have been made if the Secretary had not applied such adjustment.

Section 107 of the MMA mandates that the Secretary conduct a study on the "regional variations in prescription drug spending." Specifically, in examining the variation in per capita Part D drug spending among the 34 prescription drug plan (PDP) regions, the legislation states:

    1. In general.--The Secretary shall conduct a study that examines variations in per capita spending for covered part D drugs under part D of title XVIII of the Social Security Act among PDP regions and, with respect to such spending, the amount of such variation that is attributable to

        A. price variations (described in section 1860D-15(c)(2) of such Act); and

B. differences in per capita utilization that is not taken into account in the health status risk adjustment provided under section 1860D-15(c)(1) of such Act.

2. Report and recommendations.--Not later than January 1, 2009, the Secretary shall submit to Congress a report on the study conducted under paragraph (1). Such report shall include

   A. information regarding the extent of geographic variation described in paragraph (1)(B);

   B. an analysis of the impact on direct subsidies under section 1860D-15(a)(1) of the Social Security Act in different PDP regions if such subsidies were adjusted to take into account the variation described in subparagraph (A); and

   C. recommendations regarding the appropriateness of applying an additional geographic adjustment factor under section 1860D-15(c)(2) that reflects some or all of the variation described in subparagraph (A).

This report documents regional variation in drug prices and per capita expenditure on covered Part D drugs as reported in prescription drug event (PDE) data submitted by prescription drug plans for 2007. In particular, we address four key questions tied to the requirements of the legislation:

(1) What is the extent of the geographic variation in Part D drug prices across the 34 PDP regions in 2007?

(2) What are the regional differences in per capita utilization after accounting for health status risk adjustment?

(3) What adjustments, if any, are needed to compensate for regional variation in price?

(4) What recommendations on applying an additional geographic adjustment factor to the direct subsidy follow from the findings on geographic variation?

This report presents an overview of the basic methodology and findings on geographic variation in drug prices and per capita utilization before presenting recommendations. The technical results were written by Acumen LLC.[1] The recommendations were written by CMS.

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[1] This report was completed under CMS Contract No. HHSM-500-2006-00006I, T.O. 2, Project Director Thomas E. MaCurdy, Ph.D., Federal Project Officer Jesse M. Levy, Ph.D and authored by Thomas E. MaCurdy, Jonathan Gibbs, Tim Kautz and Margaret O'Brien-Strain.

Geographic Variation in Drug Prices across Regions

The first set of findings addresses the requirements of Section 107(a)(1)(A) by examining the extent of price variation in the Part D program across PDP regions as observed in the Prescription Drug Event (PDE) data submitted by Part D plans for 2007.

Our assessment of price variation relies on indices that measure ingredient costs or ingredient costs plus dispensing fees of two market baskets of the most prevalent and important drug products. As shown in Table 1, we constructed the market baskets from accepted claims for the first month in each quarter in 2007 (January, April, July, and October of 2007). For this four-month sample, more than 324 million claims were accepted for more nearly 48,000 unique drug products as identified by their National Drug Codes (NDC). We set a number of criteria for inclusion in the market baskets for the price indices: A drug product had to have at least one claim in each region in each month of our sample data. The drugs must also be identified by CMS as a "key product," a "required product" or a "top-100 drug" or the drug must appear on at least 60 percent of formularies on January 1, 2007. Finally, we only included prices from standalone PDP plans. We exclude claims submitted by MA-PD and Employer-Sponsored plans, because these plans often offer drugs in conjunction with other health services with packaged prices for drugs and other services only available to their enrollees. Such joint pricing of services could create artificial price variation. The first basket includes 2,132 unique drug products identified by their NDCs; the second market basket covers a broader range of drugs combined into 1,226 groups of pharmaceutically identical products (that is, products with the same active ingredients, dosage form, strength, and route of administration), identified by their Generic Sequencing Number or GSN.

Since each drug is available at multiple prices in each region, we present results for price indices evaluated at "best prices" and "typical prices". The price indices weight regional per unit costs for the different products using a national average composition of drug expenditures. To express regional prices in terms measuring percentage differences from national levels, we divide each regional index by its national counterpart; thus, a value of 1.00 means that the regional price index equals the corresponding national index, and a value of 1.05 implies that regional prices are 5 percent higher than the national value. We interpret a drug's best price to be represented by the 10th or 25th percentile of its price distribution in the relevant

Table 1: PDE Drug Claims Included in Market Baskets for Price Indices

Sample	Number of Claims	Number of NDCs	Number of GSNs
All Accepted PDE Claims in Jan, April, June and Oct 2007	324,258,481	47,713	7,270
Claims for Core Drug Products*	313,761,549	29,278	2,950
GSN Market Basket Sample, Including MA-PD and Employer-Sponsored Plans	306,826,974	22,263	1,226
GSN Market Basket, Standalone PDPs	**226,095,784**	**19,481**	**1,226**
NDC Market Basket Sample, Including MA-PD and Employer-Sponsored Plans	243,497,442	2,132	1,065
NDC Market Basket, Standalone PDPs	**181,040,858**	**2,132**	**1,065**

*Core drug products are those identified by CMS as a "key product," identified by CMS as a "required product," identified by CMS as one of the 100 most commonly prescribed drugs, or a drug that appears on at least 60 percent of formularies for January 1, 2007.
Source: Data drawn from PDE TAP files collected through March 2008.

region, and a typical price to be the 50th percentile or median.[2] The best price point reflects a balance between ensuring that the price is commonly available and limiting the influence of beneficiary choice on observed prices. Ignoring the potential influences of such choices on drug purchases (i.e., not going to the cheapest pharmacy, choosing brand name drugs, or trading higher prices for a broader formulary) could produce results that suggest geographic variation in prices when none in fact exists. At their lowest, prices largely reflect the costs of the ingredients and dispensing services. As we go higher in the distribution, prices are more reflective of the different plan and purchase choices made by beneficiaries. At the same time, the minimum or the very lowest percentiles (e.g., 1st or 3rd) may reflect prices that are only very rarely available. The 10th percentile offers a reasonable balance between low cost and availability. However, we also evaluate price indices at the 25th percentile as an alternative measure of best prices to capture more broadly available prices. Finally, to understand the influence of choice as we move up the distribution, we also calculate indices for the 50th percentile (median). Table 2 presents the price indices for ingredient costs for Part D drugs for the two market baskets evaluated at the 10th, 25th, and 50th price percentiles.

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[2] The 10th percentile of a price distribution identifies the per unit value for which 10 percent of observed prices fall below this point.

Table 2: Regional Price Indices Relative to National Indices – Per Unit Ingredient Cost

PDP Region		NDC Basket			GSN Basket		
#	Name	Price Percentile			Price Percentiles		
		10th	25th	50th	10th	25th	50th
US	**National Index**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
0	Territories	1.01	1.02	1.04	1.01	1.02	1.05
1	Northern NE	0.99	1.00	1.00	0.99	1.00	0.99
2	Central NE	1.01	1.01	1.01	1.02	1.01	1.01
3	New York	1.00	1.01	1.01	1.01	1.01	1.02
4	New Jersey	1.01	1.01	1.01	1.02	1.01	1.02
5	Mid Atlantic	1.00	1.00	1.00	1.00	1.00	1.00
6	Penn., W. Virginia	1.01	1.01	1.01	1.01	1.01	1.00
7	Virginia	1.00	1.00	1.00	1.00	1.00	0.99
8	North Carolina	1.00	1.00	1.00	1.00	1.00	1.00
9	South Carolina	1.00	1.00	1.00	1.00	1.00	1.00
10	Georgia	1.00	1.00	1.00	1.00	1.00	0.99
11	Florida	0.99	1.00	1.00	1.00	1.00	1.01
12	Alabama, Tennessee	1.00	1.00	1.00	1.00	1.00	0.99
13	Michigan	0.99	0.99	0.99	0.99	0.99	0.99
14	Ohio	1.00	1.00	1.00	1.00	1.00	1.00
15	Indiana, Kentucky	1.00	1.00	1.00	0.99	1.00	0.99
16	Wisconsin	1.00	1.00	1.00	1.01	1.00	1.00
17	Illinois	1.00	1.00	1.00	1.00	1.01	1.01
18	Missouri	1.00	1.00	1.00	1.00	1.00	0.99
19	Arkansas	1.01	1.00	1.00	0.99	1.00	0.99
20	Mississippi	1.00	1.00	1.00	1.00	1.00	0.99
21	Louisiana	1.01	1.00	1.00	1.00	1.00	1.00
22	Texas	0.99	0.99	0.99	0.99	0.99	0.99
23	Oklahoma	1.00	1.00	1.00	0.99	1.00	0.99
24	Kansas	1.00	1.00	1.00	1.00	0.99	0.99
25	Upper Midwest	1.00	1.01	1.00	1.00	1.00	1.00
26	New Mexico	0.99	1.00	1.00	0.99	1.00	1.00
27	Colorado	1.00	1.00	1.00	1.00	1.00	0.99
28	Arizona	0.99	0.99	0.99	0.99	0.99	0.99
29	Nevada	0.99	0.99	0.99	0.99	0.99	0.99
30	Oregon, Washington	0.99	1.00	1.00	0.99	1.00	0.99
31	Idaho, Utah	1.00	1.00	1.00	1.00	1.00	0.99
32	California	1.00	1.00	1.00	1.00	1.00	1.00
33	Hawaii	1.02	1.02	1.02	1.02	1.01	1.02
34	Alaska	1.01	1.02	1.05	1.02	1.03	1.07
Summary Statistics Describing Differences in Relative Indices across Regions							
Median		1.00	1.00	1.00	1.00	1.00	1.00
Average		1.00	1.00	1.00	1.00	1.00	1.00
SD		0.01	0.01	0.01	0.01	0.01	0.02
Max – Min		0.03	0.03	0.06	0.03	0.04	0.08
Range: 90th – 10th Percentiles		0.02	0.01	0.01	0.02	0.02	0.03

*Note: All index values are rounded to two decimal places.

Measured at commonly available "best prices" in the PDP regions, there is little geographic variation in Part D drug prices for 2007 as measured in ingredient costs. Interpreting the 10th percentile as measuring the best price, per unit cost in the different regions are all within 2 percent of the national index. In fact, for the NDC basket, only Hawaii shows prices 2 percent above the national value, with all other regions within 1 percent of the national best price. There is slightly more variation in the broader GSN basket, with Central New England, New Jersey and Alaska joining Hawaii with prices 2 percent above the national 10th percentile prices, and prices in the remaining 31 regions staying within 1 percent of the national price.

At best prices, the difference between the price index for any PDP region and that of the nation never exceeds 3 percent for either the NDC or GSN market basket and either ingredient costs alone or ingredient costs plus dispensing fees. Nationally, adding dispensing fees increases prices by about 3 percent.[3] However, dispensing fees only marginally add to regional price variation. When dispensing fees are added to ingredient costs, the price indices (shown in Table 3) range from 0.98 or 0.99 for Arizona, Nevada and Michigan to a high of 1.02 to 1.03 for Alaska, Hawaii and the territories. The slight increase in price variation results from the fact that dispensing fees in relatively less expensive regions tend to be lower than dispensing fees in relatively more expensive regions, thus increasing the spread from the lowest priced regions to the highest price regions. Nevertheless, an overwhelming majority of regions are still within 1 percent of the national best price when dispensing fees are included in prices.

The results are largely mirrored if we interpret best prices to be measured by the 25th percentile. As shown in the middle columns for the indices in Tables 2 and 3, price indices at the 25th percentile for all regions range from 0.99 to 1.03 without dispensing fees, and 0.98 to 1.06 including dispensing fees. However, outside of Alaska, the maximum regional value with dispensing fees is still only 1.03. This occurs because Alaska's dispensing fees at the 25th percentile are significantly higher than those found in other regions. Nationally, adding dispensing fees increases per unit costs at the 25th percentile by about 5 percent, but these fees add about 8 percent to the prices for Alaska.

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[3] See Chapter 5 and Appendix C of the companion report for detailed findings on dispensing fees.

Table 3: Regional Price Indices Relative to National Indices – Per Unit Ingredient Cost Plus Dispensing Fees

PDP Region		NDC Basket			GSN Basket		
#	Name	Price Percentiles			Price Percentiles		
		10th	25th	50th	10th	25th	50th
US	**National Index**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
0	Territories	1.02	1.03	1.05	1.03	1.03	1.06
1	Northern NE	1.00	1.00	1.00	0.99	0.99	0.99
2	Central NE	1.00	1.01	1.01	1.02	1.01	1.01
3	New York	1.01	1.01	1.01	1.01	1.01	1.02
4	New Jersey	1.01	1.01	1.01	1.02	1.01	1.01
5	Mid Atlantic	0.99	1.00	1.00	1.00	1.00	1.00
6	Penn., W. Virginia	1.01	1.01	1.01	1.01	1.01	1.01
7	Virginia	1.00	1.00	1.00	0.99	1.00	0.99
8	North Carolina	1.01	1.00	1.00	1.00	1.00	0.99
9	South Carolina	1.01	1.00	1.00	1.00	1.00	1.00
10	Georgia	1.01	1.01	1.01	1.01	1.01	1.00
11	Florida	0.99	0.99	1.00	0.99	1.00	1.00
12	Alabama, Tennessee	1.01	1.00	1.00	1.01	1.00	0.99
13	Michigan	0.99	0.99	0.99	0.99	0.99	0.99
14	Ohio	1.00	1.00	1.00	1.00	1.00	1.00
15	Indiana, Kentucky	1.00	1.00	1.00	0.99	1.00	1.00
16	Wisconsin	1.01	1.01	1.01	1.01	1.00	1.01
17	Illinois	1.00	1.00	1.00	1.00	1.01	1.01
18	Missouri	1.00	1.00	1.00	0.99	1.00	0.99
19	Arkansas	1.01	1.01	1.00	1.00	1.00	0.99
20	Mississippi	1.01	1.00	1.00	1.00	1.00	1.00
21	Louisiana	1.01	1.00	1.00	1.00	1.00	1.00
22	Texas	0.99	0.99	0.99	0.98	0.99	0.99
23	Oklahoma	1.01	1.00	1.00	1.00	1.00	1.00
24	Kansas	1.00	1.00	1.00	0.99	1.00	0.99
25	Upper Midwest	1.01	1.01	1.01	1.00	1.00	1.00
26	New Mexico	1.00	1.00	1.00	0.99	0.99	1.00
27	Colorado	1.00	1.00	1.00	1.00	0.99	0.99
28	Arizona	0.98	0.99	0.99	0.98	0.98	0.98
29	Nevada	0.98	0.99	0.99	0.98	0.99	0.99
30	Oregon, Washington	0.99	1.00	1.00	0.99	0.99	0.99
31	Idaho, Utah	1.00	1.00	1.00	1.00	1.00	0.99
32	California	0.99	1.00	1.00	1.00	1.00	1.00
33	Hawaii	1.02	1.02	1.03	1.03	1.02	1.03
34	Alaska	1.02	1.05	1.15	1.03	1.06	1.19
Summary Statistics Describing Differences in Relative Indices across Regions							
Median		1.00	1.00	1.00	1.00	1.00	1.00
Average		1.00	1.00	1.01	1.00	1.00	1.01
SD		0.01	0.01	0.03	0.01	0.01	0.04
Max – Min		0.04	0.07	0.16	0.05	0.08	0.21
Range: 90th – 10th Percentiles		0.02	0.01	0.02	0.03	0.02	0.02

*Note: All index values are rounded to two decimal places.

At typical prices, there is higher variation, but an overwhelming majority of regions show prices at or near the national median. As shown by the last columns for each market basket in Table 2, all but three of the regions show prices on ingredient costs within 1 percent of the national typical price (median). Hawaii's typical price is just 2 percent above the national median, and median prices in the territories are 4 to 5 percent above the typical national price. And while Alaska has the highest typical price for ingredient costs, it is still between 5 and 7 percent of the national price. Adding dispensing fees to ingredient costs (Table 3) does little to increase regional variation except for the case of Alaska.

At typical prices, the substantially higher dispensing fees in Alaska drive up the index value, but these higher per unit costs in large part reflect lower number of days supplied per claim in Alaska. As we move away from best prices to look at the more typical prices, the disproportionate impact of dispensing fees in Alaska increases substantially. Table 3 reveals this effect very clearly, if we compare the relative price indices at the 10th, 25th and 50th percentiles. The median (50th percentile) price index is also somewhat higher for the territories, with prices 4 to 6 percent higher than the national median. Whereas dispensing fees only add 0.01 to Alaska's price index relative to the nation at the 10th percentile, the gap rises to 0.15-0.19 at the 50th percentile depending on market basket. Further analysis of Alaska suggests that the lower percentile prices are available in all counties, either through local purchase or mail order. The high dispensing fees seen at median prices are driven in large part by low numbers of days supplied: the average days supplied per claim is below 24 in Alaska, compared to more than 30 days nationally.

Regional Differences in Per Capita Utilization of Part D Benefits

Given the minor extent of geographic variation in drug prices, we next turn to the question of differences in per capita expenditures on Part D drugs. As part of this analysis, we examine the degree to which per capita expenditures on ingredient costs and dispensing fees varies across PDP areas as seen in the Part D data. We then examine how these results change after adjusting for price differences and the health status of beneficiaries. Our analysis of utilization incorporates all claims submitted by March 2008 accepted for payment in 2007 by

Medicare for all beneficiaries participating in the Part D program. Overall, this covers 25.2 million beneficiaries enrolled in 2007, with 942 million claims. Out of this population, we define the institutional Part D segment to include those beneficiaries who resided in institutions for all months in 2007 (or until their death in 2007), and the community segment to include those beneficiaries who never resided in an institution in 2007 (including those who died in 2007). We do not separately break out beneficiaries who switched between the community and institutional populations during 2007. Table 4 reviews the characteristics of the populations considered in this analysis.

Table 4: Characteristics of Beneficiary Population in Utilization Analysis

Characteristics of Beneficiary Population	2007 Statistics
All Beneficiaries	25,217,301
Community Enrollees as Share of All Beneficiaries	89.0%
Institutional Enrollees as Share of All Beneficiaries	2.6%
Number of Claims	942,066,240
Share of All Beneficiaries with Claims	91.6%
Total Expenditures: Ingredient Cost	$58,194,468,864
Total Expenditures: Ingredient Cost Plus Dispensing Fee	$60,517,838,848

Source: CMS's March 2008 Report IV for the Calendar Year 2007 and enrollment information from the MARx system.

Median per-capita annual expenditures in Part D show relatively modest variation across regions. The typical Part D participant in the nation (defined as enrollees who purchased drugs during 2007) spends $1,553 per year in ingredient costs and $1,636 including dispensing fees, with the values for individual PDP regions falling within a $300 band around these national values. The territories have the lowest median annual expenditure at $1,216 including dispensing fees; and New Jersey has the highest at $2,128. Part of this variation reflects differences in managed care penetration, since MA-PD participants spend far less on prescription drugs. However, given these differences in penetration, considering the spending of beneficiaries only in PDP (or in MA-PD) plans would distort the picture of geographic variation in utilization.

Far more geographic variation shows up in average per-capita expenditures.
Including dispensing fees, the national average per-capita spending was $2,400 in 2007 (per-capita expenditures is for all Part D enrollees, regardless of whether enrollees purchased drugs in 2007). Expressed as an index relative to this national value, the first column in Table 5 shows that regional average expenditures range from 0.66 (66 percent of the national average) for the territories to 1.41 (41 percent above the national value) for Alaska. After Alaska, New Jersey's relative value at 1.25 places it as the next highest annual per-capita expenditure PDP region; and Arizona shows up as the lowest after territories. These rankings hold regardless of whether one measures expenditures as just ingredient costs or as ingredient costs plus dispensing fees.

Much of the geographic variation in average per-capita expenditures is driven by the most intensive users. Nationally, beneficiaries at the 90th percentile incurred 30 times higher expenditures than beneficiaries at the 10th percentile, and similar variability shows up within individual PDP regions as well. At the 90th percentile, Alaska beneficiaries had expenditures reaching almost $10,000 annually compared to just under $3,800 for the territories. More details on the distribution of costs within regions are provided in the companion report.

There is a different pattern in the rankings of PDP areas for institutional populations. The second and third columns of Table 5 show the geographic variation in the normalized average expenditures for the community and institutional segments of the overall population. Ohio, followed closely by Louisiana and Indiana/Kentucky, classify at the top of spending for institutional beneficiaries, with averages hovering around 15 percent higher than the national average. While Alaska is considerably higher at 55 percent above the national average, it has a very small institutional population. Arizona and Hawaii attain the lowest expenditure averages for institutional populations, falling around 20 percent below the national norm.

Table 5: Regional Variation in Average Per Capita Expenditures for Ingredient Costs Plus Dispensing Fees – Original and Adjusted for Population Composition

PDP Region		Average Expenditures Per Capita				
		Original			Adjusted	
#	Name	All	Community	Institutional	Community	Institutional
US	**National**	$2,400	$2,391	$4,720	--	--
0	**Territories**	0.66	0.68	0.90	0.67	--
1	**Northern NE**	0.99	1.00	0.92	0.94	1.06
2	**Central NE**	1.07	1.06	1.01	1.04	1.06
3	**New York**	1.11	1.18	0.81	1.07	0.87
4	**New Jersey**	1.25	1.25	1.07	1.19	1.03
5	**Mid Atlantic**	1.10	1.09	0.99	1.00	0.93
6	**Penn., W. Virginia**	1.01	1.01	1.04	1.04	1.13
7	**Virginia**	1.01	1.01	1.03	1.02	1.03
8	**North Carolina**	1.12	1.12	1.06	1.08	1.06
9	**South Carolina**	1.07	1.09	0.90	1.02	0.92
10	**Georgia**	1.04	1.04	0.97	0.97	0.96
11	**Florida**	0.96	0.97	1.01	0.90	0.95
12	**Alabama, Tennessee**	1.06	1.06	1.02	0.96	1.04
13	**Michigan**	1.06	1.07	0.96	1.05	1.04
14	**Ohio**	1.06	1.02	1.17	0.98	1.07
15	**Indiana, Kentucky**	1.11	1.09	1.13	1.05	1.16
16	**Wisconsin**	1.00	1.00	0.99	1.07	1.15
17	**Illinois**	1.00	0.98	1.04	1.03	1.01
18	**Missouri**	1.03	1.01	1.02	1.03	1.07
19	**Arkansas**	0.95	0.94	0.97	0.93	0.97
20	**Mississippi**	1.04	1.03	1.04	0.95	1.05
21	**Louisiana**	1.10	1.08	1.15	1.02	1.15
22	**Texas**	1.00	0.99	1.10	0.96	1.09
23	**Oklahoma**	1.05	1.04	1.06	1.06	1.09
24	**Kansas**	1.00	0.97	1.03	1.06	1.04
25	**Upper Midwest**	0.91	0.89	0.90	1.05	1.02
26	**New Mexico**	0.75	0.75	0.82	0.84	0.84
27	**Colorado**	0.84	0.84	0.89	0.98	0.86
28	**Arizona**	0.75	0.75	0.74	0.87	0.73
29	**Nevada**	0.77	0.78	0.82	0.93	0.83
30	**Oregon, Washington**	0.88	0.89	0.88	1.01	0.91
31	**Idaho, Utah**	0.91	0.92	1.05	1.07	1.05
32	**California**	0.92	0.93	0.95	0.99	0.95
33	**Hawaii**	0.88	0.89	0.76	1.00	0.89
34	**Alaska**	1.41	1.43	1.55	1.17	--
Summary Statistics Describing Differences in Relative Indices across Regions						
Median		1.01	1.01	1.01	1.02	1.03
Average		1.00	1.00	0.99	1.00	1.00
SD		0.14	0.14	0.14	0.09	0.10
Max – Min		0.75	0.75	0.82	0.52	0.42
Range: 90th – 10th Percentiles		0.31	0.31	0.30	0.16	0.26

*Note: All index values are rounded to two decimal places.

Regional Differences in Per Capita Expenditures Accounting for Health Status

The final goal of this study is to document the degree of variation in per capita utilization not accounted for by price variations and difference in the health status and compositions of regional Part D populations. Medicare risk adjusts payments of Part D premiums to compensate for predicted expenditures based on a beneficiary's health conditions and demographic characteristics. A higher premium is paid for a beneficiary with larger predicted expenditure in an upcoming year. The question posed by Congress asks whether any regional differences in utilization remain after accounting for the variables used by CMS to calculate relative risk and after adjusting for any geographic disparities in drug prices. We continue to use per-capita expenditures as our measure of utilization.

Regression-style methods can identify regional variation in utilization after controlling for geographic differences in the health-risk composition of populations and in prices. Our regression framework incorporates the same beneficiary covariates used by CMS in its methodology for risk adjustment, which includes: age/gender groupings, 84 health conditions based on 2006 diagnoses for prescription drug hierarchical condition categories (RxHCCs), age/disease interactions, gender/original disability eligibility groups and low-income status. We estimate separate models for the community and institutional populations, and use estimates from a set of statistical models characterizing different aspects of the annual expenditure distributions to evaluate variation in utilization across PDP regions after controlling for effects of covariates. When undertaking this estimation, we incorporate adjustments for geographical price variation by translating expenditures into real quantities comparable across regions.[4]

For community beneficiaries, adjusting for regional differences in population composition and prices reduces the differences in per capita expenditures among regions by more than one-third. Using the regression estimates, we can infer what average expenditures would be for beneficiaries in each region assuming the makeup of their health status and demographic characteristics matched the national population. The last two columns of

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[4] We do this by multiplying nominal beneficiary expenditures by the national median price divided by the regional median price, which scales up expenditures for beneficiaries in low price regions and scales down expenditures in high price regions. By using median prices, we remove variation in prices and also reduce the effect of beneficiary price choices on our measure of utilization. Because there is little variation in prices across most regions, this price adjustment has only a minor effect, other than for Alaska.

Table 5 show average expenditures by region presuming a nationally representative population resides in each PDP area, with values expressed relative to the mean across regions. The bottom rows of Table 5 summarize the distribution of these regional averages, with comparisons also included describing the distribution of the original average expenditures seen across geographic areas. Inspection of this table reveals that the range between the maximum and minimum indices for average annual expenditures for community beneficiaries by region equals 0.52 after adjusting for prices and health status, two-thirds of the 0.75 range seen before adjustments for population composition. The 90-10 percentile range falls from 0.31 before adjustment to 0.16 after. Further, the standard deviation falls from 0.14 to 0.09. This is due in large part by reducing the extreme for Alaska – partially because of the price adjustment – and to some degree New Jersey and New York, which had the second and third highest per-capita expenditures. After accounting for differences in population makeup, New Jersey now ranks as the top PDP region in expenditures, followed closely by Alaska, with both their averages hovering almost 20 percent higher than the average regional value. The territories again show up with the lowest per-capita annual expenditures among the regions. While substantial geographic variation remains in Part D expenditures after adjusting for population composition, the extent of variability seen here is not dissimilar to that documented for regional per capita payments covering the Part A and B programs of Medicare.[5]

For institutional beneficiaries, adjusting for regional differences in population composition and prices only slightly reduces the geographic differences in average per capita expenditures. Because there are too few institutional beneficiaries in Alaska and the territories to incorporate them in a regression analysis, these PDP regions are excluded from the statistics in Table 5. For the institutional population, the apparent drop in the max-min range after introducing geographic adjustments is virtually all due to dropping Alaska from the institutional analysis. Excluding Alaska (the maximum value) from the max-min range prior to adjustment yields a range of 0.43, which nearly equals the 0.42 value seen for the adjusted

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[5] See, for example, Fisher ES, Wennberg DE, Stukel TA, Gottlieb DJ, Lucas FL, Pinder E´ L. The implications of regional variations in Medicare spending. Part 1: The content, quality, and accessibility of care. Ann Intern Med. 2003;138:273-87. This study found a 1.61 ratio of average per capita Medicare expenditures for counties in the top quintile compared to average expenditures for counties in the lowest quintile, after adjusting for age, sex and race.

results (which excludes Alaska). The 90-10 percentile ranges before and after adjustments are also quite similar for institutional beneficiaries, again indicating that accounting for geographic differences in risk factors and prices makes little difference in the dispersion in utilization seen across regions for institutional beneficiaries. Looking across regions presented in Table 5, the rankings of many PDP regions remain stable comparing the raw and adjusted normalized averages for their institutional populations. Several regions, however, experience increases in their relative measures as high as 16 percentage points (e.g., Wisconsin, Northern New England and Pennsylvania-West Virginia), and others (e.g., Ohio) experience declines as large as 10 percentage points. When evaluated at a common nationally representative population, per capita expenditures for institutional beneficiaries are highest for Indiana/Kentucky, Louisiana and Wisconsin, with their annual averages around 15 percent above the nationwide norm. Arizona stands out at the low end of expenditures with its annual average for the institutional population attaining 27 percent below the national norm, which closely matches its ranking for unadjusted per-capita drug expenditures.

Recommendations

Under the Medicare Modernization Act (MMA), CMS is required to make two recommendations regarding the incorporation of geographic adjustments to the national average monthly bid amount used to determine beneficiary premiums and direct subsidy payments to sponsors under the Medicare Part D program. Per Section 1860D-15(c)(2) of the MMA, CMS must determine whether and how the national average monthly bid amount should be adjusted for geographic variations in the prices for covered Part D drugs. As required by Section 107 of the MMA, CMS must also make a recommendation regarding the appropriateness of adjusting the national average monthly bid amount to reflect geographic variations in per capita utilization that is not explained by health status. Based on the findings of this study, we do not recommend applying geographic adjustments to the national average monthly bid amount to adjust for either regional price variations or variations in utilization and spending.

Adjusting the National Average Monthly Bid Amount for Regional Variation in Drug Prices

The findings of this study suggest that very little variation exists in the prices of covered Part D drugs across Part D regions, with the exception of Alaska and the territories, which experienced modest price variation. The variations in regional price indices observed for PDP regions 1-33 were consistently within 2% of the national price index at the median. Price variations exist for Alaska and the territories. However, these price variations were modest at the best prices (within 3%), and prices within this range were found to be available in all of the counties in Alaska.

Per 1860D-15c(2)(B), the Secretary shall not adjust the national average monthly bid amount for geographic pricing variations if the Secretary determines that the price variations across PDP regions are de minimis. Given that the regional price variations as observed in this study are minimal, the Secretary has determined that, to date, the price variations across regions are de minimis. Therefore, no geographical adjustment will be applied to the national average monthly bid amount to account for regional price variations.

Adjusting the National Average Monthly Bid Amount for Regional Variation in Utilization and Spending

The findings of this study indicate that there is modest regional variation in median per-capita spending in the community population with the highest annual per-capita expenditure observed in Alaska, New Jersey, and New York, and the lowest annual per-capita expenditure observed in the territories. Much of this regional variation exists even after accounting for health status and geographic disparities in drug prices.

The Part D program is a competitive program in which Part D sponsors compete with one another to provide prescription drug coverage to Part D beneficiaries at the best possible value. Part D sponsors strive to provide the lowest possible beneficiary premiums and cost sharing by using several tools to appropriately manage and reduce drug costs such as negotiating drug prices with pharmaceutical manufacturers, establishing tiered formularies, and implementing utilization management programs. High drug costs due to high utilization are reflected in the Part D bids submitted by Part D sponsors. By design, Part D plans with high drug utilization (after adjusting for health status) and, therefore, high drug costs are made less competitive than those Part D

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plans with lower drug costs through higher beneficiary premiums and cost sharing. The Part D program relies on competition between Part D sponsors to keep the overall costs of the Part D program low as well as the cost of the program to the federal government.

Implementing an adjustment to the national average monthly bid amount to reflect regional variations in utilization beyond that which is due to differences in health status would interfere with the competitive nature of the Part D program and inappropriately reward Part D plans and beneficiaries in PDP regions with higher drug utilization. Several factors, such as physician practice patterns and beneficiary behavior, may contribute to the higher drug utilization observed in these PDP regions. A geographic adjustment would reduce premiums for Part D beneficiaries in PDP regions with higher utilization such as Alaska and New Jersey despite the increased drug costs and program costs that result from this higher drug utilization. Moreover, this adjustment would increase the direct subsidy paid by the federal government, such that the government would pay a larger share of the drug costs resulting from this potential over-utilization of Part D drugs.

In order for this adjustment to remain budget neutral as required by 1860D-15(c)(2)(C), CMS would be required to adjust the national average monthly bid amount downward in those PDP regions with lower utilization such that beneficiary premiums will be increased for the beneficiaries living in these regions. Thus, these beneficiaries would be required to pay higher Part D premiums despite having lower drug utilization. It is our belief that such a change in beneficiary premiums would be inappropriate and inconsistent with the goals of the Part D program. Therefore, it is our recommendation not to adjust the national average monthly bid amount to reflect regional variations in utilization beyond that which is due to differences in health status.