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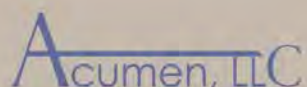


Geographic Variation in Drug Prices and Spending in the Part D Program

Thomas MaCurdy
Jonathan Gibbs
Nick Theobald
Thomas DeLeire
Tim Kautz
Margaret O'Brien-Strain

Project Director: Thomas MaCurdy
Federal Project Officer: Jesse M. Levy, Ph.D.
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Acumen, LLC

500 Airport Blvd., Suite 365

Burlingame, CA 94010

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1 INTRODUCTION

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). Described as the “most important health care legislation passed by Congress since the enactment of Medicare and Medicaid in 1965,”¹ the drug benefit filled a critical gap in Medicare coverage. The Part D program, launched on January 1, 2006, covered 24.2 million beneficiaries by 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 minimal to justify such an adjustment. To be specific, 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 Altman, D. 2004. “The New Medicare Prescription-Drug Legislation”. *New England Journal of Medicine*. Vol 350, no.1 (January):9-10.

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).

In response to this mandate in the MMA, this report investigates regional variation in per capita expenditure on covered Part D drugs and Part D drug prices as reported in prescription drug event (PDE) data submitted by prescription drug plans. In particular, we address four key questions:

- (1) How much did Part D drug prices vary across the 34 PDP regions in 2007?
- (2) How much did utilization of prescription drugs vary by region?
- (3) How much did per capita spending on prescription drugs vary by region?
- (4) How much did per capita spending on drugs vary by region, after accounting for health status risk adjustment and price variation?

Answers to these four questions provide the basis for determining the appropriateness of applying a geographic adjustment factor to Part D subsidies.

The report is structured as follows: as background to the analysis, Section 2 reviews the use of geographic adjustments in the Medicare program, the role of the 34 PDP regions, and how regional adjustments would interact with the Part D benefit framework. Section 3 describes the methodology for measuring price variation for prescription drugs as well as measuring variation

in utilization as measured by per capita spending. In Section 4, we describe the data we use for the analysis, including the samples of beneficiaries and drug products. The key results are divided into two sections. Section 5 presents the patterns of geographic variation in the prices of Part D drugs, and Section 6 presents the comparable patterns for utilization, before and after accounting for health status.

2 BACKGROUND

The concept of geographic adjustment was a natural consideration for the Part D program because other components of Medicare include geographic adjustments. In this section, we first review the use of geographic adjustments to account for differences in input prices within these other sectors of the Medicare program. The second section reviews the role of regions in the design of Part D. We then consider how differences in drug prices would affect beneficiaries and plans given each major payment aspect of the Part D program. In doing so, we also demonstrate the expected impacts of introducing a geographic adjustment to account for such price differences. Finally, we briefly discuss whether or not one would expect drug prices to vary by region.

2.1 Existing Geographic Adjustments in the Medicare Program

Geographic adjustments are currently applied to provider payments in Medicare Part A, the Hospital Insurance Program (covering inpatient care, skilled nursing facilities, home health and hospice care), and in Part B, the Supplementary Medical Insurance Program (covering physician, outpatient, home health, preventative services and durable medical equipment). Under these programs, providers are reimbursed on a fee-for-service basis at payment rates established by CMS. The base reimbursement rates represent national average reimbursement rates. Budget neutral geographic adjustments then scale these average payments up in areas with high input costs and down in areas with low input costs.

The geographic adjustments in Part A and B are based on measures of the costs of inputs for services. The hospital wage index, the key geographic index used in Part A, is designed to capture the relative wage level for hospital staff in a given area, compared to national average hospital wages. It adjusts only the labor portion of the reimbursement rate. Physician payments under Part B are adjusted using three separate indices, known as Geographic Practice Cost Indices (GPCIs). These indices are designed to account for differences in the relative cost of

physician wages, practice expenses (employees, office rents, and supplies) and malpractice premiums as different inputs into outpatient physician services.²

The geographic adjustments in Part A and B offset costs for providers, not for beneficiaries. Because the adjustments change the reimbursement rates for providers, they also change the cost of co-payments for beneficiaries for services that require beneficiaries to pay a share of costs. For example, most Part B services, including physician visits, require a 20 percent co-insurance, so when the geographic adjustment increases (or decreases) provider reimbursements, it also increases (or decreases) beneficiary costs.

The 2007 values for the hospital wage index and the GPCIs are shown in Table 2.1. Conceptually, these indices are all normalized around 1.0. For hospitals, to take an example, the index multiplies the labor portion by as much as 1.54 (a 54 percent increase or as little as 0.71 (a 29 percent decrease). The greatest variation is seen in the malpractice GPCI for physician payments, although this applies on average to only 4 percent of a physician’s reimbursement rate. The lowest variation, from 1.0000 to 1.0830, occurs in the physician work GPCI, but largely because, by law, this variation is reduced to one-fourth of the original variation, and through 2007, a floor of 1.0 was also imposed, so there were only upward adjustments.

Table 2.1: Indices Used for Geographic Adjustment in Medicare

Geographic Adjustment Indices 2007	Part	Minimum Value	Maximum Value	Standard Deviation
Hospital Wage Index*	A	0.708	1.542	0.155
Physician Work GPCI	B	1.000	1.083	0.020
Practice Expense GPCI	B	0.699	1.546	0.168
Malpractice GPCI	B	0.257	2.700	0.416

* Pre-reclassification index; the reported standard deviation is calculated across hospitals, not regions.

² The hospital wage index or a variant of it is also used for skilled nursing facilities, home health care, and hospice care. The GPCIs are also used for outpatient therapies.

2.2 Role of Regions in Part D

Regions play a different role in Part D than they do in Parts A and B, where regions are largely used to distinguish higher and lower input cost areas. Instead of relying on payment rates established by CMS, Part D payments are based on competitive bids submitted by drug plans in each of the 34 PDP regions. Beneficiaries choose among plans available in their region, based on plans' premiums, drug costs and drug formularies. The PDP regions were defined with the intention that at least two plans participate in each region. Regions were also designed to adhere as closely as possible to MA regions and to group states with similar levels of drug spending.³

By 2007, beneficiaries were participating in 90 PDP contracts with about 1,900 plan options and 545 MA-PD contracts with about 2,400 plan options. The Table below (2.2) displays the total number of contracts offered in each region; as Table 2.2 shows, at least 41 contracts and as many as 75 contracts were offered in each PDP region.⁴

Under the competitive bidding process, Part D shows substantial variation in beneficiary premiums across regions. In 2007, the average beneficiary premiums for standard coverage, calculated by CMS, ranged from \$20.56 per month in Nevada to \$33.56 per month in Alaska.⁵ Total costs for beneficiaries can vary much more. An earlier study on geographic variation published in the *Journal of General Internal Medicine* (Davis 2007) examined differences in projected total plan costs (including both premiums and drug expenditures) for the lowest cost plans available in each state. Focusing on four example cases, the authors found costs ranging from half of the national average to more than double the national average, with greater variation among higher cost individuals.

This regional variation in premiums is not surprising, since geographic variation in prescription drug spending was known prior to the start of the Part D program. Analyses summarized by the Medicare Payment Advisory Commission (MedPAC) found geographic

³ See MedPAC 2005.

⁴ Whereas plans are the specific insurance options beneficiaries may choose from, contracts are the different companies offering the plans. Contracts may offer numerous plans in one region and may also offer the same plan in different regions. Note, each time the same plan is offered in a different PDP region it is considered a new plan option.

⁵ These average premiums are calculated by CMS to set regional benchmarks for low-income subsidies.

differences in spending ranging from 120 percent of the national average in the Northeast to less than 80 percent of the national average in the West. This variation encompasses differences in

Table 2.2: Number of PDP Contracts in Each PDP Region

PDP Region Code	PDP Region Name	State(s)	Number of Contracts
01	Northern New England	Maine New Hampshire	56
02	Central New England	Connecticut, Massachusetts, Rhode Island, Vermont	72
03	New York	New York	73
04	New Jersey	New Jersey	65
05	Mid-Atlantic	Delaware, District of Columbia, Maryland	68
06	Pennsylvania, West Virginia	Pennsylvania, West Virginia	69
07	Virginia	Virginia	69
08	North Carolina	North Carolina	69
09	South Carolina	South Carolina	66
10	Georgia	Georgia	68
11	Florida	Florida	75
12	Alabama, Tennessee	Alabama, Tennessee	67
13	Michigan	Michigan	66
14	Ohio	Ohio	75
15	Indiana, Kentucky	Indiana, Kentucky	68
16	Wisconsin	Wisconsin	57
17	Illinois	Illinois	69
18	Missouri	Missouri	60
19	Arkansas	Arkansas	54
20	Mississippi	Mississippi	57
21	Louisiana	Louisiana	60
22	Texas	Texas	70
23	Oklahoma	Oklahoma	58
24	Kansas	Kansas	52
25	Upper Midwest and Northern Plains	Iowa, Minnesota, Montana, Nebraska, North Dakota South Dakota, Wyoming	66
26	New Mexico	New Mexico	50
27	Colorado	Colorado	57
28	Arizona	Arizona	65
29	Nevada	Nevada	61
30	Oregon, Washington	Oregon Washington	65
31	Idaho, Utah	Idaho, Utah	52
32	California	California	72
33	Hawaii	Hawaii	43
34	Alaska	Alaska	41

beneficiaries' health status, income and insurance coverage, as well as differences in the number of providers, providers' prescribing patterns and drug prices.⁶ A number of researchers have documented comparable variation in expenditures per capita in the fee-for-service components of Medicare. A review of these studies by the Congressional Budget Office (2008) concluded that prices of medical services and beneficiary health status together explain less than half of the total variation in fee-for-service expenditures.

2.3 Expected Impact of Higher Regional Drug Prices on Part D

Part D premiums by region are driven by a complex set of factors, including the expected utilization of drugs based on the preferences and health status of beneficiaries, tradeoffs between premiums and co-payments, and competitive forces within regions, as well as differences in the price of the prescription drug products. Since a regional adjustment would specifically address the differences associated with prices, any potential adjustment must be understood within the context of the Part D benefit design. In this subsection, we review the major elements of the Part D benefit and payment structures, and consider how higher or lower drug prices would impact beneficiaries and plans given these structures. There are three main elements of the Part D framework to analyze in the context of geographic differences in prices: the standard benefit design, the direct subsidy and associated beneficiary premiums, and the low income subsidy. Other aspects of the Part D payments, such as risk corridors, should not significantly differ between high price and low price regions.

2.3.1. Standard Benefit Design

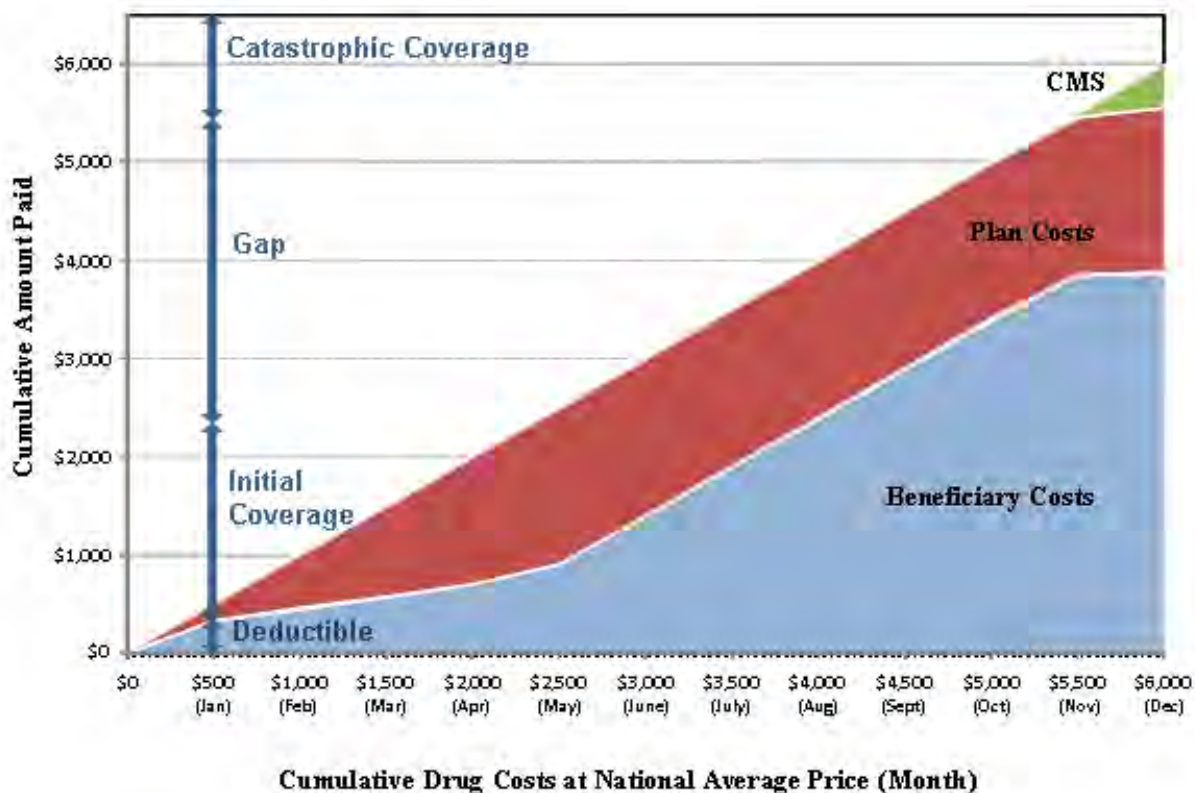
The MMA mandates a minimum “standard” benefit package for Part D coverage. Although plan sponsors may offer a variety of plans, which can include plans that provide enhanced coverage, they must include a price bid that reflects this standard benefit design. Intended to balance beneficiary coverage with incentives to avoid the overutilization of prescription drugs, the standard benefit structure includes four separate coverage bands.

Figure 2.1 illustrates the four coverage bands for a beneficiary paying \$500 per month in prescription drug costs, with coverage bands shown for the 2007 plan year. The shaded areas

⁶ See MedPAC 2005.

together represent the total costs of the drugs; by the end of the year this beneficiary would incur \$6,000 in total drug expenditures, with costs shared between the beneficiary, the plan, and CMS. In the first band, the beneficiary covers the initial costs through a deductible, set at \$265. For the total drug costs between \$265 and \$2400, the plan pays 75 percent of the total costs, and the beneficiary pays 25 percent. This second phase is referred to as the Initial Coverage Level. The third phase is the “coverage gap.” For total drug costs between \$2,400 and \$5,451, the standard Part D benefit offers no additional coverage. Above \$5,451 in total costs, which is equivalent to \$3,850 in beneficiary out-of-pocket costs, Part D offers catastrophic coverage. In this phase, CMS pays 80 percent of drug costs, the beneficiary pays 5 percent, and the plan pays the remaining 15 percent.⁷ In the example presented in Figure 2.1, the beneficiary’s total annual out-of-pocket cost (not including the premium) is \$3,877.

Figure 2.1: Cumulative Costs Paid by Beneficiary and Plan under Standard Benefit Design Example Beneficiary with \$500 per Month in Prescription Drug Expenditures



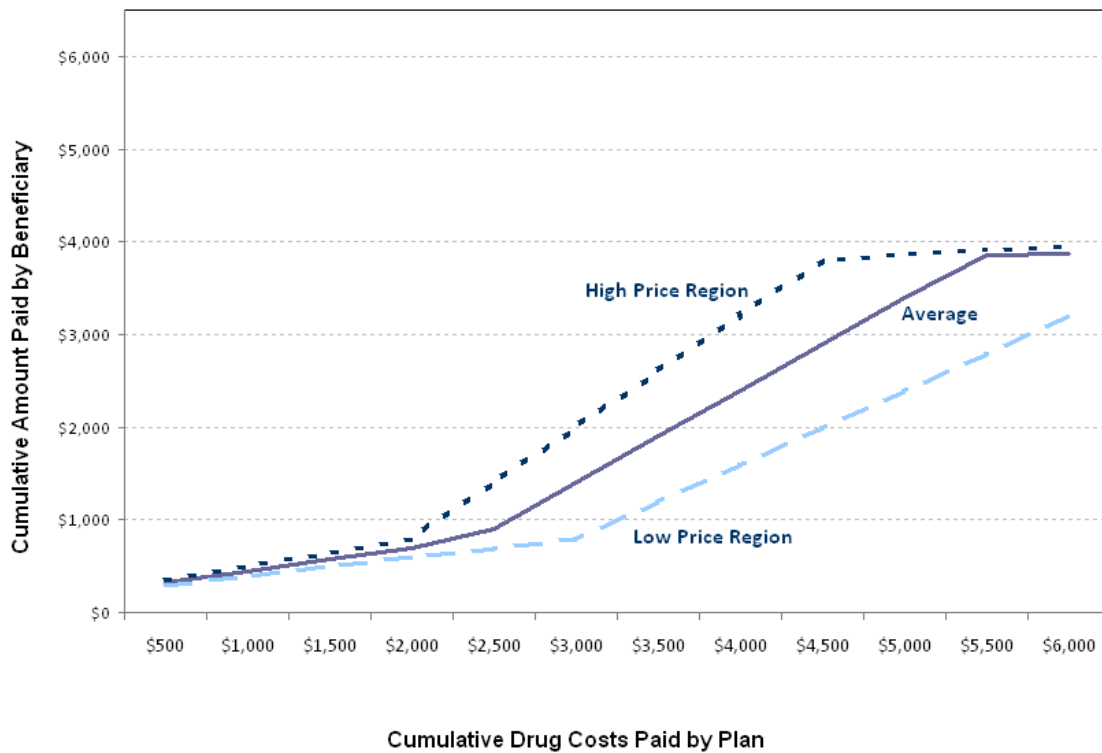
⁷ The 80% contribution by CMS, referred to as reinsurance, may be reduced by the difference between the gross costs of covered drugs and the net amount actually paid by plans, accounting for discounts, rebates and other savings provided by drug manufacturers, pharmacies, etc.

Effect of Price Differences on Beneficiary Out-of-Pocket Payments

If there are regional differences in drug prices, the beneficiary illustrated in Figure 2.1 could face higher or lower annual costs. The solid line in Figure 2.2 presents the beneficiary share from Figure 2.1. Assuming this beneficiary's \$500 per month drug costs represent the costs at national average prices, the other two lines illustrate how these costs would differ in a region with higher or lower drug prices. The top line represents the total cumulative amount this beneficiary would pay if the price for the same drugs was \$600 instead of \$500. The lower line represents the amount the beneficiary would pay if the price of these drugs was \$400.

Because our beneficiary reached the catastrophic level when paying the national average price for these drugs, the additional costs he would face in a high cost region are small. Although the total drug costs would be \$7,200 per year in a high cost region instead of \$6,000, his additional out-of-pocket costs are only \$60, which is equal to 5 percent of this added cost. On the other hand, if he resided in the low cost region, his cumulative costs would be \$678 lower than if he were paying the national average price, because he is still in the coverage gap at the end of the year, paying the full costs of his drugs himself.

Figure 2.2: Cumulative Amount Paid By Example Beneficiary by High, Low, and Average Cost Region



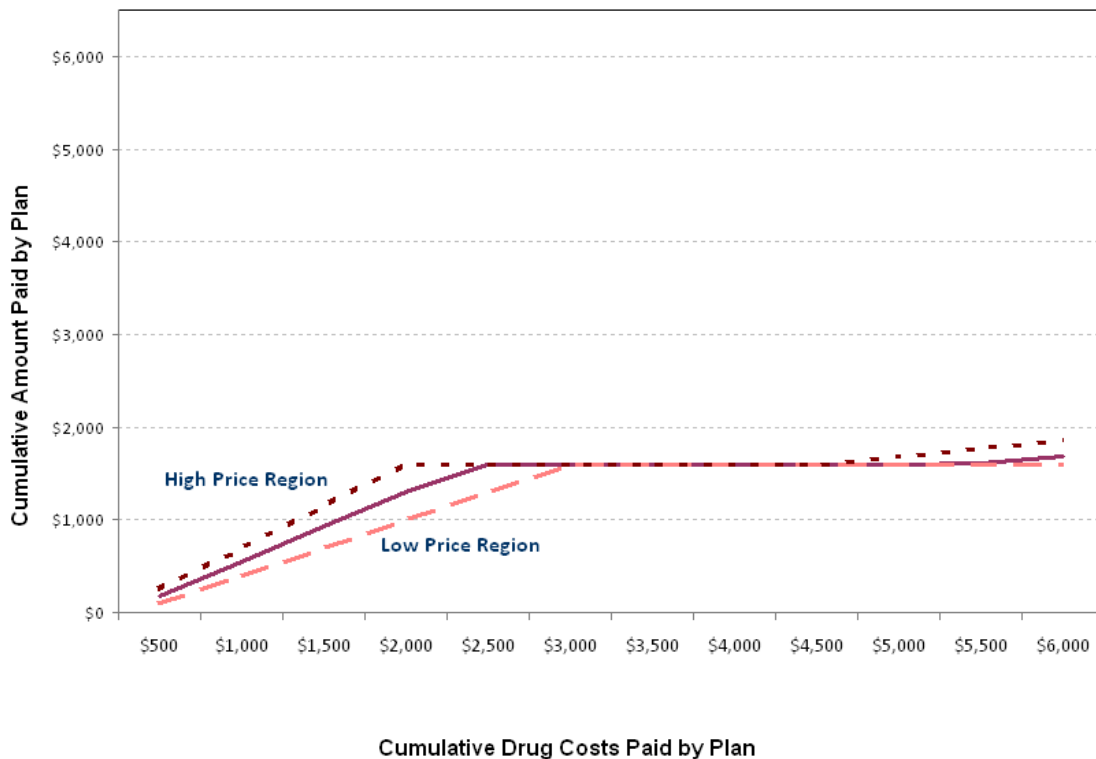
Although the catastrophic coverage level protects high expenditure beneficiaries in high cost areas, beneficiaries whose total drug expenditures place them in the coverage gap pay the entire additional prices for their drugs in high cost regions. If our example beneficiary had faced the same prices but taken half the drug quantity, his drug costs would total \$250 per month or \$3,000 annually in the average area. It would now take him until December to hit the total costs that he previously reached in June. At the end of the year, he would have paid \$1,399 total. If he lived instead in a high price region, both the total drug costs he incurred and his total out-of-pocket costs would be \$600 higher. That is, in the high cost region, he would pay \$1,999 of the total cost of \$3,600. Similarly, he would capture all of the savings from the lower prices in a cheaper region, and pay only \$799 out of the \$2,400 total costs.

Effect of Price Differences on Plan Payments for Drugs

Since the plans pay for the drug expenditures not covered by beneficiaries – except in the catastrophic range where CMS pays most of the costs – it is not surprising that the situation is

largely a mirror image for the plans compared to the beneficiaries. The “average” line in Figure 2.3 graphs the plan costs from Figure 2.1. The higher and lower lines then demonstrate how these plan costs would differ in a high price region and a low price region. Plans are most

Figure 2.3: Cumulative Amount Paid by Plan for High, Low, and Average Drug Price Region



affected by higher prices for beneficiaries whose cumulative drug costs fall into the initial coverage level. If a beneficiary’s cumulative annual expenditures fall into the coverage gap, the costs to plans are not affected by the price of drugs. Plans do not pay any of the cost in the coverage gap, and the cutoff point for the gap is the same for high price as for low price areas. So the total amount paid by plans is the same, about \$1,600, whether a beneficiary’s annual expenditures are \$2,400 or \$5,400. Plans’ costs increase again under catastrophic coverage, but they bear only 15 percent of the price difference in this range, with CMS carrying 80 percent of the total drug costs within this range.

2.3.2. Plan Bids, Beneficiary Premiums and the Direct Subsidy

The cost structure faced by plans (shown in Figure 2.2) is critical in determining the plan bids. Essentially, the plan bids reflect the plans’ predictions of the distribution of beneficiaries’ total drug costs, applying the benefit design rules to determine the implications for plan costs. The bid is thus an estimation of the cost of coverage for the average beneficiary.⁸ If beneficiaries’ expenditures fall in either the initial coverage range or the catastrophic coverage range, plans facing higher prices will need to increase their bids. Although bids will differ from plan to plan, on average, regions with higher prices will have higher average plan bids, and regions with lower prices will have lower average plan bids.

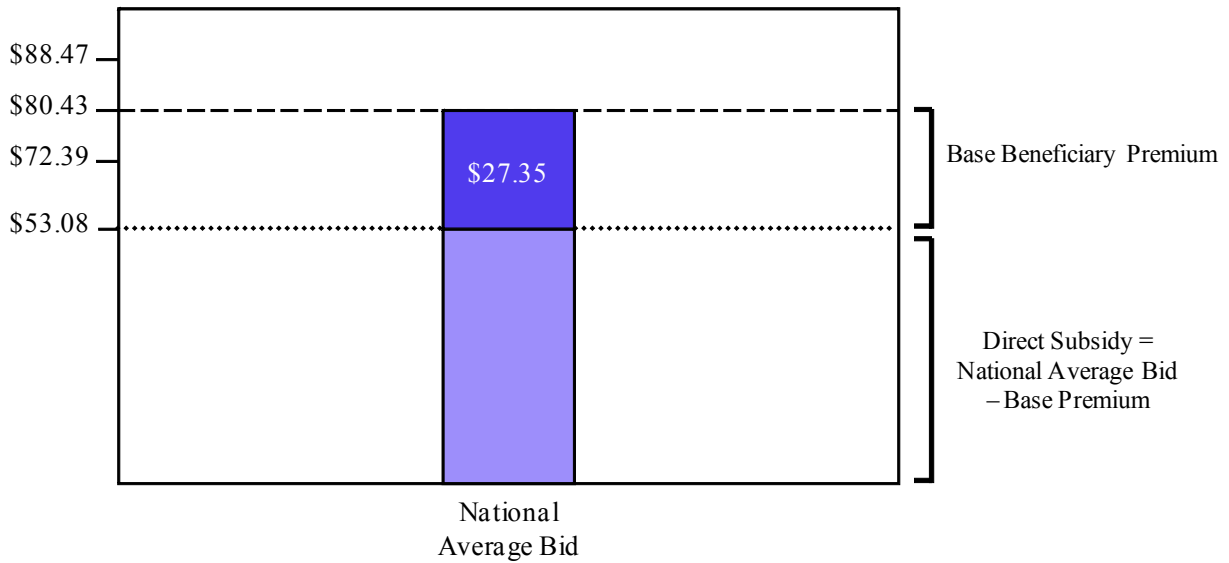
As currently structured within Part D, the direct subsidy to plans is based on the national average standard bid, which is a weighted average of the standardized bid amounts submitted by each plan.⁹ Before adjustments for reinsurance, the base beneficiary premium is 25.5 percent of the national average bid. Ignoring the issue of risk adjustment, the direct subsidy is then calculated as the national average bid amount minus the beneficiary base premium. For 2007, the beneficiary base premium was \$27.35. Given the reinsurance adjustment, this was 34 percent of the national average bid amount of \$80.43. Figure 2.4 presents the simple case for a standardized bid at the national average for 2007, where there is no risk adjustment.

The premium actually paid by the beneficiary and the direct subsidy received by the plan will both differ from case to case. For a specific plan, the beneficiary premium is equal to the base beneficiary premium plus the difference between the plan bid and the national average bid. For a bid equal to the national average, the beneficiary premium equals the beneficiary base premium. Plans with bids below the national average will have lower premiums; plans with bids above the national average will have proportionally higher premiums. Plans, in turn, will receive higher direct subsidies for beneficiaries with greater anticipated health needs, provided as an increment to the standardized plan bid, based on a beneficiary specific risk score.

⁸ MA-PDs submit one bid for Parts A and B, and one for Part D, where the Part D bid is net of any MA rebates that plans propose to apply to Part D premiums. Bids represent monthly amounts.

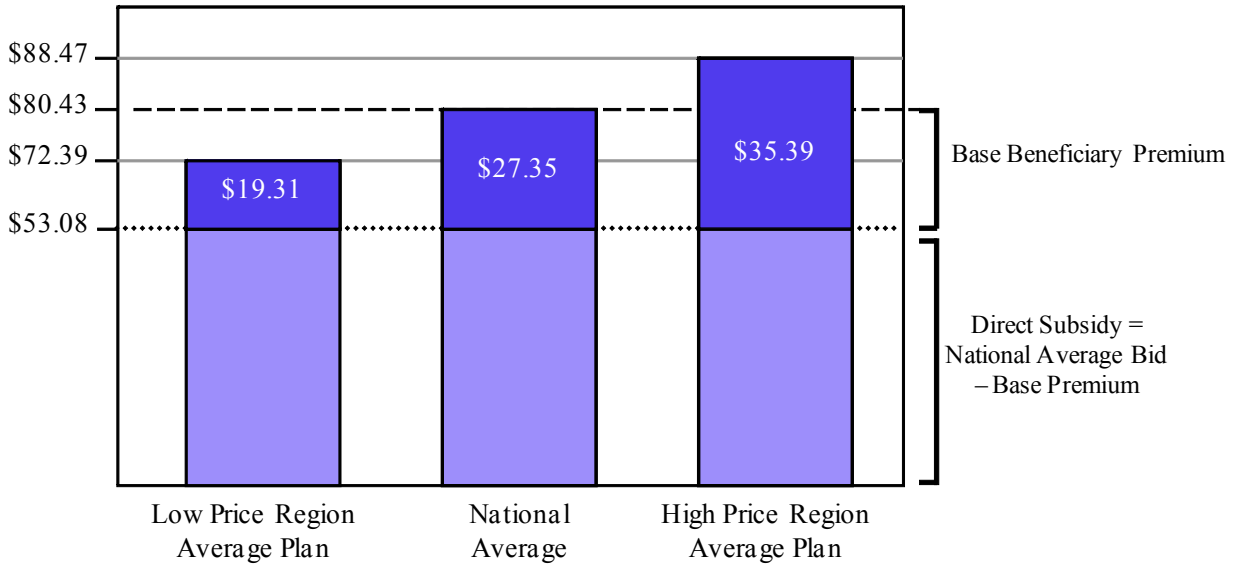
⁹ For 2007, the national average bid was a blend between unweighted and enrollment-weighted bids.

Figure 2.4: Relation between National Average Bid, Base Premium and Direct Subsidy



In the absence of geographic adjustment in Part D, the direct subsidy is the same for high price regions and low price regions. Because, all else being equal, we would expect high price regions to have bids above the national average, this means that the additional regional costs are passed on to the beneficiaries through higher premiums, as shown in Figure 2.5. In this example, the higher prices result in a 10 percent higher expected cost per beneficiary, compared to the national average bid. Because the direct subsidy is fixed at \$53.08, the beneficiary pays all the difference through the higher premium of \$35.39 instead of \$27.35. Similarly, savings in lower price regions will be passed along to beneficiaries, as lower premiums.

Figure 2.5: Impact of Regional Price Variation on Subsidies and Beneficiary Premiums



2.4 The Potential Role of Geographic Adjustment in Part D

As called for in the MMA, geographic adjustment for higher drug prices would be implemented as an adjustment to the national average bid amount. Abstracting from the exact way this adjustment would be calculated, we would expect the adjustment to scale up the national average bid amount – and by extension, the direct subsidy – in high price regions, and scale down the bid and direct subsidy amounts in low price regions. The discussion presented in Section 2.3 suggests the expected effects of such an adjustment on the costs paid by plans and beneficiaries.

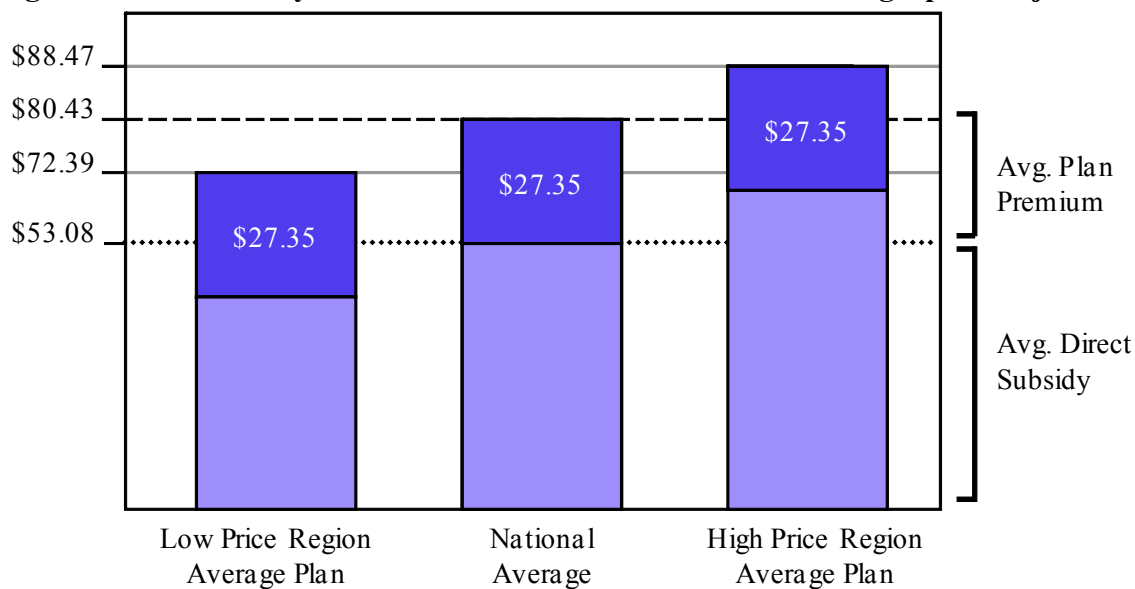
The geographic adjustment would have no direct effect on the overall drug expenditures paid by beneficiaries and plans shown in Figures 2.1 through 2.3. In particular, beneficiaries would still face higher out-of-pocket costs in higher priced areas, since neither the drug prices nor the thresholds in the standard benefit design would be affected by the geographic adjustment. Similarly, the geographic adjustment would not change the costs faced by plans under these expenditures. Because these costs would not be changed, we would not expect the plan bids to change.

The primary effect of the geographic adjustment would occur through the calculation of the direct subsidy and by extension the beneficiary premiums. Since plan bids would still reflect the costs of the drugs, the plan bids would be the same, but the direct subsidy payable to plans in

high price regions would rise. Consequently, given budget neutrality, the direct subsidy for plans in low price regions would fall.

As shown in Figure 2.6, the change in direct subsidies would directly impact the premiums paid by beneficiaries. Without the adjustment (as shown in Figure 2.5), beneficiaries in low price areas pay lower premiums on average, because their plans were generally below the national average bid. With the geographic adjustment, the beneficiary premiums are evened out across areas. (Figure 2.6 assumes the geographic adjustment would fully adjust for the price differences; however, the Part D adjustment could be applied as only a partial adjustment.) This mechanism is quite different from that seen in Parts A and B, where the geographic adjustments increase the reimbursements to providers in high input cost areas, but also increases costs to beneficiaries in these areas.

Figure 2.6: Beneficiary Premiums and Direct Subsidies with Geographic Adjustment



In 2007, 9.5 million or 39 percent of PDP and MA-PD Part D enrollees qualified for a low-income subsidy. Because the low-income subsidies generally protect beneficiaries from regional price differences, the geographic adjustment would also have minimal effect on these individuals. Since the beneficiary premiums would even out across regions, the regional benchmarks would also even out. Those beneficiaries paying for premiums on a sliding scale would see their premiums change, with premiums rising for beneficiaries in low price regions (compared to the no-adjustment premium) and falling for beneficiaries in high price regions. As

with other beneficiaries, low-income beneficiaries paying 15 percent coinsurance would not see any change in their out-of-pocket costs on prescriptions.

2.5 Expectations on Geographic Variation in Part D Drug Prices

For the purposes of this discussion, we have assumed that Part D drug prices would vary regionally. However, before we turn to the empirical investigation of regional variation in drug prices, there are two facts to keep in mind. First, there are reasons to believe that Part D drug prices are less likely to vary by locality than are the input costs addressed in the geographic adjustments in Medicare Parts A and B. Second, a focus solely on the drug prices reported as expenditures in the program may miss the full picture of drug costs under Part D.

At the point of sale, Part D drug costs include the ingredient cost and the pharmacist’s dispensing fee (plus sales tax). Because the ingredients are provided through drug manufacturers, the ingredient costs may be similar to physician office equipment or laboratory services, which under Part B are not geographically adjusted because Medicare assumes a national market. Indeed, at least by mail order, there is a national market for prescription drugs. While dispensing fees may capture regional differences in the costs of pharmacies, mail order pharmacies, large national retail chains, pharmacy benefit managers and wholesale distributors are all likely to dampen geographic differences. Moreover, competitive bidding and the sheer number of drug plans may drive prices down to a common level, especially since many of the plans are national or offered in a number of regions. To date, however, the empirical evidence is mixed. Whereas ASPE (2000) finds substantial geographic variation in drug prices for cash customers but less variation for insured customers, MedPAC (2005) cites several studies showing little or no variation in drug prices across regions.

As noted in the ASPE study, a fundamental challenge in studying drug prices is that the point-of-sale price is not the final price to the plans. Plans receive price discounts both at the time of sale, which would be accounted for in the listed price, and in the form of manufacturer rebates tied to the volume of sales.¹⁰ These rebates are considered as part of the total plan costs

¹⁰ See Avalere Health LLC, “Follow the Dollar: Understanding Drug Prices and Beneficiary Costs under Medicare Part D”, April 2006, for a description of the Part D drug supply chain.

in setting the bids, and the total value of these rebates are determined as part of the end of the year reconciliation with CMS. However, rebates are not reported for individual drugs, so the actual price to plans is not observable. Since the rebates cannot be traced to specific drugs or to individual beneficiaries, they cannot be considered as part of the regional price variation.

2.6 Summary

Geographic adjustments are used in Medicare Parts A and Part B to adjust fee-for-service reimbursement rates for higher input costs faced by providers in high wage, high rent or high malpractice premium areas. These adjustments, which encompass ranges as broad as 0.257 to 2.700 (for malpractice premiums) and as narrow as 1.000 to 1.083 (for physician wages), are applied only to specific portions of the service costs. Costs for goods that are assumed to be purchased on national markets, such as physician office equipment or oxygen tanks, are not adjusted. Most notably, beneficiaries in high cost areas bear some of the costs of these adjustments through higher coinsurance costs.

Unlike Part A and B, if prescription drug prices under Part D differ by region, the additional costs will be borne by beneficiaries rather than the Part D providers. Because of the four-phase basic benefit structure under Part D, beneficiaries may or may not face higher out-of-pocket costs for their prescription drug purchases in areas with higher drug prices, depending upon their annual level of drug spending. Similarly, the additional costs faced by plans in high price areas differ depending on the level of total expenditures. However, plan bids are designed to capture plan costs. Since the direct subsidies are based on national average bid amounts, the subsidy will cover a smaller share of the bid in high drug price areas, and beneficiaries will pay the additional costs in the form of higher premiums. Geographic adjustments would equalize beneficiary premiums across areas with little change in the plan bids, plan costs or beneficiary out-of-pocket costs.

3 METHODOLOGY FOR MEASURING GEOGRAPHIC VARIATION IN DRUG PRICES AND UTILIZATION

The empirical approach for this study is designed to assess the extent of variation in drug prices, claims and spending across PDP regions and to understand the underlying sources of any such geographical variation. The ultimate goal is to determine whether and what geographic adjustments to Part D direct subsidies might be appropriate. In undertaking this empirical analysis, however, there are significant challenges to overcome. The most problematic challenges arise in defining regional prices, given that prices vary within regions as well as across regions, and in defining what constitutes a “drug.” Beyond these core challenges, beneficiary choices intricately shape both Part D prices and consumption. Beneficiaries not only select freely among a wide variety of plans – each offering its own tailored menu of drugs and prices – but also face varying cost sharing tiers that influence their decisions about the particular drugs and drug quantities they consume. Any analysis must neutralize the influence of these choices to isolate the variation that would be the focus of geographic adjustment policies.

Our empirical design builds on analytical steps formulated to distinguish two sets of factors that jointly determine Part D prices and quantities: the opportunities available to beneficiaries – which might be addressed with policy changes – and the choices made by beneficiaries that lead to the observed outcomes. The analytical steps first address the following three questions:

- Step 1: How much do drug prices vary across regions and plans?
- Step 2: What differences arise in the utilization of pharmaceuticals across regions and beneficiary groups?
- Step 3: To what extent are there regional variations in utilization that are not caused by differences in health status and prices?

Depending on the answers to these questions, there are two potential additional steps:

- Step 4: If prices vary, what do the patterns of utilization and geographic differences in Part D costs imply about policy options for adjusting direct subsidies by region?
- Step 5: What will be the impact on the direct subsidy if subsidies are adjusted for price variation?

This section describes our statistical design for implementing Steps 1 through 3. The first analysis step addresses how opportunities in drug prices differ across regions, as measured

through price indices. The first subsection presents a basic price index and discusses the underlying challenges entailed in formulating price indices and utilization measures for a market as complex as the one applicable for drugs. We then describe our procedures for defining drug products and the complexity of assigning prices. Subsection 3.4 presents constructions of price indices designed to reveal underlying differentials in drug prices across regions. Given this background, Section 3.5 presents our approach for Steps 2 and 3. This subsection describes the metrics we use measure regional differences in the utilization of drugs, including an overview of our strategy to control for health status in examining regional variations in expenditures.

3.1 The Standard Price Index and Challenges in Constructing Price Indices for Drugs

A geographic price index relates a “quantity” weighted average of regional “prices” of individual products by region to the corresponding weighted average of national “prices.” The weights used in this construction remain “fixed” in that they differ across products but stay constant across regions. More specifically, a fixed-weight geographic price index for region r takes the form:

$$(3.1) \quad P_r = \left[\frac{\sum_i (q_{iN} \times p_{ir})}{\sum_k (q_{kN} \times p_{kN})} \right] = \sum_i [W_{iN} \times p_{ir}]$$

where

$$W_{iN} = \frac{q_{iN}}{\sum_k (q_{kN} \times p_{kN})}$$

designates the weights used to evaluate the price index; p_{ir} refers to the price of product i in region r ; p_{iN} represents the price of product i nationally; and q_{iN} denotes the (national) quantity associated with product i . Two popular formulations of this index include the Laspeyres and Paasche price indices, which merely differ in the way one sets the weights W_{iN} . The denominator of (3.1) sums prices and quantities over all products i ; we use k in the denominator to flag that there are alternative ways to set the weights, depending on the particular formulation. We describe the weights, along with the other components below.

In a market as complex as the market for drugs, one must make decisions about four components that make up the index. First, one must select the geographic areas over which one measures drug units and prices used to construct the index. For this analysis, these geographic areas are the defined PDP regions. Second, one must establish the definition of drug products. Third, one must consider the appropriate notion of prices for the drug products. The theory motivating the formulation and interpretation of price indices maintains the assumptions that products are well defined and each of these products have a single price during the relevant time period. As further explained below, neither of these assumptions applies in the market for pharmaceuticals. Finally, one must establish the product shares that determine the fixed weights.

To carry out Step 1 and Step 2 of our study, therefore, an analytical approach must address the following key questions in constructing a price index:

- What is the definition of a drug product?
- What is an appropriate basket of goods to include in the indices?
- What are the appropriate prices to consider?
- How are the fixed weights constructed?

3.2 Definition of Drug Products in Part D Data

The first analytical challenge is defining what constitutes drug products. There are tens of thousands of drugs listed by their unique National Drug Codes or NDCs. A drug's NDC consists of an eleven-digit code, with the first five numbers indicating the labeler code (FDA assigned), the next four numbers registering the drug, dosage form and strength (manufacturer assigned), and the remaining two numbers signifying the package size (manufacturer assigned). Even a brand name drug may have many different NDCs. In this analysis, we consider both individual NDCs and groupings of NDCs mapped into categories of "comparable" products. Two basic approaches exist for defining comparability: the first aggregates NDCs into higher level therapeutic classifications, which interprets drugs used to treat similar medical conditions as substitutes; and the second groups NDCs according to their chemical makeup (Generic Sequencing Number or GSN). We use the second approach to group NDCs in this analysis.

3.2.1. Information in the Part D Data

Part D plans submit Prescription Drug Event (PDE) data to CMS to report details of all their transactions documenting the dispensing of Part D drugs. Each PDE claim discloses the NDC of the drug, its ingredient cost, the quantity purchased, date of the sale, the plan covering the purchase, and the pharmacy where the drug was obtained. Combining these PDE data with information about plan characteristics from CMS’s Health Plan Monitoring System (HPMS) data and about attributes of drug products from First DataBank (FDB) allows one to determine: (i) the therapeutic classification and chemical makeup of the NDC purchased, (ii) the region and specific local pharmacy where a given drug was sold, (iii) reference units and prices used to sell the NDC (e.g. the NDC’s average wholesale price (AWP) and average manufacturer price (AMP)), and (iv) information about the other costs the beneficiary and plan had to pay to acquire that drug, such as the benefit cost structure of the plan.

3.2.2. Classifying Drugs by Their Generic Sequence Numbers (GSNs)

The National Council for Prescription Drug Programs (NCPDP) offers a typology for allotting NDCs into broader categories termed Generic Sequence Numbers (GSNs), which also serves as the standard used by FDB. A GSN identifies pharmaceutically identical NDCs. More precisely, a drug’s assigned GSN maps a product to its: (i) active ingredient(s), (ii) route of administration, (iii) dosage form, and (iv) strength. GSN is not unique across manufacturers and/or package sizes; it groups generically equivalent pharmaceutical products.

Table 3.1: Example of a GSN Structure Integrating NDC Products

Drug	GSN	BG	BN
1	001275	G	ED K+10
2	001275	G	KAON-CL 10
3	001275	G	KLOR-CON 10
4	001275	G	KLOTRIX
5	001275	G	POTASSIUM CHLORIDE
6	001275	B	K-TAB

GSNs have two modifiers that further distinguish comparable drugs: BG and BN. BG is a dummy variable taking on the value of B or G depending on whether the drug is a Brand name

drug or the Generic equivalent. Thus, GSN-BG distinguishes pharmaceutically identical drugs by classifying drugs as Brand or Generic. BN is a character variable taking on the name of drug. This can take on many values as multiple brands and generics can comprise a GSN. An example relationship between GSN/BG/BN can be found in Table 3.1. In this example, drugs 1 and 2 would not be distinguished through GSN or GSN-BG, but would be distinguished through GSN-BN. Drugs 5 and 6 would be distinguished through GSN-BG and GSN-BN.

3.2.3. Two Concepts of a Market Basket

We construct regional price indices for two distinct formulations of a market basket of drug products: the first interprets product classifications as individual NDCs, and the second specifies GSNs as the drug categories. Whereas a price index for the GSN basket recognizes the possibility of substituting a cheaper drug alternative for any available NDC, the NDC basket does not. (For example, a plan or pharmacy may provide a brand drug at a lower unit price than another plan, but the second plan may achieve the lowest price for the associated ingredient because it offers a cheaper generic alternative to the brand.) There is, of course, the critical matter of whether the individual drugs making up a GSN product represent equivalent goods; our analysis will explore the potential implications of this possibility by examining how much unit costs vary among NDCs encompassed in GSN product groups.

3.3 Not a Single Price for Drugs

Because GSNs contain multiple NDCs, it is not surprising that there are multiple prices within GSNs. However, in any geographic area, no matter the size, even if one specifies NDCs, drugs sell at multiple prices. In the PDE data from Part D claims, much of the price variation stems from Part D plan negotiations with pharmacies and pharmaceutical companies. Moreover, three sources determine the unit cost of a drug product for a claim: (i) total PDE price for ingredients as reported in , (ii) dispensing fees, and (iii) options for substitutes available in a plan’s formulary. To formulate a single price measure for a geographic region, our analysis requires a metric to characterize the distribution of price, accounting for the distributional properties of all these cost components in developing measures of “effective prices” and price indices.

3.3.1. Prices Depend on Choices

Not only does each drug product sell for multiple prices, but beneficiaries', plans' and pharmacies' choices determine which prices show up in the claims data. Within regional drug markets, products tend to be sold locally in pharmacies with substantial discretion about what options are offered and selected when a beneficiary fills out a prescription. If in one region beneficiaries tend to purchase more brand-name drugs over generics, or higher-cost generics instead of lower-cost equivalents, this region would appear more expensive in a simple index. This index would be misleading if all the lower cost options were indeed available in all regions, and it was just a matter of preferences in purchasing higher cost alternatives.

While refining the specification of drug products can control for some of this confusion of price and choice, such adjustments typically do not solve all the issues when constructing a price index. For example, stores may carry pharmaceutically-equivalent but not precisely identical products. To account for this, indices need to be weighted to combine these equivalent products. Moreover, factors unrelated to the product can substantially influence observed prices. For instance, beneficiaries may be willing to pay higher drug prices or premiums in exchange for having more brand name drugs covered or for more convenience in purchasing drugs. Plans typically have different prices for different distribution channels (e.g., retail versus mail-order pharmacies, preferred versus non-preferred pharmacies). Ignoring the potential influences of endogenous choices on drug purchases (i.e., not going to the cheapest pharmacy or acquiring the least expensive drug equivalent) could produce results suggesting geographic variation in prices when none in fact exists.

3.3.2. Price Indices Based on Lowest-Cost Options

To compensate for the variation in observed drug prices induced through choices, we will evaluate market baskets at the “least-cost” cost options available to beneficiaries for core drug products in each region. Differences in lowest-cost price options not only provide evidence on whether variation exists across regions, but also the exact sources of these differences. Rather than requiring stringent assumptions about beneficiaries' circumstances and endogenous choices, our approach will address a more fundamental question: does a beneficiary residing in a PDP region have the opportunity to purchase all combinations of drug products at costs similar to

beneficiaries living in other regions? The idea here is to focus on lowest-cost opportunities, not the more costly options that participants can freely choose.

To evaluate the least-cost bundles, we will evaluate geographic price indices at the lower percentiles of the regional price distribution. The minimum or the very lowest percentiles (e.g., 1st or 3rd) may reflect prices that are only very rarely available. Above this minimum, prices at the lower end of the distribution 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. Therefore, to balance these two factors, our study will evaluate price indices at the 10th and 25th percentiles of the regional price distributions for each specification of the relevant drug products and corresponding weights. We intend these percentiles to approximate the least-cost bundles available in regions and eliminate variation across areas attributable to choices, rather than to underlying differences in costs.

A picture of the lowest-cost options for drug purchases allows us to formulate measures of the cost opportunities available to beneficiaries for various baskets of drug products. Thus, the focus is on evaluating the menu of options available to beneficiaries, not what was actually selected.

3.4 Indices Measuring Regional Variation in Drug Prices

Combining the notions of drug products and prices described above, we formulate price indices following a three-stage process: (i) we calculate weights by drug product (NDC or GSN); (ii) using these weights, we compute a national drug price index and a set of regional price indices that can be used to determine how drug expenditures would vary if the drug product were purchased at the lowest-cost price alternatives available in each PDP region (i.e. at the 10th, 25th or 50th percentiles of the relevant price distributions); and (iii) we standardize each regional price index by its national counterpart to build a set of geographic price indices that reflect the relative cost of drugs in each region compared with the lowest-cost national equivalent. We outline each stage below.

3.4.1. Basic Elements Assumed in the Construction of a Price Index

In presenting the basic price index, as shown in equation 3.1, we noted four decisions that must be made when creating fixed-weighted geographic price indices for drugs. These four decisions can be summarized as follows:

1. *Choice of regions:* Regions refer to the 34 PDP geographic areas, as well as the nation as a whole.
2. *Definition of the product:* A drug “product” refers to either goods with a common NDC or with a common GSN. Our analysis constructs separate regional price indices for each type of product classification.
3. *Concept of price:* The notion of a “price” for a drug product refers to either the 10th, 25th, or 50th percentile of the price distribution for the designated product within the designated region. Our use of percentiles in defining price accounts for potential systematic influences of choices by both plans and beneficiaries on observed prices.
4. *Strategy for weights:* Comparable to the types of weights used to calculate the national Consumer Price Index, the quantity weights used to construct regional price indices correspond to a national market basket of drugs. These weights are discussed in more detail below.

3.4.2. Formulation of the Market-Basket Weights

Our analysis constructs weights for each drug product (NDC or GSN) to represent the national utilization of that drug product as a share of national expenditure for all drug products. These weights are fixed across all regions, but, of course, vary by drug product.

The fixed weight for a drug product in a price index depends on the quantity of this drug dispensed nationally normalized by national expenditures across all drugs. As shown in Equation 3.1, the price indices are built from national weights on regional prices. In this analysis, the weight for drug product n derives from national expenditures on drug n , taking the form:

$$(3.2) \quad W_n = \frac{Q_n}{\sum_{n=1}^N Q_n \times M_n} = \text{National Fixed Weight for drug } n$$

where

N = total number of drugs,

M_n = national median per-unit cost of drug n ,

Q_n = measure of the national quantity dispensed for drug n .

We construct the quantities Q_n through the formula:

$$(3.3) \quad Q_n = \frac{E_n}{M_n} = \text{national quantity dispensed for drug } n,$$

where E_n = total national expenditure on drug n .

Each PDE claim reports per-unit cost measured by “total ingredient cost” divided by “quantity dispensed.” This creates a distribution of prices for each drug product. When multiple prices exist for an individual product—rather than a single price as is envisioned in the formulation of simple indices—one must select which particular price value to use in the construction of weights. Whereas a common choice for this value is the mean of the price distribution for specific products, we instead select the median of the price distribution, M_n , in construction of weights given by (3.2). The value of M_n identifies the “typical” price of drug n in the sense that half of drug purchases occur above this value and half occur below. We rely on the median price instead of the mean to compensate for the existence of measurement errors in the reporting of quantities dispensed for some PDE claims. Our estimation of median prices overcomes potential contamination attributable to measurement error in the calculation of Q_n used to formulate price-index weights. Note, by construction, the denominator of the weights W_n equals the total national expenditure on all drugs incorporated in the index, and the product $W_n \times M_n$ equals the share of national expenditures spent on drug n . The weights W_n define a national market basket.

3.4.3. *Formulation of Drug Price Indices for Each Region and Nationally*

Our analysis computes national and PDP regional price indices by calculating a weighted average of reference prices for the drug products making up the index. In particular, these indices take the following form:

$$(3.4) \quad P_{lr} = \sum_{n=1}^N W_n \times p_{lrn} \quad (\text{PDP region price index})$$

$$P_{lUS} = \sum_{n=1}^N W_n \times p_{lUSn} \quad (\text{national price index})$$

where

r = PDP region,

US = nation,

l = reference level for per-unit cost (10th, 25th or 50th percentile, or the mean),

$p_{l,r,n}$ = per-unit cost at reference price level l for drug n in region r ,

$P_{l,r}$ = price index for region r at reference price level l .

By construction, the national price index, $P_{l,US}$, evaluated at the 50th percentile of national per-unit costs (i.e., M_n) equals one.

Our analysis computes price indices considering two distinct measures of drug prices p_n (i.e., per-unit costs):

- (1) p_n = per-unit ingredient costs
= (ingredient cost) / (quantity dispensed); and
- (2) p_n = per-unit ingredient-&-dispensing costs
= (ingredient cost + dispensing fee) / (quantity dispensed).

For each of these price concepts, we calculate indices with the price values $p_{l,r,n}$ appearing in (3.4) evaluated at the 10th, 25th or 50th percentiles of the respective distribution of per-unit costs reported by PDE claims. Because the national price index $P_{l,US}$ evaluated at the 50th percentile of national distribution of per-unit ingredient costs equals one, any other price index reveals the relative cost of the national market basket purchased at the prices available in the particular region. Under the second definition of p_n , the national price index valued at the 50th percentile of national per-unit costs shows percent increase in expenditures attributable to dispensing fees. The national indices evaluated at the 10th and 25th percentiles have a natural interpretation: their values reveal how much more or less (in percent terms) expenditures on Part D drugs would change if the drugs had been purchased at the 10th (or 25th) percentile unit cost instead of at median costs. Similarly, the 10th, 25th and 50th percentile price indices for any region show how much drugs would cost had they been obtained at the reference regional price level versus at median national prices.

In addition to calculating the above indices, we also construct relative price measures for each region that reflect the degree to which cost options in a PDP region compare to their national counterparts. These relative geographic price indices take the form:

$$(3.5) \quad Z_{l,r} = \frac{P_{lr}}{P_{lUS}} \quad (\text{Relative PDP region price index})$$

If l designates the low-cost price level identified as the 10th percentile of the price distribution, then the value of $Z_{l,r}$ shows how much more or less the market basket of drugs would cost had purchases been done in region r as opposed to in the nation at large at the low-cost prices.

3.5 Comparing Differences in Drug Utilization across Regions

There are various approaches to measuring the utilization of Part D drugs by either individual beneficiaries or segments of the population. The PDE data supplies comprehensive information on the number of claims, the dosage, quantities of units, the days supply and the amount spent on each category of drugs. Moreover, these data fully link such information to beneficiaries and Part D plans, which allows one to calculate a wide variety of utilization measures for any combination of these groups.

This analysis relies on two metrics to evaluate utilization in the Part D program: the per capita distribution of PDE claims, and the per capita distribution of pharmaceutical expenditures. How these distributions differ across PDP regions fully characterize geographical variation in utilization.¹¹

3.5.1. *Statistics Describing Per Capita Utilization*

Two principal factors determine the properties of a distribution describing the consumption of a product:

- The share of the population who have any utilization at all; and
- The breakdown of consumption among those who have positive utilization.

¹¹ On average, plan liability is closely related to the distribution in per capita expenditures on pharmaceuticals. Actual plan liability depends on the benefit structure for the specific plans enrollees select. Because we use only summary information on expenditures per beneficiary, this study does not address how differences in the distribution of expenditures translate into difference in plan liability across regions.

Our analytical approach carefully depicts these two aspects of consumption. The first aspect merely involves registering the proportion of the population who have positive consumption. The second is somewhat more complicated in that one must summarize attributes of the distribution of utilization among consuming individuals.

A convenient and comprehensive way to compare regional distributions of consumption involves relating statistics describing their locations, dispersion and shapes. Familiar statistics measuring the location and spread of a distribution include its mean and standard deviation. The percentiles of a distribution—also sometimes called quantiles—depict the likelihood that consuming individuals fall into specified ranges of utilization. In particular, percentiles identify the level of utilization below which a certain fraction of the population is located. For example, the 10th percentile of a geographic expenditure distribution specifies the level of spending that exceeds the amount spent by at least 10 percent of the consuming beneficiaries residing in that region. Consequently, if a regional distribution has higher percentiles than another, this implies that individuals residing in that region associated with this distribution have uniformly greater utilization than their counterparts living in the other region. A distribution with a wider range between percentiles indicates there is a larger amount of inequality in utilization within the region. To fully characterize the properties of a distribution of claims or expenditure within a PDP region, our empirical analysis reports estimates of the region’s 10th, 50th, 75th, 90th, and 99th percentiles. The subsequent analysis also reports the means and standard deviations of distributions to provide more familiar information. Comparing these distributional statistics across regions produces a comprehensive picture of geographic variation in utilization.

3.5.2. Identifying Regional Variation Exclusive of Factors Included in Risk Adjustment

In addition to documenting differences in Part D utilization across regions and various segments of the population, a further goal of this study is to determine how much of the geographic variation can be attributed to factors such as the demographic and health circumstances of the population, compared to how much might also be explained by regional price variation and other cost differentials. The key focus in this analysis is to assess how much geographic variation exists in drug utilization after compensating for potential regional differences in drug prices and for the factors used by Medicare in the calculations of risk adjustments on the base beneficiary premiums and direct subsidies to Part D plans.

To evaluate the extent to which various factors influence the fraction of beneficiaries having positive expenditures and claims, we rely on a standard probit model to adjust for the effects of such factors. A probit summarizes the probability:

$$(3.6) \quad \Pr(Y_i > 0 \mid \alpha_i, X_i)$$

which determines the proportion of beneficiaries with attributes α_i and X_i who have positive expenditures or claims (Y_i). The covariates α_i designate the PDP region in which beneficiary i resides, and X_i includes covariates reflecting the beneficiary's demographic and health attributes. One can estimate the parameters of (3.6) using standard maximum likelihood methods and can, in turn, use the estimates produced to predict the values of \Pr given by (3.6) for any combination of $Z_i = (\alpha_i, X_i)$.

To describe the distributional properties of utilization among beneficiaries with positive expenditures, we implement regression-style methods to estimate the following specification:

$$(3.7) \quad Y_i = \alpha_i \mu + X_i \beta + \varepsilon_i = Z_i \theta + \varepsilon_i$$

where the dependent variable Y_{it} measures either the PDE claims or expenditure of beneficiary i and ε_i represents an error term. The covariates $Z_i = (\alpha_i, X_i)$ in (3.7) are defined as regional dummies and beneficiary characteristics as in the case of the probit relationship (3.6). The parameters β gauge the associations between values of X and values of Y . The coefficients μ measure PDP regional effects.

Standard regression methods applied to equation (3.7) produce estimates of how the means of utilization distributions differ across populations and regions with characteristics of α and X . Alternatively, quantile regression methods applied to (3.7) yield estimates revealing the extent to which percentiles of the distribution vary with different values of α and X . Combining information from estimates of the different percentiles produces a comprehensive assessment of how much of the regional variation can be attributed to the characteristics captured in either α or X .

With the parameter estimates of (3.6) and (3.7), one can predict the values of \Pr given by (3.6) and values of the means and percentiles corresponding to (3.7) for any combinations of $Z_i = (\alpha_i, X_i)$. Drawing the X_i randomly from a particular segment of the population, forming

predicted values for each draw i , and averaging across all observations produces estimates of the unconditional statistics associated with this population. Fixing the values of α_i designates that this population lives in a particular PDP region. This simulation approach distinguishes regional differences in utilization from differences in the composition of the beneficiary population by calculating utilization for an average population.

4 OVERVIEW OF PART D DATA AND COMPOSITION OF SAMPLES

As Section 3 described the empirical approach to be used in this analysis, Section 4 provides an overview of the available data and the composition of the samples used to perform the empirical analysis. Specifically, this section highlights (i) the Part D claims data, which serves as the basis for our analyses, (ii) the selection criteria used to partition the claims data into meaningful drug baskets for the construction of the price indices, and (iii) the composition of the six beneficiary populations examined in our analysis of drug utilization through annual drug claims and expenditures. This data section serves as the bridge linking the theoretical framework presented in Section 3 with the results presented in Sections 5 and 6.

4.1 Description of Part D Data

Three main categories of drug plans make up the Part D program: (i) PDP plans which allow any Medicare beneficiary to enroll, (ii) MA-PD plans which offer enrollment only to those beneficiaries already participating in the specific Part C Medicare Advantage (MA) plans directly linked to the corresponding MA-PD plan, and (iii) Employer-Sponsored PDP plans which permit enrollment only to those beneficiaries associated with supporting employers' retirement health-care program. The Medicare system maintains two primary sources of data to track the costs of beneficiaries participating in these Part D plans: PDE (Prescription Drug Events) and MARx (Medicare Advantage Prescription Drug System) data. PDE data stores all of the claims for prescription drugs covered by the Part D program, and data in MARx monitors the enrollment and premiums paid on behalf of each beneficiary. For both PDE and MARx, we use data from 2007, as submitted by early 2008.¹²

¹² The PDE data used in this study to analyze drug prices is drawn from PDE TAP files collected through March 2008. Appendix A provides a full list of the data elements used from the PDE data. The price-analysis sample includes all final action claims with service dates in January, April, July, and October 2007. The measures of Part D utilization analyzed in this study is drawn from CMS's January 2008 Report IV for the Calendar Year 2007, which summarizes final action PDE claims contained in CMS's IDR system. From this report, drug expenditures were determined based on net ingredient costs and net dispensing fees. Enrollment information used in this study comes from files in the MARx system.

4.1.1. Information about Drug Claims

Part D plans submit Prescription Drug Event (PDE) data to CMS to report details of all their transactions documenting the dispensing of Part D drugs. Each PDE claim reports the NDC (National Drug Code) of the drug, its price, the quantity purchased, date of the sale, the plan covering the purchase, and the pharmacy where the drug was obtained. Combining these PDE data with information about plan characteristics from CMS's HPMS data and about attributes of drug products from First DataBank (FDB) allows one to determine: (i) the therapeutic classification and chemical makeup of the drug purchased, (ii) the region and specific local pharmacy where a given drug was sold, (iii) reference units and prices of the drug (e.g. the drug's Average Wholesale Price (AWP) and Average Manufacturer's Price (AMP)), and (iv) information about the other costs the beneficiary and plan had to pay to acquire that drug, such as the benefit cost structure of the plan.

Although the PDE data are available since the Part D program began in 2006, we select 2007 for our analysis for two reasons: first, due to an uneven rollout of the program in early 2006, the data for 2007 constitutes a more representative picture of Part D enrollment and operations; and, second, 2007 present a more current depiction of Part D circumstances. For 2007, the total number of PDE claims currently accepted roughly equals 950 million claims totaling over \$61 billion in ingredient costs and dispensing fees.¹³

4.1.2. Enrollment by PDP Region and Beneficiary Characteristics

The MARx system provides the principal communication between CMS and Part D plans conveying which beneficiaries are enrolled in each plan and the premium amounts paid by Medicare for each beneficiary for each month of enrollment. Along with the enrollment and premium information, MARx maintains all the data elements that go into the calculation of a

¹³ These expenditures do not include rebates. As noted in Section 2.5, rebate information cannot generally be tied to specific claims, geographic areas or, in some cases, even plans. Rebates are included as part of the Direct and Indirect Remuneration (DIR), but DIR is reported at the plan level and reflects gross payments to and from the plan. One line of the DIR is the pharmacy adjustment, but this is not reported at the drug level. The Quarterly Rebate Report is drug specific but it is often reported at the sponsor level (where a sponsor may have many plans). Point of Sale rebates may or may not have been also included in the DIR in 2007, the year of data that we used for measuring price variation. As a result, we cannot tie rebate information to geography, so the rebates are not addressed in this analysis.

beneficiary's premium, which includes information about demographic characteristics, health status, and some economic circumstances.

To present an overview of the number and composition of beneficiaries enrolled in various Part D plans, Table 4.1 reports 2007 enrollment statistics by PDP region. The rows identify the region of the residence of beneficiaries, and the columns designate the total number of enrollees and national percentage residing in each PDP region, the percentages of enrollees classified as community and institutional, the share of beneficiaries under and over age 65, and the percentage enrolled in the three plan types (PDP, MA-PD, and Employer-Sponsored plans). These data reflect beneficiaries who enrolled in Part D at any point in 2007.

According to the first row, approximately 25.2 million beneficiaries participated in Part D in 2007 for the nation as a whole. Of these, 89.0 percent correspond to community beneficiaries¹⁴, 2.6 percent were institutional,¹⁵ 19.3 percent were under age 65, 67.6 percent were enrolled in PDP plans, 25.6 percent in MA-PD plans and 6.8 percent were enrolled through Employer-Sponsored plans.

The following rows of Table 4.1 report corresponding statistics for each of the 34 PDP regions. For example, inspection of the first column reveals that in 2007 there were roughly 228,000 enrollees in PDP Region 1 (Northern NE), while there were almost 1.6 million enrollees in PDP Region 3 (New York). Turning to the second column, Northern NE contained merely 0.9 percent of all enrollees, whereas New York included 6.3 percent of all enrollees. Exploring the third column, the percent of community beneficiaries (non-institutional, non-new enrollee beneficiaries) ranges from 86.7 percent in PDP Region 0 (the territories) to 93.3 percent in PDP Region 34 (Alaska). According to the fourth column, the percent of the Part D population classified as institutional ranges from a low of 0.1 percent in PDP Region 0 (the territories) to a high of 4.0 percent in PDP Region 14 (Ohio). Examining the fifth and sixth columns indicates that the percent of the Part D population under 65 ranges from a low of 10.7 percent in PDP

¹⁴ Community beneficiaries are defined to be non- new enrollees who were at no point enrolled in an institution in 2007 (see Section 4.3.1 for further details).

¹⁵ Institutional beneficiaries are defined to be non-new enrollees who were institutionalized for the entirety of 2007 (see Section 4.3.1 for further details).

Region 33 (Hawaii) to a high of 30.7 percent in PDP Region 34 (Alaska). Finally, the last three columns show substantial variation in the shares of beneficiaries enrolled in different types of drug plans. For example, in PDP Region 34 (Alaska), 97 percent of Part D beneficiaries are in PDP plans, 0.8 percent are in MA-PD plans, and 1.9 percent are in Employer-Sponsored plans. By contrast, in PDP Region 33 (Hawaii), only 30.6 percent of Part D beneficiaries are in PDP plans, 42.5 percent were enrolled in MA-PD plans, and 26.8 percent participated in Employer-Sponsored plans. PDP Region 0 (the territories) had merely 13.9 percent enrollment in PDP plans, with 80.3 percent participation in MA-PD plans.

Table 4.1: Summary of Enrollment in Part D Program by Region in 2007

PDP Region		Number of Beneficiaries	% National Beneficiaries	% Community	% Institutional	% Under 65	% Over 65	Percent Enrolled by Plan Type		
#	Name							% PDP	% MA-PD	% Employer Sponsored
US	Nation	25,217,301	100.0%	89.0%	2.6%	19.3%	80.7%	67.6%	25.6%	6.8%
0	Territories	434,952	1.7%	86.7%	0.1%	23.4%	76.6%	13.9%	80.3%	5.8%
1	Northern NE	228,395	0.9%	90.7%	2.9%	25.1%	74.9%	95.9%	2.0%	2.1%
2	Central NE	1,019,703	4.0%	88.5%	3.9%	20.6%	79.4%	72.7%	22.9%	4.4%
3	New York	1,587,463	6.3%	81.1%	3.3%	18.3%	81.7%	64.0%	28.6%	7.5%
4	New Jersey	655,790	2.6%	90.3%	3.0%	16.1%	83.9%	81.8%	13.4%	4.9%
5	Mid Atlantic	409,417	1.6%	90.0%	3.4%	20.6%	79.4%	83.9%	8.3%	7.8%
6	Penn., W. Virginia	1,539,326	6.1%	86.8%	2.8%	17.9%	82.1%	53.5%	34.7%	11.8%
7	Virginia	523,237	2.1%	90.0%	2.6%	21.9%	78.1%	79.4%	11.7%	8.9%
8	North Carolina	784,925	3.1%	90.7%	2.4%	23.5%	76.5%	80.7%	16.6%	2.7%
9	South Carolina	368,939	1.5%	89.8%	2.3%	25.9%	74.1%	82.6%	13.3%	4.0%
10	Georgia	647,706	2.6%	89.5%	2.9%	23.0%	77.0%	84.9%	11.9%	3.2%
11	Florida	1,800,254	7.1%	89.9%	1.7%	15.9%	84.1%	54.9%	41.8%	3.3%
12	Alabama, Tennessee	1,047,662	4.2%	89.9%	2.6%	26.5%	73.5%	74.2%	22.8%	3.0%
13	Michigan	735,028	2.9%	88.1%	2.7%	22.5%	77.5%	69.4%	14.4%	16.2%
14	Ohio	878,329	3.5%	87.3%	4.0%	21.2%	78.8%	67.1%	29.0%	3.9%
15	Indiana, Kentucky	883,276	3.5%	89.3%	3.3%	24.7%	75.3%	88.1%	8.6%	3.3%
16	Wisconsin	422,643	1.7%	86.2%	3.9%	20.0%	80.0%	72.1%	22.2%	5.7%
17	Illinois	970,136	3.8%	90.3%	3.5%	18.3%	81.7%	86.8%	9.8%	3.5%
18	Missouri	573,697	2.3%	89.7%	3.2%	21.4%	78.6%	73.4%	22.0%	4.6%
19	Arkansas	297,705	1.2%	89.1%	3.0%	25.6%	74.4%	87.8%	10.6%	1.7%
20	Mississippi	303,730	1.2%	91.4%	2.9%	28.4%	71.6%	94.1%	4.5%	1.4%
21	Louisiana	378,947	1.5%	88.1%	3.4%	24.1%	75.9%	72.6%	24.7%	2.7%
22	Texas	1,510,159	6.0%	89.3%	2.6%	19.3%	80.7%	74.3%	22.2%	3.5%
23	Oklahoma	330,897	1.3%	90.3%	2.7%	20.3%	79.7%	71.2%	14.9%	13.9%
24	Kansas	248,575	1.0%	90.1%	3.8%	16.2%	83.8%	87.5%	9.1%	3.4%
25	Upper Midwest	1,275,719	5.1%	90.0%	3.6%	14.3%	85.7%	78.6%	17.0%	4.5%
26	New Mexico	157,992	0.6%	90.1%	1.9%	20.6%	79.4%	63.9%	32.6%	3.5%
27	Colorado	321,906	1.3%	89.2%	2.4%	16.4%	83.6%	49.1%	39.2%	11.7%
28	Arizona	500,160	2.0%	90.1%	1.0%	17.7%	82.3%	39.5%	52.1%	8.4%
29	Nevada	177,003	0.7%	92.0%	1.1%	16.5%	83.5%	44.1%	51.5%	4.4%
30	Oregon, Washington	807,099	3.2%	90.8%	1.4%	17.8%	82.2%	61.6%	29.3%	9.2%
31	Idaho, Utah	248,471	1.0%	89.7%	1.6%	17.6%	82.4%	68.6%	26.0%	5.4%
32	California	3,000,267	11.9%	91.2%	1.4%	14.8%	85.2%	51.4%	34.5%	14.2%
33	Hawaii	125,752	0.5%	92.1%	1.7%	10.7%	89.3%	30.6%	42.5%	26.8%
34	Alaska	22,041	0.1%	93.3%	1.5%	30.7%	69.3%	97.3%	0.8%	1.9%

4.2 Composition of Samples Used to Formulate Price Indices

As described in the previous section outlining our methodology, we rely on two distinct definitions of drug products in constructing the price indices presented later in this report. The first is simply to interpret each NDC as an individual product. This constitutes the most disaggregated level of drugs available in the PDE data. The second is to aggregate NDCs into a larger drug GSN product groups which construes chemically-equivalent NDCs as identical pharmaceutical goods.

To allow for the possibility that drug prices may vary over the year, our analysis formulates price indices on a monthly basis and then assesses the appropriateness of integrating these monthly indices into single measures. In particular, to capture potential variation over the year and still ensure that claims submission is as complete as feasible, we select all final-action PDE claims with service dates in the first month of each quarter of 2007 (January, April, July, and October 2007) to conduct our price analyses.

To be included in our market baskets, a drug product must have at least one claim in each region in each of the four months comprising our sample. This selection criterion avoids problems encountered in creating price indices for market baskets comprised of some drugs with no cost data in some regions. Accordingly, we create regional price indices for two different market drug baskets for the months of January, April, July, and October in 2007. The first, in which we define drug products as individual NDCs, requires that an NDC be purchased in each region in each of the four months to be included in the basket. The second specifies GSNs as drug products and again requires each GSN be purchased at least once in each region in each of the four months to be incorporated in the basket. As GSNs are comprised of NDCs, a broader set of claims is included when we define a drug product to be a GSN rather than an NDC.

4.2.1. Composition of the NDC and GSN Market Basket Samples

We further restrict our construction of price indices to the most prevalent and important drugs, by including PDEs linked to purchases of drugs with NDCs satisfying at least one of the following four criteria:¹⁶

1. The drug is identified by CMS as a "Key Product";
2. The drug is identified by CMS as a "Required Product";
3. The drug is identified by CMS as a "top-100 drug"; or
4. The drug appears on at least 60 percent of formularies on January 1, 2007.

Restricting the sample to incorporate only claims with drug products meeting these criteria reduces the set of drugs and the corresponding Part D expenditures used to structure market baskets and price indices.

Table 4.2 shows the consequences of each of these sample composition decisions on the number of claims, expenditures, and drug products included in market baskets. The first column identifies the sample composition; the second reports the number and percentage of claims included in the designated sample; the third shows the amount and percentage of expenditures accounted for by the sample; and the fourth and fifth columns present the number and percentage of drug products covered by the market basket. As seen in the first row of this table, roughly 324 million claims totaling nearly \$20 billion were submitted for the months of January, April, July, and October in 2007. These claims covered about 47,000 NDCs and roughly 7,200 GSNs.

Table 4.2: Effects of Market Basket Selection on Sample Composition of PDEs

Sample	Number and % of Claims	Level and % of Expenditures	Number and % of NDCs	Number and % of GSNs
All Accepted PDE Claims in 4-month PDE sample	324,258,481 (100%)	\$19,966,257,753 (100%)	47,713 (100%)	7,270 (100%)
Key, Required, Top 100, Top 60% Drug Product sample	313,761,549 (96.8%)	\$18,972,735,498 (95.0%)	29,278 (61.4%)	2,950 (40.6%)
GSN market basket sample	306,826,974 (94.6%)	\$17,876,411,016 (89.5%)	22,263 (46.7%)	1,226 (16.9%)
NDC market basket sample	243,497,442 (75.1%)	\$15,807,586,790 (79.2%)	2,132 (4.5%)	1,065 (14.7%)

¹⁶These criteria are defined in different manners: the Key Product criterion is defined at the GSN-BN level, the Required Product criterion is defined at the GSN level, the top-100 drug criterion is defined at the GNN level (Generic Name Level), and the 60 percent appearance criterion is defined at the GSN-BG level. These selections can all be translated into NDC and GSN categories.

The second row of Table 4.2 reports the number of claims, expenditure, and drug products that are represented by key drugs, CMS required drugs, top 100 drugs, and formulary prevalent drugs. Key drugs, CMS required drugs, top 100 drugs, and formulary prevalent drugs represent nearly all claims (97 percent) and expenditures (95 percent) but only 29,200 (61 percent) of drug products defined by NDCs and only roughly 3,000 (41 percent) of drug products defined by GSNs.

The third row of Table 4.2 reports the number of claims, expenditure, and drug products when one restricts the market basket to GSNs for which at least one claim was made in each PDP region in each of the months of January, April, July, and October in 2007. This restriction slightly reduces the number of claims to roughly 307 million (95 percent of the total sample of claims) for which expenditures totaled almost \$18 billion (90 percent of the expenditures for the total sample of claims). This restriction leaves us with roughly 1,200 drug products, defined by GSNs, which represent over 22,200 different NDCs.

The fourth row of Table 4.2 reports the number of claims, expenditures, and drug products when we restrict the market basket to NDCs for which at least one claim occurred in each PDP region in each of the four analysis months. Because GSNs represent broader product categories than NDCs, the requirement that a claim shows up in each region and each month for each included product leads to a reduction of claims included in the formation of NDC baskets. In particular, in forming NDC baskets, the number of PDE claims comprising the price index sample falls to fewer than 244 million (75 percent of the total sample of claims) covering expenditures totaling almost \$16 billion (79 percent of the expenditures for the total sample of claims). Moreover, the combined effect of the sample selection criteria in the case of NDC baskets covers roughly 1,000 drug products defined by GSNs and slightly more than 2,100 different NDCs.

4.2.2. Restricting Samples to Claims from PDP Plans

As a further sample selection criterion for conducting our price analyses, we include only claims submitted by PDP plans when analyzing prices. PDPs constitute stand-alone drug plans in which any Medicare beneficiary residing in a region can enroll. This decision excludes two sets of plans that may have different incentive structures for pricing drugs, which could create

artificial regional price variation. First, we remove claims filed under MA-PD plans. This sample restriction is advisable because comparing drug prices across PDP and MA-PD plans can be problematic as the incentive structures differ across plan types. PDP plans cover only drugs, whereas MA-PD plans combined with MA programs also cover medical expenses. MA-PD plans primarily profit from insuring medical expenses and may offer relatively low-priced drugs to induce enrollment.¹⁷ Second, we exclude plans that are partially sponsored by employers, since like MA-PD plans, the Employer-Sponsored plans may have different incentive structures. Employer-Sponsored plans also make up a relatively low fraction of expenditure and total number of claims. The claims remaining after these two final restrictions make up samples that we use for our analysis of price variation.

Tables 4.3 and 4.4 show the sample compositions before and after deleting claims filed under MA-PD and Employer-Sponsored plans. Table 4.3 starts with the NDC market basket of claims from Table 4.2, and Table 4.4 starts with the corresponding GSN basket. According to these tables, the analysis samples comprised of only PDP claims retain approximately 75 percent of the data measured by either claims or expenditures after excluding MA-PD and Employer-Sponsored plans from the GSN and NDC market baskets.

Table 4.3: Composition of the NDC Market Basket Before/After PDP Contract Restriction

Sample	Number and % of Claims	Claims per Beneficiary	Level and % of Expenditures	Expenditures per Beneficiary	Number and % of NDCs	Number and % of GSNs
NDC Market Basket	243,497,442 (100%)	11.22	\$15,807,586,790 (100%)	\$728.35	2,132 (100%)	1,065 (100%)
NDC Market Basket Excluding MA-PD and Employer-Sponsored Plans	181,040,858 (74.4%)	12.11	\$12,044,388,249 (76.2%)	\$803.73	2,132 (100%)	1,065 (100%)

¹⁷A casual inspection of the evidence reveals that the 12th percentile of unit costs for a typical NDC for MA claims corresponds to about the 9th percentile of unit costs for PDP claims.

Table 4.4: Composition of the GSN Market Basket Before/After PDP Contract Restriction

Sample	Number and % of Claims	Claims per Beneficiary	Level and % of Expenditures	Expenditures per Beneficiary	Number and % of NDCs	Number and % of GSNs
GSN Market Basket	306,826,974 (100%)	13.79	\$17,876,411,016 (100%)	\$803.86	22,263 (100%)	1,226 (100%)
GSN Market Basket Excluding MA-PD and Employer-Sponsored Plans	226,095,784 (73.7%)	14.86	\$13,526,565,115 (75.7%)	\$889.09	19,481 (87.5%)	1,226 (100%)

4.2.3. Problems with the Reporting of Quantities in the PDE Data

We find considerable evidence suggesting that data errors exist in the Part D claims related to inconsistencies in the reporting of quantities dispensed. Misreported quantities present serious obstacles for the analysis of geographic price variation because of the importance of accurately calculating the per-unit costs of drug purchases within NDC classifications. We have identified a number of distinct types of data errors, some associated with institutional features of the PDE submission process and others that reflect fundamental inconsistencies in contract or pharmacy reporting practices. We have developed basic “data cleaning” algorithms to compensate for these quantity reporting errors where possible. More information about the errors and data cleaning methods is provided in Appendix A.

Our cleaning algorithm alters information for less than 2 percent of claims covering less than 2 percent of total PDE expenditures. While modifying only a miniscule number of claims, this data cleaning process dramatically alters the average of per-unit drug prices for many NDCs in our sample. The national price index shifts from a value of 2.27 before adjusting the PDE data to slightly more than 1.0 after adjusting the data when this index is evaluated at the sample means of NDC per-unit costs. This finding suggests that average per-unit prices are overstated by a factor of two and a quarter in the raw PDE data. Our cleaning algorithms similarly affect the regional price indices evaluated at average per-unit costs. In sharp contrast, none of the regional price indices evaluated at median reference prices change at all as a consequence of our data adjustment procedures.

4.3 Composition of the Sample Used to Measure Utilization of Part D Drugs

Unlike in the price index analyses, in our examination of the utilization of Part D services, we do not restrict our samples to exclude categories of claims covering particular drug products. Instead, we construct samples using all available claims submitted on behalf of specific groups of beneficiaries. If our sample selection criteria include a beneficiary in a utilization-study sample, then we incorporate all of this individual's claims for 2007 in the dataset used to conduct the analysis. We investigate two measure of utilization in these samples: (i) number of claims/scripts and (ii) expenditure on claims.¹⁸ In addition, we examine two measures of expenditures: (i) ingredient costs and (ii) ingredient costs plus dispensing fees.

4.3.1. *Primary Beneficiary Populations Used to Study Utilization*

Although our price analysis is focused on PDP prices (since these prices are not distorted by the interaction with Medicare Advantage), the relevant population for measuring utilization consists of all Part D participants residing in the respective regions. This full population is precisely the one used by CMS in its estimation of risk scores relied upon to adjust its contributions to Part D premiums aimed at compensating for differences in individual's health status. A principal task of our report is to assess 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. One would not expect these factors alone to neutralize regional disparities in utilization by beneficiaries participating solely in PDP or in MAPD plans. This in part arises because the degree of managed care penetration varies significantly across areas of the country, and the decision to participate in MA plans is likely to depend on characteristics that also influence spending on drugs. In particular, MA-PD participants spend far less on prescription drugs. Since regional variation in per capita spending can be attributed in part to the availability of and enrollment in MA-PD plans, considering the spending of beneficiaries only in PDP (or in MAPD) plans distorts the picture of geographic variation in utilization.

¹⁸ A third measure could be days supplied. However, two-thirds of all scripts have a 30-day supply, so there is less variation in this measure. We did review days supply to confirm that this was not driving other findings.

Thus, our empirical analysis presents utilization measures for three sets of broad specifications of beneficiary groups participating in the Part D program:

- *Entire Part D population*: all beneficiaries enrolled in the Part D program at any point in 2007.
- *Community Part D population*: beneficiaries (i) enrolled in Part A and B services for all of 2006, (ii) enrolled in the Part D program in January 2007, and (iii) never resided in an institution in 2007 (including those who died in 2007).
- *Institutional Part D population*: beneficiaries (i) enrolled in Part A and B services for all of 2006, (ii) enrolled in the Part D program in January 2007, and (iii) resided in institutions for all months in 2007 (or until their death in 2007).

We examine the entire Part D population as our most inclusive sample of beneficiaries to provide summary statistics for drug utilization in its broadest sense in 2007. However, we focus on the latter two populations, the community Part D population and the institutional Part D population, as they are the two populations used by Medicare in assigning beneficiary risk scores. We do not separately break out beneficiaries who switched between the community and institutional populations during 2007.

4.3.2. Composition-Adjusted Variants of these Beneficiary Populations

When paying its portion of Part D premiums on behalf of beneficiaries, Medicare adjusts its payments to plans depending on the risk score assigned to each individual beneficiary. A person with an average expected cost receives a risk score equal to one; an individual forecasted to have costs below average is assigned a score less than one; and a beneficiary with anticipated higher than average costs obtains a score value greater than one. In the 2007 Part D population, actual risk scores can range from values near 0.1 to values well above 3.

To compute risk scores, Medicare relies on a statistical model incorporating the following set of beneficiary attributes:

- *Age/Gender*: 24 mutually exclusive groups determined by the interaction between a beneficiary's age as of June 1, 2007 and gender.
- *Health Conditions*: 84 prescription drug hierarchical condition categories (RxHCC) indicating a beneficiaries 2006 health conditions.
- *Age/Disease*: 3 specific age/health condition interaction categories.

- *Gender/Originally Disabled*: 2 groups indicating whether a beneficiary was originally entitled to Medicare due to disability, split corresponding to a beneficiary's gender.

Risk scores are also adjusted for eligibility for low-income subsidies. Additionally, it is important to note that the RxHCCs defined above were based upon diagnoses from 2006. The year lag in diagnosis information is implemented because the statistical model is attempting to forecast 2007 costs in order to produce 2007 risk values for beneficiaries.

CMS estimates two distinct risk models corresponding to two segments of the Medicare population: the community sample, and the institutional sample. Specifically, to calculate risk values, CMS implements standard regression methods to estimate coefficients predicting the influence of the above factors on the amount that a plan spends on a beneficiary's Part D claims in the year immediately following the year when the above variables are observed.

One goal of this report is to evaluate the extent of utilization in the Part D program that is not accounted for by the factors used by CMS in its risk adjustment of premiums. Rather than directly incorporate risk scores, we estimate utilization accounting for the same factors as are used in the risk scores, estimating the models for samples constructed to directly correspond to those used by CMS in its computations of risk scores. These models are built using the empirical frameworks described in Section 3.5.2. These samples directly correspond to the constructions used by CMS in its computations of risk scores.¹⁹

¹⁹ The two corresponding Medicare Part D risk adjustment models are: (i) Medicare Part D Continuing Enrollee Risk-Adjustment Model Community Sample, and (ii) Medicare Part D Continuing Enrollee Risk-Adjustment Model Institutional Sample.

5 PATTERNS OF GEOGRAPHIC VARIATION IN THE PRICES OF PART D DRUGS

Drawing on the methodology and data described in the previous two sections, we start by addressing the first key research question: How much did Part D drug prices vary across the 34 PDP regions in 2007? We consider two alternative definitions of drug prices. First, we consider the price of the drug ingredients only, defined as the ingredient cost per quantity dispensed. As we noted in Section 2, if there is a national market for prescription drugs, we may not expect substantial variation in these prices. The second definition adds the dispensing fee, where prices reflect ingredient cost plus dispensing fee per quantity dispensed.²⁰ Because dispensing fees cover pharmacist labor and facilities costs, there is more reason to expect regional variation when looking at this broader index. For both price definitions, we have adjusted for price inflation across the year, since our focus is on price differences across regions.

In addition to evaluating two definitions of drug prices, we also evaluate prices at different price points. Observed prices reflect both variation in prices and beneficiary choice. Beneficiaries may choose to pay more for brand name pharmaceuticals or for plans that offer broader formularies. Additionally, they may choose pharmacies that provide more services over less-expensive mail order options. As a result, we differentiate between “best prices” and “typical prices.” Best prices are identified as prices paid at the 10th and 25th percentile, and represent low price options that should be readily accessible throughout a region. (Prices at the 1st or 3rd percentile represent the lowest prices in the regions, but may not be prices that are accessible throughout the region.) We identify the typical price as the median (50th percentile) price paid in a region. Relative to best prices, the typical price should reflect, in part, beneficiaries’ choices of for higher price options.

In this section, we present the results for each of these two indices, starting with the ingredient cost index in Section 5.1, followed by the ingredient cost plus dispensing fee index in Section 5.2. As noted in Section 4, our focus in this analysis is on drug prices in standalone PDP plans. For each index, we consider both the NDC and the GSN market baskets. Because we include prices at different points during 2007, Section 5.3 briefly reviews the stability of prices

²⁰ Findings for the price index based on just dispensing fees per claim are included in the appendix.

over the year as observed in the two baskets. Our findings on prices are summarized in Section 5.4. Comparable indices for MA-PD plans are in Appendix B and indices for dispensing fees per claim are in Appendix C.

5.1 Regional Price Variation in Ingredient Costs

We start with the regional price variation in the ingredient cost per quantity dispensed. The first set of results considers the variation using the NDC market basket, which captures the 2,132 specific drugs observed in all regions and all months of our sample. The second set, using the GSN basket, broadens the drugs included to capture the 19,481 ingredients common across all regions and all months, even if these claims represent a variety of NDCs.

5.1.1. Regional Price Indices for Ingredient Costs – NDC Basket

Tables 5.1 and 5.2 present the PDP regional price indices and corresponding national indices measuring ingredient cost per quantity dispensed based on drug products measured at the NDC level. Table 5.2 shows indices relative to three national price points, with the 10th and 25th percentiles representing what we consider to be the “best prices”, and the 50th percentile as what we consider to be the “typical” price. Table 5.2 shows indices at all price points relative to the national median. The tables have four columns with the first indicating the PDP region number and name, and the next three indicating the index computed at the 10th, 25th, and 50th percentiles of the NDC ingredient cost per quantity dispensed distribution.

Looking down the columns in Table 5.1 shows the price variation across regions at the different price points relative to national indices, with each national price point index set to 1. The first two columns show variation at the best prices relative to the median, and the last column provides a comparison at the typical cost across the regions. At the 10th percentile, we see little price variation across the 35 regions, with prices in all regions but Region 33 (Hawaii) within 1 percent of the national best price. And with an index of 1.02, drugs in Hawaii’s basket are only predicted to cost 2 percent more than the 10th percentile basket nationally.

Table 5.1: Regional Price Indices Relative to National Indices – Per Unit Ingredient Cost – NDC Basket

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

Moving to the 25th percentile, we see only a slight increase in regional variation, with Region 0 (territories) and Region 34 (Alaska) joining Hawaii with prices 2 percent above the national 25th percentile. Still, 22 of the regions have indices of 1, meaning that their costs are equal to the national 25th percentile cost, and prices in 10 other regions only differ by 1 percent above or below the national price. So, at most there is only a 3 percent spread (0.99-1.02) in prices across regions around the 25th percentile, with an overwhelming majority of region prices within 1 percent of the national best price points.

At the typical prices, there is slightly more variation across regions, with a 6 percent spread (0.99-1.05) across all regions. However, the spread in the index for median prices is still relatively narrow: 32 of the regions have median index values between 0.99 and 1.01, meaning their median prices are within 1 percent of the national median. The only exceptions are Hawaii at 1.02, the Territories at 1.04, and Alaska at 1.05. Nevertheless, this variation is notably lower than the lowest variation in existing geographic adjustment, where the physician work index ranges from 1.0 to 1.08, but only after suppressing much of the variation in the underlying index.

In Table 5.2, the regional price index is normalized (by construction) at the national median price for the NDC basket, allowing us to evaluate differences between best prices and the typical price. Each value in the table essentially represents the price of the same basket at the given percentile in the given location. For example, consider the values for the national index. The value of the national index calculated at the 50th percentile of the NDC ingredient cost per quantity dispensed distribution is 1.00. Moving across columns to the left, the value of the national index calculated at the 25th percentile of the ingredient cost per quantity dispensed distribution is 0.96. This implies that if we take the 25th percentile price for each drug in the basket, the basket will cost 96 percent of the median price. Similarly, the price at the 10th percentile for each drug in the basket yields a basket cost that is 93 percent of the national median (column 2). This is a relatively tight distribution in per-unit prices, showing only between a 4 and 7 percent difference between the best prices and the typical price.

Next, consider as an example the index values for one of the PDP regions: Central NE, PDP Region 2. The value of the index for PDP Region 2 calculated at the 50th percentile of the ingredient cost per quantity dispensed distribution is 1.01 (last column). This means that the typical price in Central NE is 1.01 times the national median, or 1 percent higher. The index

value at the 25th percentile in PDP Region 2 is 0.97, or 97 percent of the national median. This price is just slightly more than 96 percent of the median for Central NE, or 0.97/1.01. The best price, or the 10th percentile, in Central NE is 92 percent of the national median.

Although all of the prices are relative to the national median, looking within a row provides the dispersion in prices at the lower end of the distribution within any region. Again we see a relatively tight distribution with consistent patterns across most regions. The difference between the index at the typical price and the best price regionally is typically about 0.08, with the 10th percentile index values falling between 0.91 and 0.94 of the national median. Only Alaska and the territories have a larger spread between their best prices and their typical prices for the ingredient cost of the NDC basket. In both cases, though, the 10th percentile prices are much closer to the rest of the regions than are the median prices, with Alaska's best price just 1 percent above the best price nationally. This suggests that although median prices are relatively high in these areas, there are prices available in the market for only slightly more than the equivalent levels in other regions.

Table 5.2: Regional Price Index Relative to National Median Index – Per Unit Ingredient Cost – NDC Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.93	0.96	1.00
0	Territories	0.94	0.98	1.04
1	Northern NE	0.92	0.96	1.00
2	Central NE	0.93	0.97	1.01
3	New York	0.93	0.97	1.01
4	New Jersey	0.93	0.97	1.01
5	Mid Atlantic	0.92	0.96	1.00
6	Penn., W. Virginia	0.93	0.97	1.01
7	Virginia	0.92	0.96	1.00
8	North Carolina	0.93	0.96	1.00
9	South Carolina	0.93	0.96	1.00
10	Georgia	0.93	0.96	1.00
11	Florida	0.92	0.96	1.00
12	Alabama, Tennessee	0.93	0.96	1.00
13	Michigan	0.91	0.95	0.99
14	Ohio	0.93	0.96	1.00
15	Indiana, Kentucky	0.92	0.96	1.00
16	Wisconsin	0.93	0.96	1.00
17	Illinois	0.93	0.96	1.00
18	Missouri	0.93	0.96	1.00
19	Arkansas	0.93	0.96	1.00
20	Mississippi	0.93	0.96	1.00
21	Louisiana	0.93	0.96	1.00
22	Texas	0.92	0.95	0.99
23	Oklahoma	0.93	0.96	1.00
24	Kansas	0.93	0.96	1.00
25	Upper Midwest	0.93	0.97	1.00
26	New Mexico	0.92	0.96	1.00
27	Colorado	0.92	0.96	1.00
28	Arizona	0.91	0.95	0.99
29	Nevada	0.92	0.95	0.99
30	Oregon, Washington	0.92	0.96	1.00
31	Idaho, Utah	0.93	0.96	1.00
32	California	0.93	0.96	1.00
33	Hawaii	0.94	0.98	1.02
34	Alaska	0.94	0.98	1.05
Summary Statistics Describing Differences in Indices across Regions				
Median		0.93	0.96	1.00
Average		0.93	0.96	1.00
SD		0.01	0.01	0.01
Max – Min		0.03	0.03	0.06
Range: 90 th – 10 th Percentiles		0.01	0.01	0.01

Regional price indices calculated at different percentiles of the NDC price distribution (for specific PDP regions and for the nation as a whole) provide an indication of the relative spread of the distribution of ingredient costs per quantity dispensed both across and within regions. The results presented in Tables 5.1 and 5.2 can be summarized as follows:

- There is little geographic price variation observed across regions in the ingredient costs per quantity dispensed, whether the regional price index is based on the 10th, 25th, or 50th percentile of the per-unit price distribution.
- Although the territories and Alaska have ingredient costs per quantity dispensed that are slightly higher than those nationally, this difference is more pronounced at the median than at lower points in the price distribution. Whereas the territories and Alaska have median prices for ingredient costs 4-5 percent higher at the median, their prices are only 1-2 percent higher than the price paid at the 10th percentile nationally.
- The lower half of the per-unit price distribution is fairly tight both nationally and within PDP regions. For the nation as a whole and for most PDP regions, if drugs were purchased at the best per-unit prices as opposed to at the typical prices, the cost of the NDC market basket would decrease by approximately 7-8 percent. Across all regions, the 10th percentile prices fall between 91 percent and 94 percent of the national median price.
- Out of the 34 regions plus the territories, 32 regions have median ingredient cost prices for the NDC market basket between 99 percent and 101 percent of the typical national price. The typical price for this basket in Hawaii is 102 percent of the typical price nationally.
- The territories and Alaska have median ingredient prices 4-5 percent higher than the typical national price. Because their 10th percentile prices are closer to the national 10th percentile prices, they also have a wider range of prices than do other PDP regions or the nation as a whole.

5.2 Regional Price Indices for Ingredient Costs – GSN Basket

The NDC basket includes a relatively limited set of drugs because it examines only NDCs that are prescribed in all regions. If we broaden the basket to include distinct ingredients prescribed in all regions, but do not restrict to identical NDCs, we get the larger GSN basket of drugs. Tables 5.3 and 5.4 reproduce the previous tables using this alternative basket; the column and row structure is identical, and the values have the same interpretation.

Not surprisingly, there is somewhat greater price dispersion for the GSN basket than observed for the NDC basket. Price variation in the GSN basket includes variation both because

of variation in the prices for specific NDCs, but also because of the use of different NDCs within the same GSN. This basket also includes a much larger number of drugs. At the best price point (Table 5.3), three regions (Central NE, Hawaii, and Alaska) show prices 2 percent higher than the price at the 10th percentile nationally, with the remaining regions showing prices within 1 percent of the national price point. There is greater spread in price at the 25th percentile, but only because Alaska's index at this point is 1.03; all other indices, save Central NE at 1.02, are between 0.99 and 1.01.

As with typical prices for the NDC basic, typical prices for the GSN basket show the greatest price variation among the different price points. Even so, 30 of the regions are within 1 percent of the national median price, and three others (New York, New Jersey and Hawaii) are only 2 percent higher than the typical national price. The largest differences in price occur in the territories, with prices 5 percent above the national median, and Alaska, with prices 7 percent above the national median. So while we see slightly more variation in prices for GSN baskets relative to NDC baskets, prices for GSN baskets in an overwhelming majority of regions are within 1 percentage of the national price at both the best price points and the typical price point.

Table 5.4 shows the spread of ingredient costs per quantity dispensed relative to the national median price for the GSN basket. For the nation as a whole and for most PDP regions, the best per-unit prices are approximately 12 percent lower than the typical prices, compared to a 7 to 8 percent difference for the NDC basket across the same price distribution points. Although not as narrow a distribution as for the NDCs, the lower half of the per-unit price distribution is still fairly tight both nationally and within PDP regions.

With the GSN basket, Alaska and the territories again show higher median prices compared to the national median and a greater spread in prices between the 10th percentile and the 50th percentile. Alaska has ingredient prices 1.07 times the national median, and a range from 0.89 to 1.07 between the 10th and 50th percentile prices, and the territories show a slightly narrower spread between the 10th and 50th percentile prices, ranging from 0.89 to 1.05.

Table 5.3: Regional Price Indices Relative to National Indices – Per Unit Ingredient Cost – GSN Basket

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

Table 5.4: Regional Price Index Relative to National Median Index – Per Unit Ingredient Cost – GSN Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.88	0.94	1.00
0	Territories	0.89	0.96	1.05
1	Northern NE	0.87	0.93	0.99
2	Central NE	0.89	0.95	1.01
3	New York	0.88	0.95	1.02
4	New Jersey	0.89	0.95	1.02
5	Mid Atlantic	0.88	0.94	1.00
6	Penn., W. Virginia	0.88	0.94	1.00
7	Virginia	0.87	0.94	0.99
8	North Carolina	0.87	0.94	1.00
9	South Carolina	0.88	0.94	1.00
10	Georgia	0.88	0.94	0.99
11	Florida	0.88	0.94	1.01
12	Alabama, Tennessee	0.88	0.94	0.99
13	Michigan	0.86	0.93	0.99
14	Ohio	0.87	0.94	1.00
15	Indiana, Kentucky	0.87	0.93	0.99
16	Wisconsin	0.88	0.94	1.00
17	Illinois	0.88	0.94	1.01
18	Missouri	0.87	0.93	0.99
19	Arkansas	0.87	0.93	0.99
20	Mississippi	0.88	0.94	0.99
21	Louisiana	0.88	0.94	1.00
22	Texas	0.87	0.93	0.99
23	Oklahoma	0.87	0.93	0.99
24	Kansas	0.87	0.93	0.99
25	Upper Midwest	0.88	0.94	1.00
26	New Mexico	0.87	0.94	1.00
27	Colorado	0.87	0.93	0.99
28	Arizona	0.87	0.93	0.99
29	Nevada	0.86	0.93	0.99
30	Oregon, Washington	0.87	0.94	0.99
31	Idaho, Utah	0.88	0.94	0.99
32	California	0.88	0.94	1.00
33	Hawaii	0.89	0.95	1.02
34	Alaska	0.89	0.96	1.07
Summary Statistics Describing Differences in Indices across Regions				
Median		0.88	0.94	1.00
Average		0.88	0.94	1.00
SD		0.01	0.01	0.02
Max - Min		0.03	0.04	0.08
Range: 90th – 10th Percentiles		0.02	0.01	0.03

The results for the regional price index for the GSN basket based on ingredient cost per quantity dispensed can be summarized as follows:

- As expected, there is somewhat greater price variation for the GSN basket than for the NDC basket, both across different points in the price distribution and across regions. At best prices, regional price indices vary from 0.99 to 1.03, and at typical prices the regional index ranges from 0.99 to 1.07, compared to a range of 0.99 to 1.05 for the NDC basket. However, with the exception of the territories and Alaska at typical prices, there are still only marginal differences in prices at both best prices and the typical price.
- As with the NDC basket, there is less variation in the 10th percentile regional price index (shown in Table 5.1) than at higher points in the price distribution. In particular, Alaska and the territories are closer to the national index values lower in the price distribution.
- Alaska and the territories continue to be outliers in the GSN basket at the median, prices 1.07 and 1.05 times the national median, respectively.
- There is also more variation between best and typical prices, with the best price is 12 percent lower than the typical price, compared to only a 7 to 8 percent spread for the NDC basket.

5.3 Regional Price Variation in Ingredient Costs Plus Dispensing Fees

In Section 5.1, we considered only the geographic variation in ingredient costs. We now turn to an alternative definition of drug prices, measuring ingredient cost plus dispensing fee per quantity dispensed. We start with the NDC basket and then consider the GSN basket.

5.3.1. Regional Price Indices for Ingredient Costs Plus Dispensing Fees – NDC Basket

Shifting to regional price indices based on the ingredient cost plus dispensing fee (Table 5.5), we see somewhat more geographic variation than in comparable indices using only ingredient costs. At the best price index for ingredient costs plus dispensing fees, we see a couple of regions drop lower than in other indices. In particular, slightly lower dispensing fees in Nevada and Arizona push their index values to 0.98 at the 10th percentile point in the distribution. The territories, Hawaii and Alaska all have indices of 1.02, leading to a 4 percent spread in prices across the regions. The spread increases to 6 percent for prices at the 25th percentile, with the territories showing an index of 1.03, and Alaska showing prices 5 percent above the national 25th percentile. The spread at typical prices (the median) more than doubles, ranging from 0.99 to 1.15. However, nearly all of this range results from prices in Alaska, with an index of 1.15; the territories show the next highest index at only 1.05.

Table 5.5: Regional Price Indices Relative to National Indices – Per Unit Ingredient Cost Plus Dispensing Fee – NDC Basket

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

Table 5.6: Regional Price Index Relative to National Median Index– Per Unit Ingredient Cost Plus Dispensing Fee –NDC Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.96	1.01	1.05
0	Territories	0.98	1.04	1.11
1	Northern NE	0.96	1.00	1.05
2	Central NE	0.97	1.01	1.06
3	New York	0.97	1.01	1.06
4	New Jersey	0.97	1.01	1.06
5	Mid Atlantic	0.96	1.01	1.05
6	Penn., W. Virginia	0.98	1.01	1.06
7	Virginia	0.96	1.00	1.05
8	North Carolina	0.97	1.00	1.05
9	South Carolina	0.97	1.01	1.05
10	Georgia	0.97	1.01	1.06
11	Florida	0.95	1.00	1.05
12	Alabama, Tennessee	0.97	1.01	1.05
13	Michigan	0.95	1.00	1.05
14	Ohio	0.96	1.00	1.05
15	Indiana, Kentucky	0.96	1.00	1.05
16	Wisconsin	0.97	1.01	1.06
17	Illinois	0.96	1.01	1.06
18	Missouri	0.96	1.00	1.05
19	Arkansas	0.98	1.01	1.06
20	Mississippi	0.97	1.01	1.05
21	Louisiana	0.97	1.01	1.06
22	Texas	0.95	1.00	1.05
23	Oklahoma	0.97	1.01	1.05
24	Kansas	0.97	1.01	1.05
25	Upper Midwest	0.97	1.01	1.06
26	New Mexico	0.96	1.00	1.05
27	Colorado	0.96	1.00	1.05
28	Arizona	0.94	0.99	1.04
29	Nevada	0.95	0.99	1.04
30	Oregon, Washington	0.96	1.01	1.05
31	Idaho, Utah	0.96	1.01	1.05
32	California	0.96	1.00	1.05
33	Hawaii	0.99	1.03	1.09
34	Alaska	0.99	1.06	1.21
Summary Statistics Describing Differences in Indices across Regions				
Median		0.97	1.01	1.05
Average		0.97	1.01	1.06
SD		0.01	0.01	0.03
Max – Min		0.04	0.07	0.17
Range: 90th – 10th Percentiles		0.02	0.01	0.02

To better understand the effect of adding dispensing fees to the ingredient costs, Table 5.6 presents the regional price index relative to the national median price for just the ingredients in the NDC basket. Thus the national index value for the typical price for ingredient cost plus dispensing fees is 1.05, not 1.00. This indicates that the typical national price goes up once we include dispensing fees. For almost every region, the dispensing fees increase the index value by 0.05 to 0.06, compared to the values in Table 5.2. This is obvious, given the typical values of 1.05 and 1.06 in the last column of Table 5.5, compared to the typical values of 1.00 to 1.01 in Table 5.1.

The increase in costs relative to the national median excluding dispensing fees is generally similar between the 25th and 50th percentiles, but somewhat lower at the 10th percentile. For the national index, the 10th percentile index value for the NDC basket is 0.03 higher including dispensing fees than it is without.

Dispensing fees add a disproportionate amount to typical the costs in Alaska, and to a lesser extent, in Hawaii and the territories. The jump in the index for Alaska is 0.16, bringing Alaska prices inclusive of dispensing fees to 1.21 times the typical national ingredient cost without dispensing fees. Hawaii and the territories go up by 0.07. Yet, while dispensing cost for these three regions are high at typical costs, the best price indices show that beneficiaries in these three regions have access to prices that are within 4 percent of the national price points.

Thus, the findings on geographic variation for the NDC basket defining price as ingredient cost plus dispensing fee can be summarized as follows:

- Nationally, dispensing fees raise best prices by approximately 3-5 percent, with the lower increases applying to prices lower in the distribution. Dispensing fees add 5-6 percent to the ingredient costs at the median for most regions.
- There is slightly higher regional price variation when dispensing fees are included in prices, with the spread in prices increasing from 2 percent when only ingredient costs are considered to 4 percent when dispensing fees are added to costs.
- There is greater dispersion in prices between the best and typical prices once dispensing fees are included, increasing the spread from 7 percent for ingredient costs alone, to 12 percent including dispensing fees.
- Including dispensing fees, the Alaska index value at the best price is 1.02, essentially equivalent to Hawaii and the territories. However, this changes as we move up the

5.3.2. GSN Regional Price Indices for Ingredient Costs Plus Dispensing Fees

Table 5.7 presents the regional price indices at different points in the price distribution for geographic adjustments based on ingredient cost plus dispensing fee per quantity dispensed based on drug products measured at the GSN level. At the best price, we see slightly more variation with the GSN basket compared to the NDC basket, with a spread of 0.5 between the regions with the lowest prices (Texas, Arizona and Nevada) and the highest prices (territories, Hawaii and Alaska). Still, an overwhelming majority of regions are within 1 percent of the national 10th percentile price. The spread increases to 0.08 at the 25th percentile, with the increase in spread solely attributable to Alaska, with prices 6 percent above the national price point.

For the typical price, most regions are within 1 percent of the national median. Prices in New York and Hawaii are 2 and 3 percent higher, and prices in the territories are 6 percent higher. Alaska again stands alone, with prices 19 percent above the national median.

The price index shown in Table 5.8 is normalized to the national median index value for the ingredient costs alone, so that this table shows the effect of adding the dispensing fees. Comparing Table 5.8 with 5.4 (GSN basket ingredient prices only), we see that adding dispensing fees adds 3 to 5 percent to the national percentile values. At the 50th percentile, most regions show a 4 to 8 percent increase in price over the national median for ingredient costs alone; however the territories and Alaska show an 11 and 25 percent increase respectively. We also see a greater dispersion between percentiles both nationally and regionally. The spread from the best price to typical price increases from 12 percent, when only ingredient costs are considered, to 14 percent when both ingredient costs and dispensing fees are considered. Similar increases in dispersion between the 10th and 50th percentile occur across individual regions; however the territories show a 0.18 point spread and Alaska shows a 0.31 point spread. This suggests that there are substantial differences in dispensing fees in the territories, but especially in Alaska.

Table 5.7: Regional Price Indices Relative to National Index – Per Unit Ingredient Cost Plus Dispensing Fee – GSN Basket

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

Table 5.8: Regional Price Index – Per Unit Ingredient Cost Plus Dispensing Fee – GSN Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.91	0.98	1.05
0	Territories	0.93	1.01	1.11
1	Northern NE	0.90	0.97	1.04
2	Central NE	0.92	0.99	1.06
3	New York	0.92	0.99	1.07
4	New Jersey	0.92	0.99	1.06
5	Mid Atlantic	0.90	0.98	1.05
6	Penn., W. Virginia	0.92	0.99	1.06
7	Virginia	0.90	0.98	1.04
8	North Carolina	0.91	0.98	1.04
9	South Carolina	0.91	0.98	1.05
10	Georgia	0.91	0.99	1.05
11	Florida	0.90	0.98	1.05
12	Alabama, Tennessee	0.91	0.98	1.04
13	Michigan	0.90	0.97	1.04
14	Ohio	0.91	0.98	1.05
15	Indiana, Kentucky	0.90	0.98	1.04
16	Wisconsin	0.92	0.98	1.06
17	Illinois	0.91	0.99	1.06
18	Missouri	0.90	0.98	1.04
19	Arkansas	0.91	0.98	1.04
20	Mississippi	0.91	0.98	1.05
21	Louisiana	0.91	0.98	1.05
22	Texas	0.89	0.97	1.04
23	Oklahoma	0.90	0.98	1.05
24	Kansas	0.90	0.98	1.04
25	Upper Midwest	0.91	0.98	1.05
26	New Mexico	0.90	0.97	1.05
27	Colorado	0.90	0.97	1.04
28	Arizona	0.89	0.96	1.03
29	Nevada	0.89	0.97	1.04
30	Oregon, Washington	0.90	0.97	1.04
31	Idaho, Utah	0.91	0.98	1.04
32	California	0.91	0.98	1.05
33	Hawaii	0.93	1.00	1.08
34	Alaska	0.94	1.04	1.25
Summary Statistics Describing Differences in Indices across Regions				
	Median	0.91	0.98	1.05
	Average	0.91	0.98	1.06
	SD	0.01	0.01	0.04
	Max - Min	0.05	0.07	0.22
	Range: 90 th – 10 th Percentiles	0.02	0.02	0.03

We conducted further analysis of Alaska to better understand this outlier, included as Appendix E. In particular, we examined whether the “best” prices were generally available, or whether they reflected specific low cost areas. Our review of Alaska concludes that the 25th percentile prices are available in all counties for virtually all GSNs, either through local purchase or mail order. The high dispensing fees are driven in large part by low numbers of days supplied: average days supplied in Alaska is 23.7, compared to 30.8 nationally.

The distribution of prices shown in Tables 5.7 and 5.8 and can be summarized as follows:

- As with the NDC basket, dispensing fees increase the total cost of the GSN basket by approximately 3 percent to 5 percent for the national values.
- With only three exceptions (the territories, Alaska, and Hawaii), ingredient costs plus dispensing fee per quantity dispensed do not differ from national values by more than 2 percent at both best prices and the typical price. And at the best price, all prices are within 3 percent of the national price.
- At the best price for the GSN basket including ingredient costs plus dispensing fees per quantity dispensed, Alaska’s index value is 1.03. There is a much larger gap at the median, where Alaska stands out with a high index value of 1.19. The next closest value is for the territories, at 1.06. Since this effect is largely concentrated among prices higher in the distribution, these findings suggest substantial variation in dispensing fees within Alaska.
- The inclusion of dispensing fees increases the dispersion in prices between the best and typical prices both nationally and within regions, adding 5 percent to the spreads compared to the NDC basket.
- The additional costs for Alaska after including dispensing fees are even higher for the GSN basket than for the NDC basket. The median price in Alaska with dispensing fees is 20 percent higher than the national median price with dispensing fees, compared to a 15 percent gap with the NDC basket.

5.4 Adjustment of Monthly Prices for Possible Inflation During 2007

The price indices presented in the previous subsections are designed to examine the geographic variation across regions using alternative price measures. As noted in Section 4, these indices were constructed using claims data from four months that span 2007 (January, April, July, and October). In doing so, we recognized that drug-price inflation over this time period could affect the values of the indices. To eliminate this possibility, we deflated the per-unit prices from the April, July, and October 2007 claims into January 2007 prices when calculating price indices. In the following discussion, we briefly review our approach to

adjusting for price inflation and the magnitude of the price changes across time in 2007. However, these adjustments had no appreciable impact on findings across months.

To construct a measure for the rate of inflation across the time period, we first computed indices over each market basket for each month separately. For April, July, and October these indices were calculated using the weights constructed for the January index – thus indicating what the April, July, and October NDC and GSN market baskets would have cost had they been bought in January. We then used the national index value at the median as the “inflation” factor to adjust all of that month’s claims back into January dollars.

Tables 5.9 and 5.10 presents the “inflation” factor by month for the NDC and GSN baskets for each price definition. As these tables show, the ingredient prices for the NDCs in the NDC basket rose by 2.8 percent between January and October 2007. Because dispensing fees did not keep up, the inflation for the NDC basket including dispensing fees was slightly lower. In contrast, the price of the GSN basket fell across the year, by 1.4 percent. (There were no real differences in price increases by region.) Together, these results suggest that, while individual NDC prices rose, beneficiaries shifted across the year to less expensive drugs within the same GSNs.

Table 5.9: National Inflation Rates by Month for the NDC Market Basket

Price Definition	January 2007	April 2007	July 2007	October 2007
Ingredient Cost per Quantity Dispensed	--	0.3%	1.2%	2.8%
Ingredient Cost plus Dispensing Fee per Quantity Dispensed	--	0.3%	1.2%	2.6%

Table 5.10: National Inflation Rates by Month for the GSN Market Basket

Price Definition	January, 2007	April, 2007	July, 2007	October, 2007
Ingredient Cost per Quantity Dispensed	--	0.0%	-0.6%	-1.4%
Ingredient Cost plus Dispensing Fee per Quantity Dispensed	--	0.1%	-0.5%	-1.4%

5.5 Summary of Findings for Regional Price Variation

The price indices introduced here not only consider “typical prices,” assessed to be the median of per-unit drug costs in an area, but also the “best prices,” as measured by the 10th and 25th percentiles of the regional price distribution. This analysis evaluates indices for two notions of prices: considering only ingredient costs, and then combining these costs with dispensing fees. Moreover, these indices rely on two market baskets of drug products: one based on individual NDCs and another based on GSNs, which groups NDCs into pharmaceutically identical products. Our empirical findings reveal the following:

- There exists little variation in drug ingredient prices across PDP regions. With the exception of Alaska and the territories, the difference between the price index for any PDP region and that of the nation never exceeds 2 percent when evaluating indices at the typical or best prices considering either the NDC or GSN market basket.
- Even for Alaska and the territories, differentials in ingredient price are quite modest. Both of these PDP regions only have higher drug prices at the medians, exceeding the national level from 4 to 7 percent depending on the market basket used in the assessment. Evaluating indices at the best prices, Alaska and the territories mostly look like the other regions.
- Nationally, adding dispensing fees increases drug prices by 5 percent, with increases falling to just over 3 percent more evaluating baskets at the best prices. Again with the exception of Alaska and the territories, one sees little regional variation in prices with practically all differentials being within 2 percent of the national price level.
- Dispensing fees are higher in Alaska and the territories. Typical prices including dispensing fees exceed national costs by 15-19 percent in Alaska, and by 5-6 percent in the territories. At the best prices, differentials for the territories fall to merely 2-3 percent higher than the corresponding national price indices.
- At the best prices, the differentials for Alaska fall to 5-6 percent higher than the counterpart national costs, suggesting substantial variation in dispensing fees in Alaska. Further analysis of Alaska suggests that the lower percentile prices are available in all counties, either through local purchase or mail order (mail order accounts for only 1 percent of Alaska claims). The high dispensing fees are driven in large part by low numbers of days supplied.
- Purchasing drugs at the “best prices” offers prices about 7 percent below “typical prices” for ingredient costs when maintaining a fixed market basket of specific NDCs, and these price differences increase to 12 percent when one allows for substitution of equivalent pharmaceuticals. With dispensing fees included in costs, best prices are about 9 percent below typical prices, keeping the drug basket fixed in its NDC composition, and about 14 percent below typical prices with substitutions permitted across pharmaceutically equivalent drugs.

6 PATTERNS OF GEOGRAPHIC VARIATION IN UTILIZATION OF PART D DRUGS

We now turn to the remaining key research questions: How much do utilization and per capita spending on prescription drugs vary by region, and how does the answer on spending per capita change once we account for health status risk adjustment? As we saw in the previous section, there is relatively little geographic variation in the price of drugs in the Part D program, so differences in spending will largely be due to differences in utilization. For this reason, we begin our analysis of spending variation with an assessment of the number of claims filed, presented in Section 6.1. Section 6.2 then turns to the average and distribution of per capita expenditures across regions. Finally, Section 6.3 uses the regression techniques described in Section 3 to compare per capita expenditures, after controlling for differences in health risk factors across the beneficiaries in different regions.

We present findings for the overall Part D beneficiary population and separately for the community population and the institutional population, following the distinctions in the CMS risk adjustment approach. Altogether, findings are provided for three beneficiary populations:

- All Part D beneficiaries - beneficiaries enrolled in Part D at any point in 2007.
 - Community Part D beneficiaries - Part D beneficiaries who never resided in an institution in 2007. Excludes new enrollees.
 - Institutional Part D beneficiaries - Part D beneficiaries who resided in institutions for all months in 2007. Excludes new enrollees.

More information on these groups is provided in Section 4.3. Comparable findings for beneficiaries enrolled in PDP plans, MA-PD plans and in Employer-Sponsored PDP plans are in Appendix D.

6.1 Differences in Number of Claims Per Capita across Regions and Groups

To assess beneficiary total and regional utilization patterns, we first look at numbers of claims filed by each group. Tables 6.1 through 6.3 present the results of this analysis, for each of our beneficiary groups. Each table presents the same information for each group. The first column designates the region being analyzed. The second column shows national and regional claim totals. The third column shows the percent of beneficiaries in a group who filed a claim in

2007. The fourth and fifth columns show the national and regional means and standard deviations respectively. Finally, columns 6 through 10 show the national and regional 10th, 50th, 75th, 90th and 99th percentiles, presenting the distribution of utilization nationally and regionally. The group of rows at the bottom of the table presents measures of central tendency and dispersion for the values presented in each column.

6.1.1. Per Capita Claims for Overall Part D Population

As shown in Table 6.1, across all Part D beneficiaries, there were 942,066,240 claims filed in 2007, with 91.6 percent of beneficiaries filing at least one claim. The median number of claims filed per capita was 31. Because some beneficiaries file a large number of claims, the national average is higher than median, at 41 claims per capita. For all Part D beneficiaries, the share of beneficiaries with at least one claim ranged from 86.1 percent (Region 34, Alaska) to 93.4 percent (Region 8, North Carolina).

However, unlike in prices, there is a fair amount of variation in utilization both within and across regions as measured by claims filed. On average, the beneficiary at the 90th percentile files nearly three times as many claims as the median beneficiary, and the 99th percentile beneficiary filed about five times as many claims compared to the median beneficiary; the 99th percentile beneficiary in Alaska filed over 16 times as many claims as its median beneficiary. Across regions, we see that the median number of claims filed ranged from 24 by beneficiaries in Region 33 (Hawaii) to 40 in Regions 14 and 15 (Ohio, and Indiana and Kentucky). The variation is much greater at the 99th percentile, ranging from 117 in Hawaii to 496 in Alaska. As noted above, supplemental analyses of Alaska suggest that the number of days supply per claim is lower in Alaska, explaining, at least in part, this large discrepancy.

Since community beneficiaries represent 89 percent of the Part D enrollment, the results for the community beneficiaries are quite similar to those for all beneficiaries. In contrast, the institutional Part D beneficiaries show the highest level of utilization, with the national median at 75 claims filed (Table 6.3). This group also exhibits high levels of variation in utilization within and across regions, but there are some differences between this group and the community group. Within regions, the beneficiary at the 90th percentile filed twice as many claims as the median

beneficiary, and the beneficiary at the 99th percentile filed just over three times as many claims. Across regions, we see that the median beneficiary in the highest region, Ohio, filed 88 claims, compared to 52 claims filed by the median beneficiary in the lowest region, Hawaii. As with community beneficiaries, we see that institutional beneficiaries in the highest utilization regions showed nearly twice the level of utilization compared to the lowest region at the median.

The patterns seen in Tables 6.1 through 6.3 can be summarized as showing:

- Within a given region, there is substantial variation in utilization, as measured by claims, across beneficiaries. Nationally, the median beneficiary has about 30 claims per year. However, 10 percent of beneficiaries have 6 or fewer claims, while 1 percent file more than 160 claims.
- The region that exhibits the greatest variation is Alaska, where the most intense users of the Part D benefit have noticeably higher number of claims, even though Alaska is close to the national level at the median. In Alaska, beneficiaries at the 90th percentile and 99th percentile file 117 claims and 496 claims respectively. The 99th percentile beneficiary in Alaska files 16 times more claims than the median beneficiary.
- Variation in utilization across regions is lower than the variation within regions. The median number of claims ranges from 31 in Region 33 (Hawaii) to 40 in Regions 14 and 15 (Ohio, and Indiana and Kentucky).
- Institutional Part D beneficiaries have a larger number of claims, although the variation across regions is similar to that for community beneficiaries.

Table 6.1: All Beneficiaries: Claims Distribution

PDP Region		Total Annual Claims	% Beneficiaries with Claims	Attributes of Distribution of Claims Per Capita						
#	Name			Average	SD	Percentiles of Claims				
						10 th	50 th	75 th	90 th	99 th
US	National	942,066,240	91.6%	41	35	6	31	56	87	162
0	Territories	13,511,473	89.6%	35	28	5	29	49	72	123
1	Northern NE	8,480,497	91.2%	41	35	7	32	56	86	160
2	Central NE	38,247,040	92.9%	40	36	7	31	55	86	161
3	New York	55,781,716	90.0%	39	36	6	29	54	86	163
4	New Jersey	23,663,288	92.0%	39	35	6	29	53	85	163
5	Mid Atlantic	14,031,165	91.1%	38	34	6	28	51	81	160
6	Penn., W. Virginia	59,693,136	92.3%	42	36	7	32	58	90	166
7	Virginia	20,169,316	92.4%	42	35	7	33	57	87	161
8	North Carolina	34,312,596	93.4%	47	37	9	38	65	95	169
9	South Carolina	15,138,997	92.3%	44	34	8	37	62	90	155
10	Georgia	27,263,240	91.5%	46	38	8	38	64	94	166
11	Florida	67,487,520	92.3%	41	34	7	32	56	85	156
12	Alabama, Tennessee	47,590,616	92.9%	49	38	9	40	68	100	174
13	Michigan	26,691,212	92.0%	39	35	6	29	54	86	165
14	Ohio	35,903,868	92.0%	44	40	7	34	60	95	184
15	Indiana, Kentucky	39,468,040	92.7%	48	40	9	39	66	100	182
16	Wisconsin	16,643,164	91.3%	43	38	7	32	59	94	178
17	Illinois	37,903,448	90.4%	43	36	7	34	60	91	163
18	Missouri	24,391,302	92.1%	46	39	7	36	64	98	181
19	Arkansas	12,195,283	91.2%	45	35	8	38	63	91	156
20	Mississippi	13,271,019	92.7%	47	35	9	40	65	94	158
21	Louisiana	16,267,805	92.3%	47	36	8	38	65	95	166
22	Texas	53,655,176	91.2%	39	32	7	31	54	81	147
23	Oklahoma	12,817,013	92.2%	42	34	7	34	58	88	157
24	Kansas	10,260,450	93.0%	44	37	8	35	61	93	172
25	Upper Midwest	48,272,344	91.3%	41	36	6	32	57	89	165
26	New Mexico	4,846,790	87.4%	35	31	5	27	49	76	138
27	Colorado	10,181,235	90.5%	35	32	5	26	47	76	150
28	Arizona	15,060,131	89.5%	34	30	5	25	46	73	142
29	Nevada	5,191,931	87.6%	33	30	5	25	46	72	138
30	Oregon, Washington	28,365,026	91.0%	39	35	6	29	53	84	161
31	Idaho, Utah	8,707,176	90.3%	39	35	6	29	53	84	162
32	California	91,917,040	91.4%	34	31	5	25	45	73	144
33	Hawaii	3,596,053	90.1%	32	28	5	24	44	69	126
34	Alaska	1,090,145	86.1%	57	89	5	31	63	117	496
Summary Statistics Describing Differences in Attributes of the Distribution of Claims Per Capita across Regions										
Median		20,169,316	91.4%	41	35	7	32	57	87	161
Average		26,916,179	91.2%	41	36	7	32	57	87	169
SD		20,883,701	1.6%	5	10	1	5	7	10	59
Max – Min		90,826,895	7.3%	26	61	4	16	24	48	373
Range: 90th – 10th Percentiles		48,423,743	3.3%	13	9	4	13	19	24	40

Table 6.2: Community Beneficiaries: Claims Distribution

PDP Region		Total Annual Claims	% Beneficiaries with Claims	Attributes of Distribution of Claims Per Capita						
#	Name			Average	SD	Percentiles of Claims				
						10 th	50 th	75 th	90 th	99 th
US	National	830,003,776	91.9%	40	34	7	32	56	85	154
0	Territories	12,057,382	90.0%	36	28	5	30	50	73	123
1	Northern NE	7,610,242	91.7%	40	34	7	32	55	84	152
2	Central NE	32,929,686	93.2%	39	34	7	31	53	82	151
3	New York	46,509,616	90.2%	40	35	6	30	55	87	160
4	New Jersey	20,870,230	92.3%	38	33	7	29	52	81	155
5	Mid Atlantic	12,123,958	91.4%	36	32	7	27	49	76	145
6	Penn., W. Virginia	51,459,468	92.5%	42	34	7	33	58	88	156
7	Virginia	17,869,638	92.7%	41	33	8	33	56	84	151
8	North Carolina	31,043,250	93.7%	47	36	9	39	64	94	165
9	South Carolina	13,691,299	92.9%	44	33	9	37	62	89	151
10	Georgia	24,308,604	91.9%	46	37	8	38	63	92	160
11	Florida	60,725,132	92.7%	40	33	7	33	56	83	151
12	Alabama, Tennessee	42,432,392	93.1%	48	37	9	40	67	97	168
13	Michigan	23,336,184	92.3%	39	34	7	30	53	83	159
14	Ohio	30,022,768	92.2%	42	37	7	33	58	89	168
15	Indiana, Kentucky	34,380,208	92.9%	47	37	9	38	64	95	170
16	Wisconsin	13,974,846	91.5%	42	36	7	32	58	89	166
17	Illinois	33,407,480	90.7%	42	34	7	34	59	88	156
18	Missouri	21,507,100	92.3%	45	38	8	36	62	95	175
19	Arkansas	10,781,887	91.8%	44	33	8	38	62	89	149
20	Mississippi	11,944,315	92.9%	46	33	9	40	64	91	150
21	Louisiana	14,104,612	92.5%	46	35	9	38	63	92	158
22	Texas	46,880,832	91.5%	38	30	7	31	52	78	137
23	Oklahoma	11,331,081	92.4%	41	32	7	33	57	84	148
24	Kansas	8,936,200	93.2%	43	35	8	34	59	88	161
25	Upper Midwest	41,977,024	91.4%	40	34	6	31	56	85	154
26	New Mexico	4,352,584	87.7%	35	30	5	27	49	75	134
27	Colorado	8,944,053	90.7%	34	30	5	26	47	74	141
28	Arizona	13,614,274	89.9%	34	30	5	26	46	72	138
29	Nevada	4,779,681	88.0%	33	29	5	26	46	71	132
30	Oregon, Washington	25,892,688	91.4%	39	34	6	29	53	83	158
31	Idaho, Utah	7,813,073	90.6%	39	34	6	30	53	82	157
32	California	84,022,080	91.7%	33	30	5	25	45	72	140
33	Hawaii	3,339,736	90.4%	32	27	5	25	44	68	125
34	Alaska	1,030,168	87.1%	57	89	5	32	63	116	499
Summary Statistics Describing Differences in Attributes of the Distribution of Claims Per Capita across Regions										
Median		17,869,638	91.8%	40	34	7	32	56	84	154
Average		23,714,393	91.5%	41	35	7	32	56	85	162
SD		18,539,462	1.6%	5	10	1	4	6	9	60
Max - Min		82,991,912	6.5%	26	62	4	15	23	48	376
Range: 90th – 10th Percentiles		40,820,440	3.1%	13	7	4	12	17	22	33

Table 6.3: Institutional Beneficiaries: Claims Distribution

PDP Region		Total Annual Claims	% Beneficiaries with Claims	Attributes of Distribution of Claims Per Capita						
#	Name			Average	SD	Percentiles of Claims				
						10 th	50 th	75 th	90 th	99 th
US	National	53,358,652	98.2%	82	52	23	75	112	151	237
0	Territories	41,618	97.3%	78	53	21	69	107	145	237
1	Northern NE	500,670	98.0%	78	51	20	69	106	146	227
2	Central NE	3,066,134	98.7%	78	48	22	71	106	143	221
3	New York	3,683,126	96.8%	73	49	19	65	98	135	222
4	New Jersey	1,521,541	98.7%	79	50	22	71	106	144	235
5	Mid Atlantic	1,147,869	98.7%	83	53	23	74	111	153	248
6	Penn., W. Virginia	3,796,294	98.4%	89	56	25	81	121	164	255
7	Virginia	1,159,349	98.7%	86	53	25	77	115	156	251
8	North Carolina	1,498,194	98.8%	81	49	23	74	111	148	224
9	South Carolina	633,167	98.7%	77	47	21	71	106	142	211
10	Georgia	1,498,917	98.2%	82	53	23	74	109	147	236
11	Florida	2,525,143	97.9%	83	52	24	75	112	152	242
12	Alabama, Tennessee	2,420,596	99.0%	88	53	27	81	119	158	248
13	Michigan	1,603,235	98.3%	83	51	24	75	113	152	230
14	Ohio	3,314,697	99.0%	96	57	29	88	129	171	259
15	Indiana, Kentucky	2,769,129	98.9%	95	57	29	87	128	171	268
16	Wisconsin	1,409,198	96.8%	89	55	25	82	120	163	251
17	Illinois	2,658,305	98.4%	79	48	23	73	107	144	224
18	Missouri	1,566,729	98.6%	86	51	24	80	117	154	232
19	Arkansas	694,641	97.8%	81	47	24	75	109	145	215
20	Mississippi	733,809	97.1%	86	50	27	79	115	153	230
21	Louisiana	1,066,263	98.7%	84	48	26	79	114	149	219
22	Texas	3,136,445	98.7%	81	47	24	75	109	144	214
23	Oklahoma	736,299	98.7%	84	50	25	79	115	150	230
24	Kansas	804,516	98.3%	86	52	25	80	118	155	237
25	Upper Midwest	3,720,194	98.3%	83	52	23	76	112	151	234
26	New Mexico	199,700	96.3%	69	44	19	63	96	128	192
27	Colorado	578,264	97.9%	75	51	18	66	104	143	223
28	Arizona	362,065	98.0%	72	48	17	64	99	137	215
29	Nevada	152,265	96.7%	78	54	18	69	105	149	250
30	Oregon, Washington	876,909	97.8%	78	51	19	69	107	146	230
31	Idaho, Utah	326,293	96.2%	86	57	22	78	118	161	250
32	California	3,006,810	97.9%	73	47	19	66	100	136	216
33	Hawaii	117,201	97.6%	57	37	13	52	78	107	169
34	Alaska	33,066	96.3%	106	100	26	76	128	209	515
Summary Statistics Describing Differences in Attributes of the Distribution of Claims Per Capita across Regions										
Median		1,159,349	98.3%	82	51	23	75	111	149	230
Average		1,524,533	98.0%	82	52	23	74	111	150	239
SD		1,195,646	0.8%	8	9	3	7	10	16	52
Max - Min		3,763,228	2.8%	49	62	16	36	51	102	346
Range: 90th – 10th Percentiles		3,072,157	2.0%	16	9	8	16	21	27	39

6.2 Comparisons of Per Capita Expenditures across Regions and Groups

With this background on utilization, we next assess differences in per capita expenditures across PDP regions and groups. As with the price index, we consider two definitions for expenditures: total ingredient costs or total ingredient costs and dispensing fees.²¹

6.2.1 Differences in Expenditures on Ingredient Costs

The ingredient costs for the median Part D participant (defined as a Part D enrollee who purchased drugs in 2007) in 2007 totaled \$1,533, as shown on Table 6.4. Tables 6.4 through 6.9 show the results for the per participant expenditure analysis only considering ingredient costs in 2007 for the overall Part D population and for community and institutional beneficiaries. There are two tables for each population group, showing levels and relative values.

Tables 6.4, 6.6 and 6.8 show the expenditure levels, nationally and regionally. These tables show total expenditure levels nationally and regionally, percent of beneficiaries with positive costs in 2007, per participant (those who purchased drugs in 2007) expenditures and standard deviations, and the 10th, 50th, 75th, 90th and 99th percentiles nationally and regionally. The bottom rows of these tables present measures of central tendency and dispersion for the values in the table columns.

The expenditure levels for All Part D beneficiaries (Table 6.4) largely reflect the patterns for community beneficiaries. Although the median expenditures are around \$1,550, there is a wide range across beneficiaries. Expenditures at the 10th percentile are around \$160, compared to more than \$5,500 at the 90th percentile. The 99th percentile spending is substantially higher, at nearly \$17,000. This leads to the average expenditure being almost \$1,000 greater than the median, at \$2,520, and a standard deviation of \$3,771 nationally.

There is also substantial geographic variation in the per capita expenditures, with more variation around the average than around the median. Across regions, there is a \$920 spread in median expenditures between the highest and lowest regions, with the highest median in New

²¹ Total expenditures on PDE claims also capture sales tax, which we exclude from this analysis.

Jersey, at \$2,061, and the lowest in the territories, \$1,141. The range in per participant expenditures is \$1,941, with Alaska the highest at \$3,625, and the territories the lowest at \$1,684. The territories are low because they do not have the jump in expenditures at the high end, while Alaska's high average is due to its higher expenditures among the high end of the distribution.

The second table in each pair provides the expenditures relative to national value, producing an expenditure index akin to the price indices in Section 5. Relative scores are shown comparing the regions against the national mean and the national 10th, 50th, 75th, 90th, and 99th percentiles, as well as relative values for the percent of beneficiaries with positive costs. For example, Florida (Region 11) has about the same share of beneficiaries with positive claims as the nation as a whole, with a relative value of 1.01 or 1 percent higher than the nation (Table 6.5). Its average expenditures per capita are below the national average, yielding a relative value of 0.96, or 96 percent of the national average.

For Community Part D beneficiary expenditures (Tables 6.6), the \$914 dollar difference in the median expenditure levels and nearly a \$2,000 difference in average expenditures across region. This translates to a 0.59 and 0.76 point spread in indices at the median and for average expenditures respectively (Table 6.7). New Jersey has the highest median expenditures at 1.32 times the national median, and Alaska has the highest average expenditures at 1.45 times the national average. At the low end of expenditures are Colorado, at 0.74 times the national median, and New Jersey and the territories, at 0.69 times the national average. The relative differences are greatest at the 10th percentile, where expenditures are over 50 percent above the national value in Region 4 (New Jersey) and a little more than half the national value in Region 26 (New Mexico), ranging from \$266 to \$94.

Table 6.8 shows that costs are much higher for Institutional Part D beneficiaries, with national per capita expenditures at \$4,419, and typical (median) expenditure levels of \$3,438 for ingredient costs. This group exhibits similar variation in expenditures compared to community beneficiaries (Table 6.9), with a expenditures ranging from 27 percent below the national average (Arizona) to nearly 51 percent above the national median (Alaska). At the median, Arizona (Region 28) beneficiaries have the lowest expenditure levels, at \$2,334, and Alaskan

beneficiaries have the highest, at \$4,359. As with the community beneficiaries, we see the greatest variation at the 10th percentile, with expenditures for Hawaii beneficiaries at nearly half the national value and expenditures Mississippi 50 percent above the national value.

6.2.2. Differences in Expenditures on Ingredient Costs and Dispensing Fees

Average expenditures rise by \$100, from \$2,520 to \$2,620, when dispensing fees are added to ingredient costs (Table 6.10). At the median for all beneficiaries, cost rises from \$1,553 to \$1,636. However, we do not see much change in the variation in costs across regions compared to only assessing expenditures on ingredient costs, with the difference at the median dropping only 3 percent (Table 6.11). This suggests that there is not a large difference in dispensing fees across regions, other than in Alaska.

For Community beneficiaries (Tables 6.12 and 6.13), we see that New Jersey, New York, and Alaska exhibit high levels of utilization, as well as high variation in utilization, as measured in expenditures. This differs from the results assessing utilization through numbers of claims filed. For claims filed, the median beneficiary from New Jersey filed two claims fewer than the national median beneficiary and the Alaska beneficiary filed the same number as the national beneficiary. When examining expenditures for community beneficiaries (Table 6.12), we see that the median beneficiary from New Jersey spends \$487 or 30 percent more than the national median. The New Jersey beneficiary at the 10th percentile spends 47 percent more than the national 10th percentile, even though the number of claims filed by the New Jersey beneficiary and national beneficiary at this percentile is the same, at 6 (Table 6.2). However, the difference for New Jersey relative to the nation is somewhat lower after including dispensing fees than it is without.

Alaska has the highest per capita expenditure level for both ingredient cost and dispensing fees, at \$3,920; however, the Alaskan beneficiary's expenditures at the 10th percentile are 14 percent lower than the national expenditure at this percentile (Table 6.13). The dispensing fees only increase the relative costs by .01 at the median: including dispensing fees, Alaskan beneficiaries at the median spend \$433 more than the median national beneficiary, representing a 26 percent difference in expenditures, compared to 25 percent higher on ingredient costs (Table

6.7). The role of higher Alaskan prices after dispensing fees shows up more among the intensive users. At the 90th percentile, an Alaskan beneficiary's expenditure level is 75 percent higher than the national expenditure level at this percentile, compared to 64 percent higher without dispensing fees.

The median Institutional Part D beneficiary had expenditures of \$3,813 for both ingredient costs and dispensing fees (Table 6.14). Average expenditures range from 0.74 of the national average (Arizona) to 1.69 times the national average (Alaska), for over a \$4,000 difference in average expenditures across regions. At the median, there is a 0.63 point spread in indices, with a \$2,137 difference in expenditures between the highest region (34, Alaska) and the lowest region (33, Hawaii). The relative difference at the median is greater for institutional beneficiaries when both ingredient costs and dispensing fees are considered compared to when only ingredient cost are considered, where the spread around the median is 0.59 (Table 6.9). There is also increased variation at the 75th and 90th percentile, but decreased variability at the 10th and 99th percentile. All this change in variation though, can be attributed to change in relative expenditures in Alaska when dispensing fees are included.

Institutional beneficiaries in Alaska exhibit the highest expenditure levels, much higher than any other region. Whereas the 10th percentile Alaskan community beneficiary had expenditures below the national 10th percentile (Table 6.12), the 10th percentile Alaskan institutional beneficiary had expenditures that were 49 percent higher than the 10th percentile nationally (Table 6.15). In fact, at every percentile, Alaskan beneficiaries had substantially higher expenditures; with a 59 percent difference between the next highest region (14, Ohio) at the 90th percentile. Of note, while community beneficiaries in New Jersey exhibited the highest expenditure levels, expenditure levels for institutional beneficiaries did not differ much from national levels; the median New Jersey beneficiary's expenditures was only 6 percent higher than the national median.

The examination of tables presenting results for expenditures on ingredient costs and dispensing fees, and comparison with these tables and tables showing expenditures on ingredient costs only, reveals the following patterns:

- When examining Community beneficiaries, we see similar levels of variation when examining regional variation in expenditures for both ingredient costs and dispensing fees compared to regional variation in expenditures on ingredient costs only. For community beneficiaries, there is a 0.45 point spread in indices around the median in expenditures on both ingredient costs and dispensing fees, compared to 0.59 point spread when considering expenditures on ingredient costs only. This suggests that there is little variation in dispensing fees across PDP regions for community beneficiaries.
- Continuing with Community beneficiaries, New Jersey and Alaska exhibit high levels of utilization, as measured by expenditures on ingredient costs and fees. For all beneficiaries, the median beneficiary in New Jersey spends 30 percent more than the national median beneficiary; there is a 47 percent difference at the 10th percentile. For the same group, the median Alaskan beneficiary spends 26 percent more than the national median. At the 75th, 90th and 99th percentile, Alaskan beneficiaries spend 45 percent, 71 percent and 56 percent more than the respective national percentiles.
- When examining Institutional beneficiaries, Alaska stands alone as having high expenditures on ingredient costs and dispensing fees. The median beneficiary in Alaska spends 32 percent more than the national median and 15 percent above beneficiaries in the next highest region (15, Indiana and Kentucky). At the 90th percentile, spending by the Alaskan beneficiary is 59 percent higher than in the next highest region (14, Ohio).

Table 6.4: All Beneficiaries: Ingredient Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$58,194,468,864	91.6%	\$2,520	\$3,771	\$164	\$1,553	\$3,037	\$5,555	\$16,990
0	Territories	\$656,040,768	89.6%	\$1,684	\$2,142	\$127	\$1,141	\$2,304	\$3,630	\$8,972
1	Northern NE	\$524,545,376	91.2%	\$2,517	\$3,671	\$165	\$1,539	\$3,046	\$5,634	\$16,730
2	Central NE	\$2,536,646,400	92.9%	\$2,678	\$3,930	\$173	\$1,616	\$3,207	\$5,995	\$18,316
3	New York	\$4,107,677,184	90.0%	\$2,876	\$4,443	\$191	\$1,693	\$3,418	\$6,467	\$19,906
4	New Jersey	\$1,911,111,680	92.0%	\$3,166	\$4,420	\$258	\$2,061	\$3,878	\$6,916	\$19,963
5	Mid Atlantic	\$1,038,864,768	91.1%	\$2,786	\$3,941	\$209	\$1,767	\$3,309	\$6,068	\$18,924
6	Penn., W. Virginia	\$3,603,009,792	92.3%	\$2,536	\$3,546	\$184	\$1,635	\$3,125	\$5,545	\$15,957
7	Virginia	\$1,222,754,560	92.4%	\$2,529	\$3,576	\$189	\$1,638	\$3,083	\$5,525	\$16,013
8	North Carolina	\$2,036,199,424	93.4%	\$2,777	\$3,909	\$221	\$1,800	\$3,355	\$6,134	\$17,453
9	South Carolina	\$909,960,960	92.3%	\$2,672	\$3,600	\$215	\$1,795	\$3,298	\$5,763	\$16,341
10	Georgia	\$1,540,535,552	91.5%	\$2,599	\$3,604	\$195	\$1,705	\$3,202	\$5,650	\$16,268
11	Florida	\$4,000,476,928	92.3%	\$2,408	\$3,793	\$170	\$1,497	\$2,853	\$5,093	\$16,962
12	Alabama, Tennessee	\$2,555,078,912	92.9%	\$2,624	\$3,566	\$206	\$1,719	\$3,226	\$5,750	\$16,221
13	Michigan	\$1,795,743,360	92.0%	\$2,655	\$3,923	\$166	\$1,608	\$3,160	\$5,982	\$18,211
14	Ohio	\$2,139,179,008	92.0%	\$2,649	\$3,776	\$172	\$1,648	\$3,151	\$5,958	\$17,549
15	Indiana, Kentucky	\$2,247,973,376	92.7%	\$2,746	\$3,613	\$217	\$1,817	\$3,345	\$6,064	\$17,026
16	Wisconsin	\$975,556,672	91.3%	\$2,529	\$3,849	\$145	\$1,441	\$2,953	\$5,787	\$18,329
17	Illinois	\$2,247,631,616	90.4%	\$2,562	\$3,596	\$193	\$1,680	\$3,152	\$5,518	\$16,127
18	Missouri	\$1,357,244,032	92.1%	\$2,569	\$3,779	\$160	\$1,545	\$3,044	\$5,791	\$17,470
19	Arkansas	\$646,074,176	91.2%	\$2,378	\$3,266	\$166	\$1,564	\$2,942	\$5,192	\$14,756
20	Mississippi	\$729,324,608	92.7%	\$2,591	\$3,410	\$222	\$1,775	\$3,238	\$5,550	\$15,199
21	Louisiana	\$963,810,240	92.3%	\$2,756	\$3,770	\$220	\$1,842	\$3,430	\$6,010	\$16,591
22	Texas	\$3,498,963,968	91.2%	\$2,541	\$3,522	\$190	\$1,680	\$3,136	\$5,511	\$15,730
23	Oklahoma	\$802,683,328	92.2%	\$2,632	\$3,597	\$192	\$1,730	\$3,258	\$5,769	\$16,218
24	Kansas	\$571,874,048	93.0%	\$2,474	\$3,490	\$178	\$1,569	\$2,960	\$5,404	\$16,154
25	Upper Midwest	\$2,680,360,704	91.3%	\$2,302	\$3,501	\$131	\$1,376	\$2,755	\$5,138	\$16,025
26	New Mexico	\$275,396,704	87.4%	\$1,994	\$3,183	\$93	\$1,174	\$2,492	\$4,465	\$13,772
27	Colorado	\$614,327,296	90.5%	\$2,109	\$3,715	\$108	\$1,148	\$2,498	\$4,646	\$16,385
28	Arizona	\$868,932,160	89.5%	\$1,941	\$3,113	\$111	\$1,193	\$2,422	\$4,150	\$13,132
29	Nevada	\$318,557,216	87.6%	\$2,055	\$3,466	\$115	\$1,220	\$2,514	\$4,444	\$14,625
30	Oregon, Washington	\$1,628,740,736	91.0%	\$2,218	\$3,602	\$118	\$1,269	\$2,620	\$4,877	\$16,735
31	Idaho, Utah	\$525,038,112	90.3%	\$2,341	\$3,513	\$122	\$1,405	\$2,775	\$5,143	\$16,683
32	California	\$6,343,550,464	91.4%	\$2,314	\$4,107	\$122	\$1,245	\$2,727	\$5,172	\$17,541
33	Hawaii	\$251,775,536	90.1%	\$2,223	\$3,239	\$124	\$1,367	\$2,808	\$4,980	\$14,270
34	Alaska	\$68,830,120	86.1%	\$3,625	\$5,314	\$140	\$1,934	\$4,283	\$8,971	\$25,468
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$1,222,754,560	91.4%	\$2,541	\$3,602	\$172	\$1,616	\$3,125	\$5,550	\$16,385
Average		\$1,662,699,137	91.2%	\$2,516	\$3,671	\$169	\$1,567	\$3,056	\$5,563	\$16,629
SD		\$1,370,538,285	1.6%	\$350	\$482	\$41	\$238	\$400	\$888	\$2,509
Max – Min		\$6,274,720,344	7.3%	\$1,941	\$3,172	\$165	\$920	\$1,979	\$5,341	\$16,496
Range: 90th – 10th Percentiles		\$3,139,840,166	3.3%	\$701	\$788	\$102	\$604	\$887	\$1,552	\$4,238

**Table 6.5: All Beneficiaries: Comparison of Ingredient Cost Distributions
Regional Statistics Measured Relative to National Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	91.6%	\$2,520	\$164	\$1,553	\$3,037	\$5,555	\$16,990
0	Territories	0.98	0.67	0.77	0.73	0.76	0.65	0.53
1	Northern NE	1.00	1.00	1.01	0.99	1.00	1.01	0.98
2	Central NE	1.01	1.06	1.06	1.04	1.06	1.08	1.08
3	New York	0.98	1.14	1.16	1.09	1.13	1.16	1.17
4	New Jersey	1.01	1.26	1.57	1.33	1.28	1.25	1.17
5	Mid Atlantic	0.99	1.11	1.27	1.14	1.09	1.09	1.11
6	Penn., W. Virginia	1.01	1.01	1.12	1.05	1.03	1.00	0.94
7	Virginia	1.01	1.00	1.15	1.06	1.02	0.99	0.94
8	North Carolina	1.02	1.10	1.34	1.16	1.10	1.10	1.03
9	South Carolina	1.01	1.06	1.31	1.16	1.09	1.04	0.96
10	Georgia	1.00	1.03	1.19	1.10	1.05	1.02	0.96
11	Florida	1.01	0.96	1.04	0.96	0.94	0.92	1.00
12	Alabama, Tennessee	1.01	1.04	1.26	1.11	1.06	1.04	0.95
13	Michigan	1.00	1.05	1.01	1.04	1.04	1.08	1.07
14	Ohio	1.00	1.05	1.05	1.06	1.04	1.07	1.03
15	Indiana, Kentucky	1.01	1.09	1.32	1.17	1.10	1.09	1.00
16	Wisconsin	1.00	1.00	0.88	0.93	0.97	1.04	1.08
17	Illinois	0.99	1.02	1.18	1.08	1.04	0.99	0.95
18	Missouri	1.01	1.02	0.97	1.00	1.00	1.04	1.03
19	Arkansas	1.00	0.94	1.01	1.01	0.97	0.93	0.87
20	Mississippi	1.01	1.03	1.35	1.14	1.07	1.00	0.89
21	Louisiana	1.01	1.09	1.34	1.19	1.13	1.08	0.98
22	Texas	1.00	1.01	1.16	1.08	1.03	0.99	0.93
23	Oklahoma	1.01	1.04	1.17	1.11	1.07	1.04	0.95
24	Kansas	1.02	0.98	1.09	1.01	0.97	0.97	0.95
25	Upper Midwest	1.00	0.91	0.80	0.89	0.91	0.93	0.94
26	New Mexico	0.95	0.79	0.57	0.76	0.82	0.80	0.81
27	Colorado	0.99	0.84	0.66	0.74	0.82	0.84	0.96
28	Arizona	0.98	0.77	0.68	0.77	0.80	0.75	0.77
29	Nevada	0.96	0.82	0.70	0.79	0.83	0.80	0.86
30	Oregon, Washington	0.99	0.88	0.72	0.82	0.86	0.88	0.98
31	Idaho, Utah	0.99	0.93	0.74	0.90	0.91	0.93	0.98
32	California	1.00	0.92	0.74	0.80	0.90	0.93	1.03
33	Hawaii	0.98	0.88	0.75	0.88	0.92	0.90	0.84
34	Alaska	0.94	1.44	0.86	1.25	1.41	1.62	1.50
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.01	1.05	1.04	1.03	1.00	0.96
Average		1.00	1.00	1.03	1.01	1.01	1.00	0.98
SD		0.02	0.14	0.25	0.15	0.13	0.16	0.15
Max – Min		0.08	0.77	1.01	0.59	0.65	0.96	0.97
Range: 90th – 10th Percentiles		0.04	0.28	0.62	0.39	0.29	0.28	0.25

Table 6.6: Community Beneficiaries: Ingredient Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$51,770,830,848	91.9%	\$2,510	\$3,794	\$169	\$1,562	\$3,008	\$5,445	\$17,123
0	Territories	\$585,275,456	90.0%	\$1,725	\$2,156	\$136	\$1,189	\$2,350	\$3,693	\$9,021
1	Northern NE	\$476,320,320	91.7%	\$2,508	\$3,703	\$169	\$1,543	\$3,010	\$5,540	\$16,853
2	Central NE	\$2,218,327,552	93.2%	\$2,638	\$3,935	\$175	\$1,600	\$3,122	\$5,809	\$18,438
3	New York	\$3,538,213,376	90.2%	\$3,048	\$4,683	\$200	\$1,815	\$3,628	\$6,837	\$20,905
4	New Jersey	\$1,726,909,568	92.3%	\$3,162	\$4,446	\$266	\$2,067	\$3,845	\$6,833	\$20,152
5	Mid Atlantic	\$927,980,480	91.4%	\$2,757	\$3,952	\$212	\$1,757	\$3,237	\$5,904	\$19,064
6	Penn., W. Virginia	\$3,123,592,448	92.5%	\$2,527	\$3,538	\$189	\$1,653	\$3,106	\$5,441	\$15,957
7	Virginia	\$1,095,094,272	92.7%	\$2,509	\$3,580	\$193	\$1,640	\$3,047	\$5,400	\$16,013
8	North Carolina	\$1,844,791,552	93.7%	\$2,767	\$3,917	\$227	\$1,807	\$3,320	\$6,024	\$17,612
9	South Carolina	\$830,575,552	92.9%	\$2,698	\$3,640	\$230	\$1,825	\$3,310	\$5,752	\$16,563
10	Georgia	\$1,380,402,048	91.9%	\$2,589	\$3,627	\$204	\$1,715	\$3,166	\$5,529	\$16,424
11	Florida	\$3,626,710,272	92.7%	\$2,417	\$3,839	\$178	\$1,518	\$2,848	\$5,035	\$17,220
12	Alabama, Tennessee	\$2,285,586,688	93.1%	\$2,606	\$3,577	\$210	\$1,718	\$3,183	\$5,628	\$16,371
13	Michigan	\$1,598,214,400	92.3%	\$2,672	\$3,988	\$170	\$1,621	\$3,144	\$5,966	\$18,571
14	Ohio	\$1,808,994,688	92.2%	\$2,558	\$3,733	\$170	\$1,610	\$3,018	\$5,585	\$17,409
15	Indiana, Kentucky	\$1,972,706,304	92.9%	\$2,690	\$3,585	\$219	\$1,798	\$3,251	\$5,811	\$17,004
16	Wisconsin	\$838,022,720	91.5%	\$2,512	\$3,899	\$148	\$1,439	\$2,891	\$5,629	\$18,667
17	Illinois	\$1,980,229,760	90.7%	\$2,494	\$3,550	\$195	\$1,659	\$3,059	\$5,258	\$15,895
18	Missouri	\$1,201,474,816	92.3%	\$2,530	\$3,775	\$162	\$1,531	\$2,968	\$5,601	\$17,518
19	Arkansas	\$570,796,544	91.8%	\$2,344	\$3,262	\$171	\$1,561	\$2,885	\$5,015	\$14,776
20	Mississippi	\$656,886,528	92.9%	\$2,547	\$3,396	\$224	\$1,761	\$3,164	\$5,349	\$15,186
21	Louisiana	\$831,964,544	92.5%	\$2,697	\$3,764	\$224	\$1,829	\$3,335	\$5,741	\$16,532
22	Texas	\$3,081,658,368	91.5%	\$2,497	\$3,499	\$196	\$1,675	\$3,071	\$5,299	\$15,599
23	Oklahoma	\$717,165,376	92.4%	\$2,596	\$3,577	\$196	\$1,725	\$3,200	\$5,595	\$16,152
24	Kansas	\$500,451,520	93.2%	\$2,398	\$3,431	\$178	\$1,543	\$2,858	\$5,108	\$15,734
25	Upper Midwest	\$2,363,013,888	91.4%	\$2,253	\$3,485	\$130	\$1,357	\$2,682	\$4,945	\$15,992
26	New Mexico	\$247,663,936	87.7%	\$1,984	\$3,193	\$94	\$1,181	\$2,481	\$4,396	\$13,836
27	Colorado	\$545,768,768	90.7%	\$2,096	\$3,756	\$112	\$1,154	\$2,478	\$4,550	\$16,358
28	Arizona	\$786,824,064	89.9%	\$1,942	\$3,086	\$115	\$1,207	\$2,426	\$4,128	\$13,035
29	Nevada	\$295,733,536	88.0%	\$2,063	\$3,496	\$119	\$1,233	\$2,521	\$4,424	\$14,723
30	Oregon, Washington	\$1,492,199,680	91.4%	\$2,228	\$3,601	\$123	\$1,290	\$2,626	\$4,853	\$16,858
31	Idaho, Utah	\$472,793,056	90.6%	\$2,341	\$3,500	\$126	\$1,425	\$2,778	\$5,079	\$16,634
32	California	\$5,848,069,632	91.7%	\$2,331	\$4,156	\$128	\$1,271	\$2,741	\$5,156	\$17,694
33	Hawaii	\$235,345,984	90.4%	\$2,246	\$3,247	\$131	\$1,405	\$2,831	\$4,975	\$14,345
34	Alaska	\$65,074,188	87.1%	\$3,632	\$5,311	\$144	\$1,953	\$4,293	\$8,945	\$25,175
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$1,095,094,272	91.8%	\$2,512	\$3,601	\$175	\$1,610	\$3,047	\$5,441	\$16,532
Average		\$1,479,166,625	91.5%	\$2,503	\$3,682	\$173	\$1,574	\$3,025	\$5,452	\$16,694
SD		\$1,230,283,307	1.6%	\$351	\$500	\$42	\$234	\$397	\$889	\$2,554
Max - Min		\$5,782,995,444	6.5%	\$1,907	\$3,155	\$172	\$914	\$1,943	\$5,252	\$16,154
Range: 90th - 10th Percentiles		\$2,722,555,520	3.1%	\$683	\$835	\$103	\$601	\$828	\$1,514	\$4,371

**Table 6.7: Community Beneficiaries: Comparison of Ingredient Cost Distributions
Regional Statistics Measured Relative to National Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures					
#	Name		Average	Percentiles of Expenditures Per Capita				
				10 th	50 th	75 th	90 th	99 th
US	National	91.9%	\$2,510	\$169	\$1,562	\$3,008	\$5,445	\$17,123
0	Territories	0.98	0.69	0.81	0.76	0.78	0.68	0.53
1	Northern NE	1.00	1.00	1.00	0.99	1.00	1.02	0.98
2	Central NE	1.01	1.05	1.04	1.02	1.04	1.07	1.08
3	New York	0.98	1.21	1.18	1.16	1.21	1.26	1.22
4	New Jersey	1.00	1.26	1.58	1.32	1.28	1.25	1.18
5	Mid Atlantic	0.99	1.10	1.26	1.12	1.08	1.08	1.11
6	Penn., W. Virginia	1.01	1.01	1.12	1.06	1.03	1.00	0.93
7	Virginia	1.01	1.00	1.15	1.05	1.01	0.99	0.94
8	North Carolina	1.02	1.10	1.35	1.16	1.10	1.11	1.03
9	South Carolina	1.01	1.07	1.36	1.17	1.10	1.06	0.97
10	Georgia	1.00	1.03	1.21	1.10	1.05	1.02	0.96
11	Florida	1.01	0.96	1.06	0.97	0.95	0.92	1.01
12	Alabama, Tennessee	1.01	1.04	1.25	1.10	1.06	1.03	0.96
13	Michigan	1.00	1.06	1.01	1.04	1.04	1.10	1.08
14	Ohio	1.00	1.02	1.01	1.03	1.00	1.03	1.02
15	Indiana, Kentucky	1.01	1.07	1.30	1.15	1.08	1.07	0.99
16	Wisconsin	1.00	1.00	0.87	0.92	0.96	1.03	1.09
17	Illinois	0.99	0.99	1.16	1.06	1.02	0.97	0.93
18	Missouri	1.00	1.01	0.96	0.98	0.99	1.03	1.02
19	Arkansas	1.00	0.93	1.01	1.00	0.96	0.92	0.86
20	Mississippi	1.01	1.01	1.33	1.13	1.05	0.98	0.89
21	Louisiana	1.01	1.07	1.33	1.17	1.11	1.05	0.97
22	Texas	1.00	0.99	1.16	1.07	1.02	0.97	0.91
23	Oklahoma	1.01	1.03	1.16	1.10	1.06	1.03	0.94
24	Kansas	1.01	0.96	1.05	0.99	0.95	0.94	0.92
25	Upper Midwest	0.99	0.90	0.77	0.87	0.89	0.91	0.93
26	New Mexico	0.95	0.79	0.56	0.76	0.82	0.81	0.81
27	Colorado	0.99	0.83	0.66	0.74	0.82	0.84	0.96
28	Arizona	0.98	0.77	0.68	0.77	0.81	0.76	0.76
29	Nevada	0.96	0.82	0.71	0.79	0.84	0.81	0.86
30	Oregon, Washington	0.99	0.89	0.73	0.83	0.87	0.89	0.98
31	Idaho, Utah	0.99	0.93	0.75	0.91	0.92	0.93	0.97
32	California	1.00	0.93	0.76	0.81	0.91	0.95	1.03
33	Hawaii	0.98	0.90	0.78	0.90	0.94	0.91	0.84
34	Alaska	0.95	1.45	0.85	1.25	1.43	1.64	1.47
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.00	1.04	1.03	1.01	1.00	0.97
Average		1.00	1.00	1.03	1.01	1.01	1.00	0.97
SD		0.02	0.14	0.25	0.15	0.13	0.16	0.15
Max - Min		0.07	0.76	1.02	0.59	0.65	0.96	0.94
Range: 90th - 10th Percentiles		0.03	0.27	0.62	0.39	0.28	0.28	0.26

Table 6.8: Institutional Beneficiaries: Ingredient Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$2,858,932,992	98.2%	\$4.419	\$4.120	\$622	\$3,438	\$5,998	\$9,160	\$19,298
0	Territories	\$2,135,166	97.3%	\$3.976	\$3.716	\$534	\$3,118	\$5,288	\$8,318	\$15,209
1	Northern NE	\$26,143,368	98.0%	\$4.055	\$3.886	\$498	\$3,063	\$5,526	\$8,639	\$18,539
2	Central NE	\$174,782,288	98.7%	\$4.444	\$4,221	\$597	\$3,416	\$5,994	\$9,283	\$19,953
3	New York	\$183,513,536	96.8%	\$3,624	\$3,936	\$403	\$2,559	\$4,829	\$7,877	\$18,986
4	New Jersey	\$91,375,520	98.7%	\$4,724	\$4,415	\$744	\$3,665	\$6,303	\$9,658	\$21,056
5	Mid Atlantic	\$60,152,000	98.7%	\$4,331	\$4,063	\$648	\$3,363	\$5,796	\$8,915	\$19,616
6	Penn., W. Virginia	\$195,809,376	98.4%	\$4,607	\$4,245	\$717	\$3,675	\$6,211	\$9,276	\$19,691
7	Virginia	\$60,614,240	98.7%	\$4,478	\$4,040	\$746	\$3,501	\$6,035	\$9,084	\$19,517
8	North Carolina	\$86,838,888	98.8%	\$4,706	\$4,234	\$753	\$3,798	\$6,431	\$9,643	\$18,781
9	South Carolina	\$32,345,594	98.7%	\$3,942	\$3,535	\$544	\$3,115	\$5,401	\$8,167	\$16,661
10	Georgia	\$78,454,168	98.2%	\$4,266	\$3,608	\$646	\$3,437	\$5,895	\$8,780	\$17,175
11	Florida	\$135,758,768	97.9%	\$4,483	\$3,941	\$740	\$3,588	\$6,046	\$9,066	\$18,648
12	Alabama, Tennessee	\$121,592,616	99.0%	\$4,438	\$3,787	\$743	\$3,586	\$6,074	\$8,932	\$17,566
13	Michigan	\$80,963,752	98.3%	\$4,189	\$3,776	\$638	\$3,382	\$5,686	\$8,439	\$17,288
14	Ohio	\$177,647,200	99.0%	\$5,128	\$4,475	\$886	\$4,112	\$6,902	\$10,317	\$20,949
15	Indiana, Kentucky	\$143,811,168	98.9%	\$4,952	\$4,280	\$880	\$3,985	\$6,700	\$9,899	\$20,250
16	Wisconsin	\$69,718,096	96.8%	\$4,418	\$4,148	\$600	\$3,433	\$5,979	\$9,225	\$19,519
17	Illinois	\$154,813,952	98.4%	\$4,626	\$4,320	\$668	\$3,606	\$6,257	\$9,623	\$19,341
18	Missouri	\$81,918,656	98.6%	\$4,511	\$4,120	\$623	\$3,547	\$6,066	\$9,357	\$19,410
19	Arkansas	\$37,119,368	97.8%	\$4,302	\$3,780	\$658	\$3,435	\$5,892	\$8,865	\$17,070
20	Mississippi	\$39,921,444	97.1%	\$4,679	\$3,768	\$861	\$3,941	\$6,351	\$9,228	\$17,387
21	Louisiana	\$64,767,324	98.7%	\$5,131	\$4,172	\$928	\$4,279	\$6,977	\$10,093	\$19,190
22	Texas	\$189,524,048	98.7%	\$4,880	\$4,105	\$829	\$4,002	\$6,653	\$9,732	\$19,067
23	Oklahoma	\$40,918,280	98.7%	\$4,693	\$4,290	\$785	\$3,636	\$6,323	\$9,624	\$20,541
24	Kansas	\$42,556,236	98.3%	\$4,570	\$4,398	\$589	\$3,448	\$6,139	\$9,648	\$21,941
25	Upper Midwest	\$177,545,536	98.3%	\$3,950	\$3,965	\$475	\$2,918	\$5,354	\$8,485	\$18,591
26	New Mexico	\$10,579,862	96.3%	\$3,681	\$3,458	\$483	\$2,774	\$5,182	\$7,714	\$14,720
27	Colorado	\$30,209,270	97.9%	\$3,936	\$4,179	\$375	\$2,829	\$5,222	\$8,288	\$21,587
28	Arizona	\$16,150,509	98.0%	\$3,217	\$3,224	\$331	\$2,334	\$4,419	\$7,093	\$14,999
29	Nevada	\$7,118,048	96.7%	\$3,634	\$3,542	\$425	\$2,721	\$5,100	\$7,603	\$16,139
30	Oregon, Washington	\$43,926,420	97.8%	\$3,883	\$3,996	\$424	\$2,866	\$5,279	\$8,320	\$18,524
31	Idaho, Utah	\$17,936,468	96.2%	\$4,740	\$4,751	\$548	\$3,457	\$6,449	\$10,105	\$24,628
32	California	\$173,124,688	97.9%	\$4,225	\$4,207	\$500	\$3,138	\$5,701	\$9,024	\$19,976
33	Hawaii	\$7,058,042	97.6%	\$3,423	\$3,276	\$331	\$2,642	\$4,700	\$7,334	\$15,949
34	Alaska	\$2,089,146	96.3%	\$6,675	\$7,335	\$875	\$4,359	\$8,367	\$14,025	\$33,098
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$64,767,324	98.3%	\$4,438	\$4,063	\$638	\$3,437	\$5,994	\$9,066	\$19,067
Average		\$81,683,801	98.0%	\$4,386	\$4,091	\$629	\$3,392	\$5,929	\$9,076	\$19,187
SD		\$64,023,730	0.8%	\$613	\$661	\$168	\$490	\$745	\$1,178	\$3,195
Max - Min		\$193,720,230	2.8%	\$3,458	\$4,111	\$597	\$2,026	\$3,948	\$6,932	\$18,379
Range: 90th - 10th Percentiles		\$168,757,580	2.0%	\$1,266	\$870	\$456	\$1,248	\$1,541	\$2,220	\$5,331

**Table 6.9: Institutional Beneficiaries: Comparison of Ingredient Cost Distributions
Regional Statistics Measured Relative to National Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	98.2%	\$4,419	\$622	\$3,438	\$5,998	\$9,160	\$19,298
0	Territories	0.99	0.90	0.86	0.91	0.88	0.91	0.79
1	Northern NE	1.00	0.92	0.80	0.89	0.92	0.94	0.96
2	Central NE	1.00	1.01	0.96	0.99	1.00	1.01	1.03
3	New York	0.99	0.82	0.65	0.74	0.81	0.86	0.98
4	New Jersey	1.00	1.07	1.20	1.07	1.05	1.05	1.09
5	Mid Atlantic	1.00	0.98	1.04	0.98	0.97	0.97	1.02
6	Penn., W. Virginia	1.00	1.04	1.15	1.07	1.04	1.01	1.02
7	Virginia	1.01	1.01	1.20	1.02	1.01	0.99	1.01
8	North Carolina	1.01	1.06	1.21	1.10	1.07	1.05	0.97
9	South Carolina	1.00	0.89	0.87	0.91	0.90	0.89	0.86
10	Georgia	1.00	0.97	1.04	1.00	0.98	0.96	0.89
11	Florida	1.00	1.01	1.19	1.04	1.01	0.99	0.97
12	Alabama, Tennessee	1.01	1.00	1.19	1.04	1.01	0.98	0.91
13	Michigan	1.00	0.95	1.02	0.98	0.95	0.92	0.90
14	Ohio	1.01	1.16	1.42	1.20	1.15	1.13	1.09
15	Indiana, Kentucky	1.01	1.12	1.41	1.16	1.12	1.08	1.05
16	Wisconsin	0.99	1.00	0.96	1.00	1.00	1.01	1.01
17	Illinois	1.00	1.05	1.07	1.05	1.04	1.05	1.00
18	Missouri	1.00	1.02	1.00	1.03	1.01	1.02	1.01
19	Arkansas	1.00	0.97	1.06	1.00	0.98	0.97	0.88
20	Mississippi	0.99	1.06	1.38	1.15	1.06	1.01	0.90
21	Louisiana	1.00	1.16	1.49	1.24	1.16	1.10	0.99
22	Texas	1.00	1.10	1.33	1.16	1.11	1.06	0.99
23	Oklahoma	1.00	1.06	1.26	1.06	1.05	1.05	1.06
24	Kansas	1.00	1.03	0.95	1.00	1.02	1.05	1.14
25	Upper Midwest	1.00	0.89	0.76	0.85	0.89	0.93	0.96
26	New Mexico	0.98	0.83	0.78	0.81	0.86	0.84	0.76
27	Colorado	1.00	0.89	0.60	0.82	0.87	0.90	1.12
28	Arizona	1.00	0.73	0.53	0.68	0.74	0.77	0.78
29	Nevada	0.98	0.82	0.68	0.79	0.85	0.83	0.84
30	Oregon, Washington	1.00	0.88	0.68	0.83	0.88	0.91	0.96
31	Idaho, Utah	0.98	1.07	0.88	1.01	1.08	1.10	1.28
32	California	1.00	0.96	0.80	0.91	0.95	0.99	1.04
33	Hawaii	0.99	0.77	0.53	0.77	0.78	0.80	0.83
34	Alaska	0.98	1.51	1.41	1.27	1.39	1.53	1.72
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.00	1.02	1.00	1.00	0.99	0.99
Average		1.00	0.99	1.01	0.99	0.99	0.99	0.99
SD		0.01	0.14	0.27	0.14	0.12	0.13	0.17
Max - Min		0.03	0.78	0.96	0.59	0.66	0.76	0.95
Range: 90th – 10th Percentiles		0.02	0.29	0.74	0.36	0.26	0.24	0.28

Table 6.10: All Beneficiaries: Ingredient Plus Dispensing Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$60,517,838,848	91.6%	\$2,620	\$3,828	\$189	\$1,636	\$3,164	\$5,767	\$17,293
0	Territories	\$688,439,744	89.6%	\$1,767	\$2,188	\$144	\$1,216	\$2,418	\$3,791	\$9,230
1	Northern NE	\$545,063,552	91.2%	\$2,616	\$3,729	\$189	\$1,618	\$3,173	\$5,857	\$16,997
2	Central NE	\$2,627,862,528	92.9%	\$2,774	\$3,990	\$196	\$1,690	\$3,332	\$6,219	\$18,600
3	New York	\$4,237,380,864	90.0%	\$2,967	\$4,498	\$211	\$1,764	\$3,542	\$6,676	\$20,164
4	New Jersey	\$1,964,867,968	92.0%	\$3,255	\$4,476	\$278	\$2,128	\$3,996	\$7,120	\$20,235
5	Mid Atlantic	\$1,078,588,672	91.1%	\$2,893	\$4,000	\$238	\$1,853	\$3,444	\$6,294	\$19,240
6	Penn., W. Virginia	\$3,738,191,360	92.3%	\$2,631	\$3,606	\$207	\$1,710	\$3,247	\$5,754	\$16,292
7	Virginia	\$1,271,515,904	92.4%	\$2,630	\$3,633	\$215	\$1,721	\$3,213	\$5,734	\$16,344
8	North Carolina	\$2,116,560,896	93.4%	\$2,887	\$3,973	\$248	\$1,891	\$3,497	\$6,370	\$17,802
9	South Carolina	\$945,936,704	92.3%	\$2,778	\$3,653	\$243	\$1,887	\$3,436	\$5,979	\$16,623
10	Georgia	\$1,616,708,352	91.5%	\$2,727	\$3,671	\$228	\$1,818	\$3,371	\$5,911	\$16,596
11	Florida	\$4,133,390,848	92.3%	\$2,488	\$3,837	\$190	\$1,564	\$2,953	\$5,260	\$17,192
12	Alabama, Tennessee	\$2,669,369,600	92.9%	\$2,742	\$3,627	\$237	\$1,821	\$3,381	\$5,991	\$16,554
13	Michigan	\$1,867,285,120	92.0%	\$2,761	\$3,982	\$194	\$1,695	\$3,298	\$6,213	\$18,475
14	Ohio	\$2,229,476,864	92.0%	\$2,760	\$3,854	\$198	\$1,733	\$3,286	\$6,219	\$17,950
15	Indiana, Kentucky	\$2,346,568,448	92.7%	\$2,866	\$3,692	\$246	\$1,913	\$3,498	\$6,332	\$17,400
16	Wisconsin	\$1,018,142,016	91.3%	\$2,640	\$3,925	\$168	\$1,523	\$3,092	\$6,055	\$18,676
17	Illinois	\$2,334,883,584	90.4%	\$2,662	\$3,658	\$216	\$1,759	\$3,280	\$5,739	\$16,455
18	Missouri	\$1,413,371,520	92.1%	\$2,675	\$3,846	\$183	\$1,630	\$3,179	\$6,039	\$17,796
19	Arkansas	\$678,027,264	91.2%	\$2,496	\$3,327	\$194	\$1,669	\$3,094	\$5,429	\$15,095
20	Mississippi	\$760,876,288	92.7%	\$2,703	\$3,465	\$252	\$1,877	\$3,385	\$5,772	\$15,490
21	Louisiana	\$1,001,449,856	92.3%	\$2,864	\$3,831	\$247	\$1,932	\$3,570	\$6,243	\$16,940
22	Texas	\$3,620,671,488	91.2%	\$2,630	\$3,574	\$212	\$1,752	\$3,249	\$5,698	\$16,012
23	Oklahoma	\$834,871,680	92.2%	\$2,738	\$3,657	\$217	\$1,819	\$3,396	\$5,990	\$16,567
24	Kansas	\$597,493,184	93.0%	\$2,584	\$3,558	\$204	\$1,659	\$3,100	\$5,648	\$16,497
25	Upper Midwest	\$2,795,276,544	91.3%	\$2,401	\$3,563	\$152	\$1,454	\$2,883	\$5,354	\$16,354
26	New Mexico	\$286,200,928	87.4%	\$2,072	\$3,226	\$109	\$1,239	\$2,593	\$4,628	\$14,008
27	Colorado	\$648,139,008	90.5%	\$2,225	\$3,762	\$142	\$1,259	\$2,630	\$4,857	\$16,610
28	Arizona	\$897,686,848	89.5%	\$2,005	\$3,148	\$127	\$1,246	\$2,496	\$4,281	\$13,355
29	Nevada	\$328,001,312	87.6%	\$2,116	\$3,501	\$129	\$1,270	\$2,589	\$4,566	\$14,825
30	Oregon, Washington	\$1,706,402,944	91.0%	\$2,324	\$3,662	\$143	\$1,356	\$2,749	\$5,103	\$17,035
31	Idaho, Utah	\$545,085,248	90.3%	\$2,430	\$3,573	\$140	\$1,476	\$2,887	\$5,335	\$17,045
32	California	\$6,634,928,128	91.4%	\$2,420	\$4,150	\$154	\$1,346	\$2,858	\$5,361	\$17,814
33	Hawaii	\$264,695,280	90.1%	\$2,337	\$3,289	\$156	\$1,474	\$2,959	\$5,173	\$14,553
34	Alaska	\$74,429,968	86.1%	\$3,920	\$5,702	\$163	\$2,058	\$4,601	\$9,889	\$26,961
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$1,271,515,904	91.4%	\$2,640	\$3,662	\$196	\$1,695	\$3,247	\$5,772	\$16,623
Average		\$1,729,081,157	91.2%	\$2,622	\$3,738	\$193	\$1,652	\$3,191	\$5,797	\$16,965
SD		\$1,424,530,857	1.6%	\$374	\$520	\$43	\$243	\$426	\$987	\$2,647
Max - Min		\$6,560,498,160	7.3%	\$2,153	\$3,515	\$169	\$911	\$2,184	\$6,098	\$17,732
Range: 90th - 10th Percentiles		\$3,254,650,979	3.3%	\$720	\$782	\$106	\$640	\$913	\$1,612	\$4,326

**Table 6.11: All Beneficiaries: Comparison of Ingredient Plus Dispensing Cost Distributions
Regional Statistics Measured Relative to National Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	91.6%	\$2,620	\$189	\$1,636	\$3,164	\$5,767	\$17,293
0	Territories	0.98	0.67	0.76	0.74	0.76	0.66	0.53
1	Northern NE	1.00	1.00	1.00	0.99	1.00	1.02	0.98
2	Central NE	1.01	1.06	1.04	1.03	1.05	1.08	1.08
3	New York	0.98	1.13	1.11	1.08	1.12	1.16	1.17
4	New Jersey	1.01	1.24	1.47	1.30	1.26	1.23	1.17
5	Mid Atlantic	0.99	1.10	1.26	1.13	1.09	1.09	1.11
6	Penn., W. Virginia	1.01	1.00	1.09	1.05	1.03	1.00	0.94
7	Virginia	1.01	1.00	1.14	1.05	1.02	0.99	0.95
8	North Carolina	1.02	1.10	1.31	1.16	1.11	1.10	1.03
9	South Carolina	1.01	1.06	1.28	1.15	1.09	1.04	0.96
10	Georgia	1.00	1.04	1.21	1.11	1.07	1.02	0.96
11	Florida	1.01	0.95	1.00	0.96	0.93	0.91	0.99
12	Alabama, Tennessee	1.01	1.05	1.25	1.11	1.07	1.04	0.96
13	Michigan	1.00	1.05	1.02	1.04	1.04	1.08	1.07
14	Ohio	1.00	1.05	1.05	1.06	1.04	1.08	1.04
15	Indiana, Kentucky	1.01	1.09	1.30	1.17	1.11	1.10	1.01
16	Wisconsin	1.00	1.01	0.89	0.93	0.98	1.05	1.08
17	Illinois	0.99	1.02	1.14	1.08	1.04	1.00	0.95
18	Missouri	1.01	1.02	0.97	1.00	1.00	1.05	1.03
19	Arkansas	1.00	0.95	1.02	1.02	0.98	0.94	0.87
20	Mississippi	1.01	1.03	1.33	1.15	1.07	1.00	0.90
21	Louisiana	1.01	1.09	1.30	1.18	1.13	1.08	0.98
22	Texas	1.00	1.00	1.12	1.07	1.03	0.99	0.93
23	Oklahoma	1.01	1.04	1.15	1.11	1.07	1.04	0.96
24	Kansas	1.02	0.99	1.08	1.01	0.98	0.98	0.95
25	Upper Midwest	1.00	0.92	0.80	0.89	0.91	0.93	0.95
26	New Mexico	0.95	0.79	0.57	0.76	0.82	0.80	0.81
27	Colorado	0.99	0.85	0.75	0.77	0.83	0.84	0.96
28	Arizona	0.98	0.77	0.67	0.76	0.79	0.74	0.77
29	Nevada	0.96	0.81	0.68	0.78	0.82	0.79	0.86
30	Oregon, Washington	0.99	0.89	0.75	0.83	0.87	0.88	0.99
31	Idaho, Utah	0.99	0.93	0.74	0.90	0.91	0.93	0.99
32	California	1.00	0.92	0.81	0.82	0.90	0.93	1.03
33	Hawaii	0.98	0.89	0.83	0.90	0.94	0.90	0.84
34	Alaska	0.94	1.50	0.86	1.26	1.45	1.71	1.56
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.01	1.04	1.04	1.03	1.00	0.96
Average		1.00	1.00	1.02	1.01	1.01	1.01	0.98
SD		0.02	0.14	0.23	0.15	0.13	0.17	0.15
Max - Min		0.08	0.82	0.89	0.56	0.69	1.06	1.03
Range: 90th – 10th Percentiles		0.04	0.28	0.56	0.39	0.29	0.28	0.25

Table 6.12: Community Beneficiaries: Ingredient Plus Dispensing Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$53,664,796,672	91.9%	\$2,602	\$3,841	\$194	\$1,642	\$3,126	\$5,624	\$17,383
0	Territories	\$614,000,192	90.0%	\$1,810	\$2,201	\$154	\$1,267	\$2,465	\$3,854	\$9,263
1	Northern NE	\$493,104,352	91.7%	\$2,596	\$3,751	\$194	\$1,618	\$3,124	\$5,722	\$17,075
2	Central NE	\$2,287,152,640	93.2%	\$2,720	\$3,982	\$198	\$1,668	\$3,227	\$5,976	\$18,674
3	New York	\$3,635,787,008	90.2%	\$3,132	\$4,732	\$219	\$1,882	\$3,741	\$7,025	\$21,155
4	New Jersey	\$1,769,021,824	92.3%	\$3,239	\$4,491	\$285	\$2,129	\$3,946	\$7,002	\$20,368
5	Mid Atlantic	\$959,572,608	91.4%	\$2,850	\$3,999	\$242	\$1,839	\$3,357	\$6,094	\$19,311
6	Penn., W. Virginia	\$3,229,719,808	92.5%	\$2,612	\$3,585	\$213	\$1,727	\$3,218	\$5,611	\$16,221
7	Virginia	\$1,134,797,440	92.7%	\$2,600	\$3,625	\$220	\$1,719	\$3,165	\$5,577	\$16,263
8	North Carolina	\$1,913,133,056	93.7%	\$2,869	\$3,972	\$255	\$1,896	\$3,452	\$6,234	\$17,913
9	South Carolina	\$861,244,992	92.9%	\$2,798	\$3,687	\$259	\$1,916	\$3,439	\$5,947	\$16,808
10	Georgia	\$1,444,769,920	91.9%	\$2,710	\$3,685	\$238	\$1,826	\$3,324	\$5,761	\$16,699
11	Florida	\$3,737,241,344	92.7%	\$2,491	\$3,875	\$199	\$1,583	\$2,941	\$5,176	\$17,419
12	Alabama, Tennessee	\$2,380,582,656	93.1%	\$2,714	\$3,627	\$241	\$1,817	\$3,327	\$5,835	\$16,625
13	Michigan	\$1,656,261,376	92.3%	\$2,769	\$4,038	\$199	\$1,705	\$3,269	\$6,165	\$18,817
14	Ohio	\$1,874,917,376	92.2%	\$2,651	\$3,789	\$196	\$1,687	\$3,132	\$5,781	\$17,719
15	Indiana, Kentucky	\$2,050,037,504	92.9%	\$2,795	\$3,645	\$249	\$1,890	\$3,386	\$6,027	\$17,303
16	Wisconsin	\$870,020,160	91.5%	\$2,608	\$3,959	\$170	\$1,515	\$3,012	\$5,844	\$18,982
17	Illinois	\$2,048,471,808	90.7%	\$2,580	\$3,596	\$218	\$1,732	\$3,169	\$5,433	\$16,143
18	Missouri	\$1,247,230,336	92.3%	\$2,626	\$3,832	\$185	\$1,612	\$3,090	\$5,806	\$17,813
19	Arkansas	\$597,569,472	91.8%	\$2,454	\$3,312	\$199	\$1,666	\$3,028	\$5,222	\$15,075
20	Mississippi	\$683,625,088	92.9%	\$2,650	\$3,440	\$255	\$1,859	\$3,304	\$5,538	\$15,439
21	Louisiana	\$862,023,680	92.5%	\$2,794	\$3,811	\$252	\$1,915	\$3,462	\$5,928	\$16,821
22	Texas	\$3,178,448,896	91.5%	\$2,576	\$3,537	\$218	\$1,744	\$3,175	\$5,451	\$15,807
23	Oklahoma	\$743,750,912	92.4%	\$2,692	\$3,625	\$222	\$1,810	\$3,328	\$5,779	\$16,426
24	Kansas	\$521,065,376	93.2%	\$2,496	\$3,485	\$204	\$1,629	\$2,983	\$5,303	\$16,063
25	Upper Midwest	\$2,454,584,320	91.4%	\$2,340	\$3,536	\$151	\$1,430	\$2,793	\$5,119	\$16,283
26	New Mexico	\$256,821,616	87.7%	\$2,058	\$3,229	\$110	\$1,245	\$2,578	\$4,539	\$14,023
27	Colorado	\$574,171,776	90.7%	\$2,205	\$3,793	\$146	\$1,264	\$2,604	\$4,729	\$16,571
28	Arizona	\$811,574,592	89.9%	\$2,003	\$3,117	\$131	\$1,259	\$2,499	\$4,244	\$13,237
29	Nevada	\$303,815,776	88.0%	\$2,119	\$3,525	\$132	\$1,282	\$2,591	\$4,533	\$14,925
30	Oregon, Washington	\$1,560,520,320	91.4%	\$2,330	\$3,657	\$149	\$1,376	\$2,752	\$5,063	\$17,135
31	Idaho, Utah	\$489,780,608	90.6%	\$2,425	\$3,551	\$145	\$1,497	\$2,885	\$5,254	\$16,933
32	California	\$6,102,712,832	91.7%	\$2,433	\$4,194	\$160	\$1,371	\$2,867	\$5,327	\$17,940
33	Hawaii	\$247,039,712	90.4%	\$2,358	\$3,293	\$166	\$1,512	\$2,975	\$5,159	\$14,643
34	Alaska	\$70,225,448	87.1%	\$3,920	\$5,694	\$167	\$2,075	\$4,595	\$9,859	\$26,877
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$1,134,797,440	91.8%	\$2,608	\$3,657	\$199	\$1,687	\$3,165	\$5,611	\$16,808
Average		\$1,533,279,909	91.5%	\$2,601	\$3,739	\$198	\$1,656	\$3,149	\$5,655	\$16,993
SD		\$1,275,329,356	1.6%	\$373	\$535	\$44	\$239	\$420	\$987	\$2,707
Max - Min		\$6,032,487,384	6.5%	\$2,110	\$3,492	\$175	\$884	\$2,130	\$6,005	\$17,614
Range: 90th - 10th Percentiles		\$2,812,413,251	3.1%	\$700	\$829	\$108	\$633	\$861	\$1,573	\$4,395

Table 6.13: Community Beneficiaries: Comparison of Ingredient Plus Dispensing Cost Distributions
Regional Statistics Measured Relative to National Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	91.9%	\$2,602	\$194	\$1,642	\$3,126	\$5,624	\$17,383
0	Territories	0.98	0.70	0.79	0.77	0.79	0.69	0.53
1	Northern NE	1.00	1.00	1.00	0.99	1.00	1.02	0.98
2	Central NE	1.01	1.05	1.02	1.02	1.03	1.06	1.07
3	New York	0.98	1.20	1.13	1.15	1.20	1.25	1.22
4	New Jersey	1.00	1.25	1.47	1.30	1.26	1.24	1.17
5	Mid Atlantic	0.99	1.10	1.24	1.12	1.07	1.08	1.11
6	Penn., W. Virginia	1.01	1.00	1.09	1.05	1.03	1.00	0.93
7	Virginia	1.01	1.00	1.13	1.05	1.01	0.99	0.94
8	North Carolina	1.02	1.10	1.31	1.15	1.10	1.11	1.03
9	South Carolina	1.01	1.08	1.33	1.17	1.10	1.06	0.97
10	Georgia	1.00	1.04	1.22	1.11	1.06	1.02	0.96
11	Florida	1.01	0.96	1.02	0.96	0.94	0.92	1.00
12	Alabama, Tennessee	1.01	1.04	1.24	1.11	1.06	1.04	0.96
13	Michigan	1.00	1.06	1.02	1.04	1.05	1.10	1.08
14	Ohio	1.00	1.02	1.01	1.03	1.00	1.03	1.02
15	Indiana, Kentucky	1.01	1.07	1.28	1.15	1.08	1.07	1.00
16	Wisconsin	1.00	1.00	0.87	0.92	0.96	1.04	1.09
17	Illinois	0.99	0.99	1.12	1.05	1.01	0.97	0.93
18	Missouri	1.00	1.01	0.95	0.98	0.99	1.03	1.02
19	Arkansas	1.00	0.94	1.02	1.01	0.97	0.93	0.87
20	Mississippi	1.01	1.02	1.31	1.13	1.06	0.98	0.89
21	Louisiana	1.01	1.07	1.30	1.17	1.11	1.05	0.97
22	Texas	1.00	0.99	1.12	1.06	1.02	0.97	0.91
23	Oklahoma	1.01	1.03	1.14	1.10	1.06	1.03	0.94
24	Kansas	1.01	0.96	1.05	0.99	0.95	0.94	0.92
25	Upper Midwest	0.99	0.90	0.78	0.87	0.89	0.91	0.94
26	New Mexico	0.95	0.79	0.57	0.76	0.82	0.81	0.81
27	Colorado	0.99	0.85	0.75	0.77	0.83	0.84	0.95
28	Arizona	0.98	0.77	0.67	0.77	0.80	0.75	0.76
29	Nevada	0.96	0.81	0.68	0.78	0.83	0.81	0.86
30	Oregon, Washington	0.99	0.90	0.76	0.84	0.88	0.90	0.99
31	Idaho, Utah	0.99	0.93	0.74	0.91	0.92	0.93	0.97
32	California	1.00	0.94	0.82	0.83	0.92	0.95	1.03
33	Hawaii	0.98	0.91	0.85	0.92	0.95	0.92	0.84
34	Alaska	0.95	1.51	0.86	1.26	1.47	1.75	1.55
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditure Per Capita across Regions								
Median		1.00	1.00	1.02	1.03	1.01	1.00	0.97
Average		1.00	1.00	1.02	1.01	1.01	1.01	0.98
SD		0.02	0.14	0.22	0.15	0.13	0.18	0.16
Max - Min		0.07	0.81	0.90	0.54	0.68	1.07	1.01
Range: 90th – 10th Percentiles		0.03	0.27	0.56	0.39	0.28	0.28	0.25

Table 6.14: Institutional Beneficiaries: Ingredient Plus Dispensing Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$3,108,033,536	98.2%	\$4,804	\$4,285	\$772	\$3,813	\$6,511	\$9,797	\$20,075
0	Territories	\$2,334,471	97.3%	\$4,347	\$3,909	\$678	\$3,430	\$5,734	\$8,979	\$15,888
1	Northern NE	\$28,622,586	98.0%	\$4,440	\$4,065	\$632	\$3,420	\$6,038	\$9,311	\$19,504
2	Central NE	\$189,647,760	98.7%	\$4,821	\$4,374	\$748	\$3,790	\$6,517	\$9,895	\$20,674
3	New York	\$200,835,456	96.8%	\$3,967	\$4,076	\$531	\$2,894	\$5,287	\$8,435	\$19,677
4	New Jersey	\$98,749,688	98.7%	\$5,106	\$4,584	\$890	\$4,038	\$6,814	\$10,299	\$21,786
5	Mid Atlantic	\$65,600,828	98.7%	\$4,724	\$4,239	\$784	\$3,749	\$6,319	\$9,563	\$20,319
6	Penn., W. Virginia	\$213,060,928	98.4%	\$5,013	\$4,416	\$874	\$4,072	\$6,750	\$9,935	\$20,520
7	Virginia	\$66,319,672	98.7%	\$4,900	\$4,226	\$911	\$3,911	\$6,596	\$9,788	\$20,283
8	North Carolina	\$93,836,320	98.8%	\$5,085	\$4,398	\$902	\$4,176	\$6,907	\$10,253	\$19,424
9	South Carolina	\$35,413,596	98.7%	\$4,316	\$3,692	\$692	\$3,494	\$5,883	\$8,771	\$17,638
10	Georgia	\$85,549,360	98.2%	\$4,652	\$3,774	\$807	\$3,821	\$6,400	\$9,393	\$17,895
11	Florida	\$147,707,136	97.9%	\$4,878	\$4,114	\$889	\$3,974	\$6,572	\$9,708	\$19,542
12	Alabama, Tennessee	\$132,934,616	99.0%	\$4,852	\$3,960	\$914	\$3,984	\$6,619	\$9,636	\$18,470
13	Michigan	\$88,640,968	98.3%	\$4,586	\$3,944	\$797	\$3,771	\$6,200	\$9,109	\$18,122
14	Ohio	\$193,561,296	99.0%	\$5,587	\$4,664	\$1,069	\$4,567	\$7,518	\$11,090	\$21,941
15	Indiana, Kentucky	\$157,299,536	98.9%	\$5,416	\$4,471	\$1,071	\$4,451	\$7,316	\$10,689	\$21,085
16	Wisconsin	\$76,456,456	96.8%	\$4,845	\$4,336	\$764	\$3,837	\$6,540	\$9,988	\$20,467
17	Illinois	\$167,704,048	98.4%	\$5,011	\$4,477	\$818	\$3,990	\$6,777	\$10,237	\$20,142
18	Missouri	\$88,469,096	98.6%	\$4,871	\$4,270	\$755	\$3,906	\$6,555	\$9,927	\$20,202
19	Arkansas	\$40,186,864	97.8%	\$4,657	\$3,927	\$804	\$3,790	\$6,336	\$9,448	\$17,842
20	Mississippi	\$42,958,232	97.1%	\$5,035	\$3,916	\$1,004	\$4,285	\$6,829	\$9,812	\$18,093
21	Louisiana	\$69,329,784	98.7%	\$5,492	\$4,316	\$1,072	\$4,647	\$7,412	\$10,662	\$19,850
22	Texas	\$203,633,312	98.7%	\$5,244	\$4,261	\$967	\$4,361	\$7,130	\$10,340	\$19,828
23	Oklahoma	\$44,207,440	98.7%	\$5,070	\$4,453	\$923	\$4,006	\$6,819	\$10,286	\$21,354
24	Kansas	\$45,945,712	98.3%	\$4,934	\$4,554	\$734	\$3,809	\$6,604	\$10,245	\$22,456
25	Upper Midwest	\$193,211,968	98.3%	\$4,299	\$4,121	\$607	\$3,260	\$5,810	\$9,052	\$19,282
26	New Mexico	\$11,477,037	96.3%	\$3,993	\$3,606	\$603	\$3,082	\$5,553	\$8,316	\$15,361
27	Colorado	\$32,960,224	97.9%	\$4,294	\$4,335	\$495	\$3,186	\$5,780	\$8,947	\$22,676
28	Arizona	\$17,857,570	98.0%	\$3,557	\$3,383	\$446	\$2,645	\$4,840	\$7,701	\$15,684
29	Nevada	\$7,849,741	96.7%	\$4,007	\$3,727	\$550	\$3,073	\$5,641	\$8,147	\$17,239
30	Oregon, Washington	\$48,288,208	97.8%	\$4,268	\$4,165	\$552	\$3,242	\$5,811	\$8,972	\$19,487
31	Idaho, Utah	\$19,496,608	96.2%	\$5,152	\$4,950	\$703	\$3,854	\$7,005	\$10,814	\$25,596
32	California	\$187,907,152	97.9%	\$4,585	\$4,353	\$637	\$3,498	\$6,195	\$9,614	\$20,609
33	Hawaii	\$7,595,481	97.6%	\$3,684	\$3,395	\$403	\$2,914	\$5,048	\$7,760	\$16,976
34	Alaska	\$2,384,324	96.3%	\$7,618	\$7,813	\$1,150	\$5,051	\$9,814	\$16,837	\$35,149
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$69,329,784	98.3%	\$4,845	\$4,239	\$784	\$3,821	\$6,540	\$9,708	\$19,828
Average		\$88,800,956	98.0%	\$4,780	\$4,265	\$777	\$3,771	\$6,456	\$9,770	\$20,030
SD		\$69,561,830	0.8%	\$695	\$709	\$189	\$534	\$868	\$1,489	\$3,366
Max - Min		\$210,726,457	2.8%	\$4,061	\$4,429	\$747	\$2,406	\$4,974	\$9,137	\$19,788
Range: 90th – 10th Percentiles		\$183,758,176	2.0%	\$1,347	\$863	\$502	\$1,337	\$1,645	\$2,303	\$5,143

Table 6.15: Institutional Beneficiaries: Comparison of Ingredient Plus Dispensing Cost Distributions
Regional Statistics Measured Relative to National Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	98.2%	\$4,804	\$772	\$3,813	\$6,511	\$9,797	\$20,075
0	Territories	0.99	0.90	0.88	0.90	0.88	0.92	0.79
1	Northern NE	1.00	0.92	0.82	0.90	0.93	0.95	0.97
2	Central NE	1.00	1.00	0.97	0.99	1.00	1.01	1.03
3	New York	0.99	0.83	0.69	0.76	0.81	0.86	0.98
4	New Jersey	1.00	1.06	1.15	1.06	1.05	1.05	1.09
5	Mid Atlantic	1.00	0.98	1.02	0.98	0.97	0.98	1.01
6	Penn., W. Virginia	1.00	1.04	1.13	1.07	1.04	1.01	1.02
7	Virginia	1.01	1.02	1.18	1.03	1.01	1.00	1.01
8	North Carolina	1.01	1.06	1.17	1.10	1.06	1.05	0.97
9	South Carolina	1.00	0.90	0.90	0.92	0.90	0.90	0.88
10	Georgia	1.00	0.97	1.05	1.00	0.98	0.96	0.89
11	Florida	1.00	1.02	1.15	1.04	1.01	0.99	0.97
12	Alabama, Tennessee	1.01	1.01	1.18	1.04	1.02	0.98	0.92
13	Michigan	1.00	0.95	1.03	0.99	0.95	0.93	0.90
14	Ohio	1.01	1.16	1.38	1.20	1.15	1.13	1.09
15	Indiana, Kentucky	1.01	1.13	1.39	1.17	1.12	1.09	1.05
16	Wisconsin	0.99	1.01	0.99	1.01	1.00	1.02	1.02
17	Illinois	1.00	1.04	1.06	1.05	1.04	1.04	1.00
18	Missouri	1.00	1.01	0.98	1.02	1.01	1.01	1.01
19	Arkansas	1.00	0.97	1.04	0.99	0.97	0.96	0.89
20	Mississippi	0.99	1.05	1.30	1.12	1.05	1.00	0.90
21	Louisiana	1.00	1.14	1.39	1.22	1.14	1.09	0.99
22	Texas	1.00	1.09	1.25	1.14	1.10	1.06	0.99
23	Oklahoma	1.00	1.06	1.20	1.05	1.05	1.05	1.06
24	Kansas	1.00	1.03	0.95	1.00	1.01	1.05	1.12
25	Upper Midwest	1.00	0.89	0.79	0.86	0.89	0.92	0.96
26	New Mexico	0.98	0.83	0.78	0.81	0.85	0.85	0.77
27	Colorado	1.00	0.89	0.64	0.84	0.89	0.91	1.13
28	Arizona	1.00	0.74	0.58	0.69	0.74	0.79	0.78
29	Nevada	0.98	0.83	0.71	0.81	0.87	0.83	0.86
30	Oregon, Washington	1.00	0.89	0.71	0.85	0.89	0.92	0.97
31	Idaho, Utah	0.98	1.07	0.91	1.01	1.08	1.10	1.28
32	California	1.00	0.95	0.83	0.92	0.95	0.98	1.03
33	Hawaii	0.99	0.77	0.52	0.76	0.78	0.79	0.85
34	Alaska	0.98	1.59	1.49	1.32	1.51	1.72	1.75
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.01	1.02	1.00	1.00	0.99	0.99
Average		1.00	1.00	1.01	0.99	0.99	1.00	1.00
SD		0.01	0.14	0.24	0.14	0.13	0.15	0.17
Max - Min		0.03	0.85	0.97	0.63	0.76	0.93	0.99
Range: 90th – 10th Percentiles		0.02	0.28	0.65	0.35	0.25	0.24	0.26

6.3 Expenditure Distributions: Controlling for Differences in Regional Risk Factors

The above findings reveal considerable variation in the utilization of Part D drugs both within and across regions. Nationally, beneficiaries at the 90th percentile incurred 35 times higher expenditures than beneficiaries at the 10th percentile, and similar variability shows up within individual PDP regions as well. No doubt, a large contributor to this variation comes about due to differences in the health status of beneficiaries. In addition to explaining dispersion within regions, the composition of beneficiaries by health status could also have a substantial effect on the differences observed in the averages of prescription drug expenditures observed across PDP areas. To investigate the importance of such factors, the following analysis examines how much regional variation in expenditures remains after controlling for differences in beneficiaries' health status risk factors and demographic characteristics.

In undertaking this empirical examination, we incorporate adjustments for geographical price variation by translating expenditures into real quantities comparable across regions. We do this by multiplying nominal beneficiary expenditures by the national price divided by the regional price, which is equivalent to dividing expenditures by the region's price index value as shown in Table 5.1. This price normalization has minimal effect for most regions due to the narrow range of index values seen in Section 5. The only exception is Alaska which has a price index for ingredient costs plus dispensing fees at 15 percent above the national value evaluated at median prices.

As described in Section 3.5.2, we control for regional differences in risk factors using regression-style methods to create models predicting the share of beneficiaries having positive expenditures on claims in a region, the average costs for those beneficiaries with any claims, and the costs at different percentiles of the PDE spending distribution. Then, using the estimates from these models, we take a national representative 5 percent sample of beneficiaries and predict what their costs would be if they lived in each region. This simulation strategy provides predicted regional costs for a beneficiary population whose composition is kept constant in constructing regional expenditure distributions. The only source of difference between regions, then, is the estimated regional effects. Comparing these results to the results presented in the

previous section allows one to assess the impacts of regional risk factors on regional utilization variation.

The implemented statistical models control for the characteristics included in CMS risk models: beneficiary's gender, age, RxHCC categories, low-income status, institutional status, and original reason for Medicare enrollment (see Section 4 for detailed descriptions of the variables). We limit our analysis here to just community and institutional Part D beneficiaries. These groups correspond to those populations used by CMS in its estimation of risk scores applied to adjust its contributions to Part D premiums to account for differences in the health status of individuals. Due to the small sizes of the institutional populations residing in Region 0 (Territories) and Region 34 (Alaska), we exclude these areas from our empirical analyses of regional differences in spending for institutional beneficiaries.

To depict geographic variation controlling for dissimilarities in the compositions of regional populations, the following tables present only relative differentials measured by computing the ratio of the value assuming residence in a region to the value that would occur at the average of the regional effects. By comparing these relative differentials to the findings presented earlier in the section, we can assess how much variation in geographical expenditures is attributable to differences in population risk factors and can, in turn, isolate purely regional differences abstracting from these factors.

6.3.1. Expenditures on Ingredient Costs Adjusting for Population Composition

Controlling for the health status composition of the Part D population narrows the observed geographic variation in expenditures. Table 6.16 shows the results of the analysis of per capita utilization rates of total ingredient costs for community Part D beneficiaries. The indices in Table 6.16 are relative to average regional values, where each region has the same number of beneficiaries in the sample. This makes the index somewhat different from the previous indices, which were relative to national values, where regions have different size populations. Despite this difference, the results in Table 6.16 can be compared in general terms to those in Table 6.7. In particular, the summary statistics in the bottom rows give us a basis to compare the degree of variation before and after controlling for the population composition.

For each measure, Table 6.16 shows less variation in the regional indices than reported in Table 6.7. For example, there is one-third less variation across regions in the index of average expenditures, as measured by the standard deviation. The spread between the maximum and the minimum index value for average expenditures drops from 0.77 to 0.57, due to Alaska's index dropping from 1.45 to 1.25. The compositional and price adjustments have a large effect on the average for Alaska, bringing it much closer in line with other high expenditure states like New Jersey. These controls have a much smaller impact on New Jersey, which remains more than 20 percent above the average across regions. In contrast, New York, which in the unadjusted results had expenditures close to New Jersey with an index of 1.21, comes much closer in line with the average across regions with an adjusted index of 1.06. There are also several regions that had unusually low expenditures largely explained by compositional differences. Expenditures in Hawaii, for example, move much closer to the regional average after accounting for the health status composition. Overall, though, the compositional controls do not change the rankings much between regions. Similar results hold for the median.

The summary statistics for the institutional Part D beneficiaries are more difficult to compare (Table 6.17 versus Table 6.9), because there was not a sufficient institutional population in Alaska or the territories to include these regions in the regression analysis. However, after accounting for the fact that these regions are excluded, the compositional adjustment has little impact on the variation across regions. As shown in Table 6.17, after controlling for risk factors and excluding Alaska and the territories, there is still a 46 percent difference in predicted expenditures on ingredient costs across regions at the average and 66 percent at the median. At the 10th percentile, there is over a 1.11 point difference between the highest and lowest indices. With Alaska removed from the sample, Indiana and Kentucky beneficiaries are predicted to have the highest expenditure levels, 16 percent higher than the national median.

A review of the results presented in Tables 6.16 and 6.17 can be summarized as showing:

- For Community beneficiaries, the compositional adjustment eliminates one-third of the deviation in average expenditures and about one-fifth of the deviation in median expenditures, in large part by reducing the extreme for Alaska, and to some degree New York. Recognizing the exclusion of Alaska and the territories, the compositional adjustments do not reduce the regional variation in expenditures for Institutional beneficiaries.

- Even after controlling for risk factors, there is substantial variation across regions in expenditures on ingredient costs. For Community beneficiaries, expenditures range from 23 percent above the national median (Alaska) to 64 percent below (territories). And even without Alaska and the territories, variation is even greater for Institutional beneficiaries, with median expenditures ranging from 61 percent below the national median (Arizona) to 27 percent above (Louisiana);
- When considering community beneficiaries, New Jersey and Alaska still exhibit high levels of expenditures relative to the rest of the nation, but controlling for risk factors does lead to a reduction in the difference from the median. For New Jersey community Part D beneficiaries, the difference is 24 percent (Table 6.16), compared to 32 percent (Table 6.7) when risks are not controlled. For Alaskan Community Part D beneficiaries, the difference is 23 percent, compared to 25 percent when risks are not controlled.

6.3.2. Expenditures on Ingredient Costs and Dispensing Fees Adjusting for Population Composition

Table 6.18 presents the results of the analysis of expenditures on both ingredient costs and dispensing fees for community Part D beneficiaries. Again, the compositional adjustment reduces the standard deviation for the expenditure statistics across regions, with the most dramatic effect on Alaska, where both price and compositional adjustments matter. For most of the points in the distribution, the range of expenditures relative to the average regional values is also narrower than before adjustments. The exception is the median, where the adjustment had a greater downward impact on the territories (the lowest index at 0.64) than on New Jersey (the highest index at 1.22). This leaves a 0.58 point spread in indices across regions.

Again we see that, among Community beneficiaries, New Jersey beneficiaries are predicted to have the highest expenditure levels at every percentile save the 90th, where Alaska shows expenditures 1.30 times the national 90th percentile compared to 1.28 for New Jersey. However, after the adjustments, the median expenditures in Alaska are only predicted to be 12 percent higher than the national median.

After accounting for the exclusion of Alaska and the territories for the Institutional population, the composition adjustment does not reduce the dispersion across regions for predicted expenditures on ingredient costs and dispensing fees for institutional beneficiaries. Around the national median, we see expenditures ranging from 36 percent below in Arizona to 23 percent above in Louisiana. The greatest difference, again, is at the 10th percentile, with

expenditures ranging from 38 percent below the national value in Arizona to 42 percent above in Mississippi.

A review of the results presented in Tables 6.18 and 6.19 can be summarized as showing:

- Even after controlling for risk factors, there is substantial variation across regions in expenditures on ingredient costs and dispensing fees. The difference for the median Community beneficiary across the regions mirrors the difference when risks are not controlled. With indices ranging from 0.64 (territories) to 1.22 (New Jersey) around the national median for expenditures on ingredient costs and dispensing fees, there is less variation across the median for institutional beneficiaries compared to when risks are not controlled, but this result likely stems from removing Alaska from the sample;
- When considering Community beneficiaries, New Jersey still exhibits high levels of expenditures relative to the rest of the nation, but controlling for risk factors does lead to a reduction in the difference from the median. For New Jersey Community Part D beneficiaries, the difference is 22 percent, compared to 30 percent (Table 6.13) when risks are not controlled;
- When comparing the results from Sections 6.4.2 and 6.4.3 with results in Sections 6.3.3 and 6.3.4, there is little evidence that regional variation in risk factors affects regional variation in expenditures.

**Table 6.16: Community Beneficiaries: Comparison of Ingredient Cost Distributions
Adjusting for Population Composition - Regional Statistics Measured Relative to Average
Regional Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
Average Regional		92.3%	\$2,508	\$174	\$1,594	\$3,045	\$5,442	\$16,863
0	Territories	0.97	0.69	0.47	0.64	0.73	0.70	0.69
1	Northern NE	1.00	0.94	0.92	0.92	0.92	0.88	0.90
2	Central NE	1.01	1.03	1.01	1.01	0.99	0.99	0.98
3	New York	0.98	1.10	1.05	1.06	1.09	1.13	1.14
4	New Jersey	0.99	1.21	1.37	1.24	1.23	1.28	1.32
5	Mid Atlantic	0.99	1.01	1.08	1.03	1.03	1.07	1.06
6	Penn., W. Virginia	1.00	1.04	1.01	1.03	1.05	1.05	1.11
7	Virginia	1.00	1.01	1.13	1.04	1.02	1.02	1.02
8	North Carolina	1.01	1.07	1.24	1.12	1.08	1.06	1.05
9	South Carolina	1.01	1.02	1.21	1.12	1.06	1.02	1.01
10	Georgia	1.00	0.97	1.04	1.00	1.00	1.01	0.99
11	Florida	1.00	0.90	0.77	0.84	0.88	0.87	0.94
12	Alabama, Tennessee	1.01	0.95	1.07	0.98	0.97	0.96	0.91
13	Michigan	1.01	1.04	0.92	1.02	1.03	1.07	1.16
14	Ohio	1.00	0.98	0.91	0.97	0.98	0.95	0.94
15	Indiana, Kentucky	1.01	1.04	1.21	1.12	1.08	1.06	0.96
16	Wisconsin	1.01	1.06	1.08	1.01	1.00	1.01	1.06
17	Illinois	0.99	1.03	1.20	1.09	1.06	1.04	1.00
18	Missouri	1.01	1.02	0.96	1.00	1.00	0.99	1.00
19	Arkansas	1.00	0.92	1.04	0.96	0.94	0.91	0.84
20	Mississippi	1.01	0.94	1.31	1.05	0.98	0.93	0.90
21	Louisiana	1.00	1.02	1.21	1.10	1.07	1.06	0.99
22	Texas	0.99	0.96	1.03	1.01	0.99	0.98	1.04
23	Oklahoma	1.01	1.06	1.19	1.12	1.09	1.12	1.08
24	Kansas	1.01	1.04	1.13	1.06	1.05	1.02	0.96
25	Upper Midwest	1.01	1.04	1.01	1.01	1.00	1.00	0.97
26	New Mexico	0.98	0.85	0.73	0.82	0.86	0.85	0.78
27	Colorado	1.01	0.96	0.86	0.86	0.91	0.92	0.89
28	Arizona	0.99	0.87	0.79	0.84	0.87	0.85	0.79
29	Nevada	0.98	0.95	0.93	0.90	0.93	0.93	0.98
30	Oregon, Washington	1.01	0.99	0.97	0.93	0.96	0.93	0.94
31	Idaho, Utah	1.00	1.07	0.99	1.05	1.05	1.05	1.04
32	California	1.01	0.97	0.90	0.85	0.90	0.92	0.99
33	Hawaii	0.99	1.01	0.75	0.93	0.99	1.03	1.02
34	Alaska	0.98	1.25	1.04	1.23	1.28	1.39	1.27
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.01	1.03	1.01	1.00	1.01	0.99
Average		1.00	1.00	1.02	1.00	1.00	1.00	0.99
SD		0.01	0.10	0.18	0.12	0.10	0.12	0.12
Max - Min		0.04	0.57	0.89	0.60	0.55	0.70	0.63
Range: 90th – 10th Percentiles		0.02	0.16	0.43	0.27	0.20	0.23	0.27

**Table 6.17: Institutional Beneficiaries: Comparison of Ingredient Cost Distributions
Adjusting for Population Composition - Regional Statistics Measured Relative to Average
Regional Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
Average Regional		98.5%	\$4,355	\$630	\$3,432	\$5,875	\$8,877	\$18,346
0	Territories	--	--	--	--	--	--	--
1	Northern NE	1.00	1.05	1.09	1.03	1.01	1.04	1.10
2	Central NE	1.00	1.05	1.03	1.04	1.04	1.04	0.96
3	New York	0.99	0.87	0.61	0.76	0.85	0.88	0.88
4	New Jersey	1.00	1.03	1.02	1.03	1.03	1.02	1.08
5	Mid Atlantic	1.00	0.92	0.90	0.89	0.89	0.90	0.93
6	Penn., W. Virginia	1.00	1.13	1.22	1.17	1.16	1.14	1.11
7	Virginia	1.00	1.02	1.10	0.98	1.00	1.04	1.00
8	North Carolina	1.01	1.06	1.17	1.10	1.09	1.07	1.11
9	South Carolina	1.00	0.91	0.79	0.87	0.94	0.93	0.94
10	Georgia	1.00	0.97	0.99	0.99	0.98	0.97	1.10
11	Florida	0.99	0.95	1.02	0.96	0.92	0.94	1.05
12	Alabama, Tennessee	1.01	1.03	1.20	1.06	1.02	1.03	0.99
13	Michigan	1.00	1.03	1.03	1.09	1.06	1.01	1.00
14	Ohio	1.00	1.06	1.36	1.11	1.06	1.03	1.04
15	Indiana, Kentucky	1.01	1.14	1.38	1.22	1.17	1.14	1.10
16	Wisconsin	0.99	1.15	1.25	1.20	1.20	1.15	1.17
17	Illinois	1.00	1.00	0.99	1.03	1.05	1.05	0.89
18	Missouri	1.00	1.07	1.19	1.12	1.11	1.08	1.06
19	Arkansas	1.00	0.98	0.93	1.01	1.00	0.99	0.93
20	Mississippi	0.99	1.08	1.54	1.17	1.07	1.04	1.03
21	Louisiana	1.00	1.18	1.39	1.27	1.24	1.22	1.10
22	Texas	1.00	1.09	1.31	1.15	1.12	1.08	1.07
23	Oklahoma	1.01	1.09	1.36	1.14	1.09	1.07	1.10
24	Kansas	1.00	1.04	1.02	1.05	1.06	1.05	0.93
25	Upper Midwest	1.00	1.01	1.00	0.97	0.98	1.03	1.01
26	New Mexico	0.98	0.86	0.74	0.81	0.85	0.87	0.76
27	Colorado	1.00	0.85	0.60	0.77	0.81	0.85	0.91
28	Arizona	1.00	0.72	0.43	0.61	0.72	0.76	0.71
29	Nevada	0.98	0.83	0.56	0.75	0.83	0.84	0.83
30	Oregon, Washington	1.00	0.90	0.78	0.85	0.88	0.91	0.94
31	Idaho, Utah	0.98	1.07	1.07	1.05	1.07	1.07	1.11
32	California	1.00	0.95	0.69	0.89	0.94	0.98	0.94
33	Hawaii	1.00	0.91	0.69	0.85	0.90	0.92	0.98
34	Alaska	--	--	--	--	--	--	--
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.03	1.02	1.03	1.02	1.03	1.00
Average		1.00	1.00	1.01	1.00	1.00	1.00	1.00
SD		0.01	0.10	0.27	0.15	0.12	0.10	0.11
Max - Min		0.03	0.46	1.11	0.66	0.52	0.46	0.46
Range: 90th – 10th Percentiles		0.02	0.26	0.73	0.39	0.31	0.26	0.22

**Table 6.18: Community Beneficiaries: Comparison of Ingredient Plus Dispensing Cost Distributions
Adjusting for Population Composition - Regional Statistics Measured Relative to Average Regional Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
Average Regional		92.3%	\$2,463	\$189	\$1,585	\$2,991	\$5,323	\$16,180
0	Territories	0.97	0.69	0.48	0.64	0.73	0.70	0.68
1	Northern NE	1.00	0.94	0.92	0.93	0.92	0.88	0.92
2	Central NE	1.01	1.03	0.99	1.00	0.98	0.98	0.98
3	New York	0.98	1.09	1.00	1.05	1.08	1.13	1.13
4	New Jersey	0.99	1.20	1.28	1.22	1.22	1.28	1.31
5	Mid Atlantic	0.99	1.02	1.11	1.03	1.03	1.07	1.06
6	Penn., W. Virginia	1.00	1.04	0.99	1.02	1.04	1.05	1.10
7	Virginia	1.00	1.01	1.11	1.04	1.03	1.02	1.02
8	North Carolina	1.01	1.07	1.24	1.13	1.09	1.07	1.05
9	South Carolina	1.01	1.02	1.19	1.12	1.07	1.02	1.01
10	Georgia	1.00	0.97	1.07	1.01	1.01	1.01	0.99
11	Florida	1.00	0.90	0.77	0.84	0.88	0.88	0.95
12	Alabama, Tennessee	1.01	0.95	1.09	0.99	0.98	0.97	0.92
13	Michigan	1.01	1.04	0.94	1.03	1.03	1.07	1.17
14	Ohio	1.00	0.98	0.92	0.97	0.98	0.95	0.94
15	Indiana, Kentucky	1.01	1.05	1.19	1.12	1.08	1.06	0.98
16	Wisconsin	1.01	1.06	1.08	1.01	1.01	1.01	1.06
17	Illinois	0.99	1.04	1.16	1.09	1.06	1.04	1.00
18	Missouri	1.01	1.02	0.97	1.00	1.00	1.00	1.00
19	Arkansas	1.00	0.93	1.07	0.97	0.95	0.92	0.84
20	Mississippi	1.01	0.94	1.30	1.05	0.98	0.94	0.90
21	Louisiana	1.00	1.02	1.20	1.09	1.07	1.06	0.99
22	Texas	0.99	0.96	1.01	1.00	0.99	0.98	1.04
23	Oklahoma	1.01	1.06	1.15	1.12	1.10	1.12	1.09
24	Kansas	1.01	1.04	1.13	1.07	1.06	1.03	0.96
25	Upper Midwest	1.01	1.04	1.01	1.01	1.01	1.01	0.97
26	New Mexico	0.98	0.85	0.74	0.83	0.87	0.85	0.78
27	Colorado	1.01	0.97	0.98	0.90	0.93	0.93	0.91
28	Arizona	0.99	0.88	0.79	0.84	0.87	0.85	0.80
29	Nevada	0.98	0.95	0.90	0.89	0.92	0.93	0.98
30	Oregon, Washington	1.01	1.00	0.99	0.95	0.97	0.94	0.97
31	Idaho, Utah	1.00	1.07	0.99	1.05	1.05	1.05	1.05
32	California	1.01	0.98	0.96	0.89	0.91	0.94	1.00
33	Hawaii	0.99	1.01	0.83	0.95	0.99	1.02	1.01
34	Alaska	0.98	1.19	0.97	1.12	1.17	1.30	1.24
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.02	1.00	1.01	1.01	1.01	0.99
Average		1.00	1.00	1.01	1.00	1.00	1.00	0.99
SD		0.01	0.09	0.17	0.11	0.09	0.11	0.12
Max - Min		0.04	0.52	0.82	0.58	0.50	0.60	0.63
Range: 90th – 10th Percentiles		0.02	0.16	0.39	0.26	0.19	0.22	0.25

**Table 6.19: Institutional Beneficiaries: Comparison of Ingredient Plus Dispensing Cost
Dispensing
Adjusting for Population Composition - Regional Statistics Measured Relative to Average
Regional Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
Average Regional		98.5%	\$4,489	\$729	\$3,607	\$6,063	\$9,011	\$18,164
0	Territories	--	--	--	--	--	--	--
1	Northern NE	1.00	1.06	1.11	1.04	1.03	1.05	1.10
2	Central NE	1.00	1.05	1.05	1.05	1.03	1.03	0.96
3	New York	0.99	0.88	0.65	0.77	0.84	0.88	0.89
4	New Jersey	1.00	1.03	1.05	1.02	1.02	1.02	1.08
5	Mid Atlantic	1.00	0.93	0.90	0.90	0.90	0.91	0.96
6	Penn., W. Virginia	1.00	1.13	1.19	1.17	1.16	1.12	1.10
7	Virginia	1.00	1.03	1.13	1.00	1.02	1.05	1.04
8	North Carolina	1.01	1.06	1.14	1.09	1.07	1.06	1.10
9	South Carolina	1.00	0.92	0.83	0.88	0.94	0.92	0.94
10	Georgia	1.00	0.97	1.00	0.98	0.96	0.96	1.08
11	Florida	0.99	0.96	1.02	0.96	0.93	0.95	1.07
12	Alabama, Tennessee	1.01	1.03	1.22	1.07	1.02	1.04	0.99
13	Michigan	1.00	1.03	1.04	1.09	1.06	1.01	0.98
14	Ohio	1.00	1.06	1.34	1.11	1.07	1.04	1.03
15	Indiana, Kentucky	1.01	1.14	1.36	1.22	1.15	1.14	1.08
16	Wisconsin	0.99	1.15	1.24	1.20	1.19	1.17	1.14
17	Illinois	1.00	1.00	0.97	1.03	1.04	1.05	0.92
18	Missouri	1.00	1.07	1.19	1.11	1.09	1.06	1.04
19	Arkansas	1.00	0.97	0.90	0.98	0.98	0.97	0.93
20	Mississippi	0.99	1.06	1.42	1.14	1.04	1.02	1.02
21	Louisiana	1.00	1.15	1.29	1.23	1.21	1.17	1.07
22	Texas	1.00	1.08	1.28	1.14	1.10	1.08	1.09
23	Oklahoma	1.01	1.09	1.31	1.14	1.08	1.06	1.09
24	Kansas	1.00	1.03	1.01	1.05	1.04	1.03	0.94
25	Upper Midwest	1.00	1.01	1.00	0.97	0.98	1.03	1.01
26	New Mexico	0.98	0.86	0.75	0.80	0.85	0.86	0.79
27	Colorado	1.00	0.86	0.63	0.78	0.82	0.86	0.91
28	Arizona	1.00	0.74	0.49	0.64	0.73	0.77	0.74
29	Nevada	0.98	0.85	0.62	0.77	0.85	0.87	0.84
30	Oregon, Washington	1.00	0.91	0.81	0.87	0.90	0.92	0.90
31	Idaho, Utah	0.98	1.07	1.06	1.04	1.07	1.06	1.09
32	California	1.00	0.95	0.73	0.89	0.94	0.98	0.95
33	Hawaii	1.00	0.89	0.68	0.83	0.87	0.90	0.92
34	Alaska	--	--	--	--	--	--	--
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.03	1.04	1.03	1.02	1.03	1.01
Average		1.00	1.00	1.01	1.00	1.00	1.00	0.99
SD		0.01	0.10	0.24	0.15	0.11	0.09	0.10
Max - Min		0.03	0.42	0.93	0.59	0.48	0.40	0.40
Range: 90th – 10th Percentiles		0.02	0.26	0.65	0.38	0.30	0.24	0.21

6.4 Regional Variation in Average Per-Beneficiary Expenditures

In the previous subsections, we evaluated variation in expenditures conditional on beneficiaries having positive expenditures. However, since utilization entails both enrolling in a plan and purchasing of prescription drugs, averages conditional on purchasing drugs do not provide a representative picture of per capita utilization. To generate a more representative per capita utilization measure, we multiply the regional average cost of claims by regional probability of filing a claim; this creates a per capita measure based on the number of enrollees in a region, regardless whether enrollees participated in the program by purchasing drugs.

Table 6.20 shows the per capita expenditures nationally and regionally for all, community and institutional beneficiaries on ingredient costs and dispensing fees. When considering All beneficiaries, the per capita expenditure nationally is \$2,400. Alaska still has the highest per capita expenditures, at \$3,377, and the territories the lowest, at \$1,853. These two regions are the highest and lowest for Community beneficiaries as well. For Institutional beneficiaries, Alaska again has the highest per capita expenditures, at \$7,336, but Arizona shows the lowest per capita expenditures, at \$3,486.

While the patterns of per-beneficiary expenditures are similar to the patterns of conditional per-participant expenditures, they are not the same. Table 6.21 shows the regional indices for expenditures for the three groups. Where there is a 0.82 point spread in indices for the conditional averages (Table 6.11) for All beneficiaries, the spread for unconditional averages is 0.75. This results from Alaska having relatively fewer beneficiaries filing Part D claims, which in turn lowers Alaska's index from 1.50 to 1.41.

Table 6.22 shows the regional variation for population adjusted expenditures. There is little difference in indices calculated using adjusted per-participant expenditures compared to indices calculated using adjusted per-beneficiary expenditures, with indices all within 2 percent of each other. Alaska and the territories still show the highest and lowest adjusted expenditures for Community members. Arizona still shows the lowest adjusted expenditures for its Institutional beneficiaries, but Wisconsin replaces Indiana/Kentucky as having the highest expenditures; although Indiana/Kentucky only trails Wisconsin by 1 percent.

Table 6.20: Regional Variation in Average Per Beneficiary Expenditures for Ingredient Costs Plus Dispensing Fees – Original Levels

PDP Region		Average Expenditures Per Beneficiary		
#	Name	All	Community	Institutional
US	National	\$2,400	\$2,391	\$4,720
0	Territories	\$1,583	\$1,629	\$4,229
1	Northern NE	\$2,386	\$2,380	\$4,349
2	Central NE	\$2,577	\$2,534	\$4,759
3	New York	\$2,669	\$2,824	\$3,842
4	New Jersey	\$2,996	\$2,988	\$5,041
5	Mid Atlantic	\$2,634	\$2,605	\$4,661
6	Penn., W. Virginia	\$2,428	\$2,416	\$4,932
7	Virginia	\$2,430	\$2,409	\$4,838
8	North Carolina	\$2,697	\$2,688	\$5,023
9	South Carolina	\$2,564	\$2,599	\$4,258
10	Georgia	\$2,496	\$2,491	\$4,566
11	Florida	\$2,296	\$2,310	\$4,775
12	Alabama, Tennessee	\$2,548	\$2,527	\$4,803
13	Michigan	\$2,540	\$2,557	\$4,510
14	Ohio	\$2,538	\$2,446	\$5,529
15	Indiana, Kentucky	\$2,657	\$2,598	\$5,355
16	Wisconsin	\$2,409	\$2,387	\$4,689
17	Illinois	\$2,407	\$2,339	\$4,932
18	Missouri	\$2,464	\$2,425	\$4,803
19	Arkansas	\$2,278	\$2,253	\$4,555
20	Mississippi	\$2,505	\$2,462	\$4,891
21	Louisiana	\$2,643	\$2,583	\$5,420
22	Texas	\$2,398	\$2,357	\$5,174
23	Oklahoma	\$2,523	\$2,488	\$5,005
24	Kansas	\$2,404	\$2,325	\$4,849
25	Upper Midwest	\$2,191	\$2,139	\$4,226
26	New Mexico	\$1,811	\$1,804	\$3,847
27	Colorado	\$2,013	\$2,001	\$4,205
28	Arizona	\$1,795	\$1,801	\$3,486
29	Nevada	\$1,853	\$1,866	\$3,876
30	Oregon, Washington	\$2,114	\$2,130	\$4,176
31	Idaho, Utah	\$2,194	\$2,198	\$4,958
32	California	\$2,211	\$2,231	\$4,489
33	Hawaii	\$2,105	\$2,133	\$3,595
34	Alaska	\$3,377	\$3,415	\$7,336
Summary Statistics Describing Differences in Relative Indices across Regions				
Median		\$2,428	\$2,409	\$4,759
Average		\$2,392	\$2,381	\$4,685
SD		\$341	\$340	\$678
Max – Min		\$1,794	\$1,787	\$3,851
Range: 90 th – 10 th Percentiles		\$747	\$735	\$1,424

Table 6.21: Regional Variation in Average Per Beneficiary Expenditures for Ingredient Costs Plus Dispensing Fees – Original Index

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

Table 6.22: Regional Variation in Average Per Beneficiary Expenditures for Ingredient Costs Plus Dispensing Fees – Adjusted for Population Composition

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

6.5 Summary of Findings

This section presents findings describing the variation of utilization across PDP regions and different beneficiary groups. It addresses three core questions:

- (1) How much did utilization of prescription drugs vary by region?
- (2) How much did per capita spending on drugs vary by region?
- (3) How much of regional variation in per capita spending can be attributed to the factors used by Medicare in its adjustments for beneficiaries' cost risk and for regional variation in drug prices?

To answer these questions, the above analysis investigates two fundamental measures of utilization: (1) regional distributions of claims per beneficiary to examine different levels of drug utilization, and (2) distributions of per capita spending to assess geographic discrepancies in drug expenditures, including expenditures on both ingredient costs and on dispensing fees.

Inspection of the differences in the distributions of PDE claims per capita across regions and beneficiary groups reveals the following features about Part D utilization:

- Generally, utilization measured by the number of submitted claims varies only slightly across PDP regions. Beneficiaries typically have about 30 claims per year. 10 percent of beneficiaries have 6 claims per year, and 1 percent have more than 160 claims.
- The key exception is Alaska, which has noticeably greater numbers of PDE claims among its most-intense users of Part D services. At the upper limit of Alaska's utilization, 10 percent of Alaskan beneficiaries submit over 117 claims in a year and 1 percent submit more than 496 claims—which compares to around 162 for the nation at large.
- Not surprisingly, beneficiary residing in institutions tend to have more claims than their counterparts living in a community setting. Institutional beneficiaries have about twice the number of claims.

Comparing the per capita distributions of PDE spending across PDP regions and beneficiary groups yields the following insights into variation in Part D utilization:

- Whereas median per capita expenditures in Part D show relatively modest variation across regions—the median beneficiary spends about \$1,550 per year with values for most regions falling within a band of about \$300—far more geographic variation shows up in average spending. Including dispensing fees, average per capita spending is \$2,400 per year in the nation, with the territories at the low end at \$1,583 and Alaska at the high at \$3,377.

- Alaska, New Jersey, and New York rank as the highest annual per capita expenditure PDP regions, and the territories show up as the lowest. This ordering holds regardless of whether one measures expenditures as just ingredient costs or as ingredient costs plus dispensing fees. When considering both ingredient costs and dispensing fees, average spending in Alaska exceeds the national average by about 40 percent; New Jersey's average expenditures are 24 percent higher; and New York's average ranges between 11. At the low end, the territories register per capita expenditure levels slightly above two-thirds of the national average.
- Distinguishing between the community and institutional segments of the Part D populations, the rankings of the PDP regions primarily reflect the orderings seen in the Community populations. In contrast, one sees a different pattern in the per capita expenditure rankings of PDP areas for the institutional populations. Ohio, Louisiana, and Indiana/Kentucky classify at the top here with averages between 17 and 13 percent higher than the national average. While Alaska is much higher at about 55 percent, it has a very small institutional population. Arizona and Hawaii attain the lowest expenditure averages for the institutional population falling around 25 percent below the national average.
- For the Community population, removing the effects of beneficiary composition and prices drops the dispersion in average expenditures across regions by one-third, and median expenditures by as much as one-fifth. These adjustments, however, do not reduce the regional variation observed for the Institutional population.
- Accounting for differences in the compositions of populations and price indices across PDP areas, the expenditure rankings of PDP regions mostly remain. For community populations, Alaska and New Jersey still rank at the top, but their averages are now close to one another being just under 20 percent higher than the average regional value. While New York continues to be positioned on the high side, its average is only modestly higher. The territories again show up with the lowest per capita annual expenditures among the regions. Its composition-adjusted average for its Community population is over 30 percent below the regional average.
- Composition-adjusted expenditures for institutional populations are highest for the Indiana/Kentucky, Pennsylvania/West Virginia, Mississippi, and Wisconsin, with annual averages reaching around 15 percent above the regional average. Texas, Oklahoma and Idaho/Montana come next with average expenditures around 10 percent above the average regional value. Arizona stands out at the low end of expenditures with its annual average for the institutional population reaching over 25 percent below the regional average.

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APPENDIX A: ADDITIONAL INFORMATION ON USE OF PDE DATA FOR PRICES

This appendix provides additional background on the use of the PDE data for price analysis. Table A.1 below lists the elements from the PDE data that we draw on in our analysis.

As this table shows, claims do not list per-unit prices. Instead each claim lists the total ingredient cost, the dispensing fee paid, and the quantity dispensed. As a result, per-unit prices must be calculated by dividing the total cost of the claim by the quantity dispensed. However, the distribution of per-unit prices by drug type reveals that there are massive disparities in prices for the same product. An exploration of per-unit prices at the lower and upper ends of the price distributions shows that this variation is primarily caused by large variations in quantities dispensed, which we conclude to be measurement errors.

Table A.1: PDE Data Elements

Data Element	Definition
Product Service ID	The NDC of the dispensed drug
Quantity Dispensed	The number of units dispensed
Ingredient Cost Paid	The amount paid for the drug itself
Dispensing Fee	The amount paid to the pharmacy for dispensing the medication
Contract Number	The number that CMS assigns to each contract
Plan Benefit Package	The number that CMS assigns to identify a plan within a contract
Service Provider ID	The pharmacy where the prescription was filled
Non Standard Format Code	Identifies records that come from non-standard sources
Compound Code	Identifies whether the drug was dispensed individually or as a compound or mixture

Thus, while PDE data provide reliable expenditure measures, errors in the measurement of quantities dispensed distort prices. Two types of claims that are disproportionately responsible for apparent errors in quantity are related to the submission process: non-electronic claims and claims filed for compound drugs. Non-electronic claims are either filed in paper form or in a manner that cannot be identified. These claims are disproportionately represented in upper or lower distributions of costs by NDC, and we assume that this is a result of these claim

types being more prone to errors. Compound drugs are drugs containing multiple NDCs. When registering the purchase of such a compound, CMS instructs the pharmacy to report only the NDC of the most expensive component, but the price and quantity dispensed of the entire compound.²² This reporting convention results in confounding information used to calculate unit prices for the NDC listed in the PDE claim. In this analysis, we set the per-unit price to the national median price for the corresponding NDC and recalculate quantities. (An alternative strategy would be to simply exclude these claims.)

Another problem with quantities we refer to as decimal place errors: claims where the quantity dispensed differs from industry-standard levels by a factor of 10, 100, or 1000, such as would occur if a data system reported units in milligrams instead of grams. For this type of inconsistency, we apply an algorithm that adjusts the decimal place on quantities to bring per-unit prices into an order of magnitude comparable to the national median price.

We observe other cases that probably occur at the pharmacy level, but cannot be systematically corrected. First, for some NDCs, pharmacists occasionally list quantity dispensed in metric units on PDE claims, while at other times they report number of packages dispensed—commonly referred to measuring quantities as “eaches.” For example, for a drug packaged as a product weighing 50mg, one pharmacist reports the purchase of 1 package as 1 each dispensed, whereas another reports this same transaction as 50 milligrams dispensed. The PDEs from these transactions show the same total ingredient price, but one lists quantity as 1 and the other as 50. Second, our analysis identifies instances in which a pharmacy reports two radically different prices for claims filed in the same week—even on the same day—under the same plan for the same drug. Because prices are negotiated between pharmacies and plans, extreme price variation at the pharmacy-plan level suggests that quantities are being reported incorrectly. We do not correct for these issues in the analysis. However, we believe that the magnitude of these errors is small enough that it does not impact the distribution points that we examine in the core analysis.

²² See page 13 of the CMS memo *Updated Instructions: Requirements for Submitting Prescription Drug Event Data (PDE)*, April 27, 2006.

APPENDIX B: MA-PD PRICE INDEX TABLES

Because of the different MA penetration rates and packaging of PD benefits with MA, price indices for MA-PD plans are likely to be less accurate representations of Part D prices for drugs than are indices based on standalone PDPs. However, we did calculate MA-PD indices comparable to those presented in Section 5 for PDP plans. The key findings from the MA-PD price indices can be summarized as follows:

- MA-PD price indices show somewhat more regional variation than PDP price indices. However, the variation in median prices is still fairly narrow. Out of the 34 regions plus the territories, 30 regions have median ingredient cost prices for the NDC market basket between 98 percent and 103 percent of the typical national price. The GSN basket shows wider variation than the NDC basket.
- Unlike in the PDP analysis, Alaska is no longer an outlier at typical prices – at the median Alaska is the same as the national. For MA-PD claims, the typical price for NDC basket in the territories and Hawaii is 112 and 106 percent of the typical price nationally. The territories and Hawaii continue to be outliers in the GSN basket, with median prices being 1.18 and 1.06 times the national median, respectively. These regions also show the highest MA-PD penetration rates.
- For both the NDC and GSN baskets, there is less variation in the 10th percentile regional price index than at higher points in the price distribution. In particular, the territories and Hawaii are closer to the national index values lower in the price distribution.
- There is a wider spread between best prices and typical prices for the MA-PD ingredient cost indices than seen for PDP. Excluding Alaska and the territories, the 10th percentile prices fall between 87 percent and 95 percent of the national median price for the NDC basket. Alaska shows little difference between the 10th and median prices, but less than 1 percent of Alaska Part D enrollees are in MA-PD plans.
- Nationally, dispensing fees raise MA-PD prices by approximately 6 percent, slightly more than seen in the PDP prices. Dispensing costs add disproportionately to costs in the territories, Hawaii and Alaska, especially for the GSN basket.
- With four exceptions (the territories, New York, Alaska, and Hawaii), ingredient costs plus dispensing fee per quantity dispensed for the GSN basket do not differ from national values by more than 4 percent.
- At the typical price for the GSN basket including ingredient costs plus dispensing fees per quantity dispensed, the territories stand out with a high index value of 1.27. The next closest value is for Hawaii at 1.17. This effect is true for the territories across all price percentiles, but Hawaii is less pronounced at the best prices.

Table B.1: Regional Price Index – Per Unit Ingredient Cost – NDC Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.89	0.95	1.00
0	Territories	1.00	1.06	1.12
1	Northern NE	0.91	0.96	1.03
2	Central NE	0.92	0.98	1.02
3	New York	0.92	0.97	1.04
4	New Jersey	0.94	0.97	1.03
5	Mid Atlantic	0.91	0.95	1.00
6	Penn., W. Virginia	0.92	0.98	1.03
7	Virginia	0.91	0.95	0.99
8	North Carolina	0.94	0.97	1.00
9	South Carolina	0.94	0.98	1.01
10	Georgia	0.91	0.95	1.00
11	Florida	0.90	0.96	1.00
12	Alabama, Tennessee	0.95	0.98	1.01
13	Michigan	0.87	0.91	0.96
14	Ohio	0.91	0.96	1.00
15	Indiana, Kentucky	0.94	0.97	1.01
16	Wisconsin	0.93	0.97	1.00
17	Illinois	0.94	0.97	1.01
18	Missouri	0.93	0.97	1.00
19	Arkansas	0.95	0.98	1.02
20	Mississippi	0.94	0.98	1.01
21	Louisiana	0.92	0.96	1.00
22	Texas	0.92	0.96	1.00
23	Oklahoma	0.95	0.98	1.03
24	Kansas	0.93	0.96	1.00
25	Upper Midwest	0.93	0.98	1.02
26	New Mexico	0.94	0.97	1.02
27	Colorado	0.89	0.94	0.98
28	Arizona	0.87	0.95	0.99
29	Nevada	0.90	0.94	0.99
30	Oregon, Washington	0.90	0.95	0.99
31	Idaho, Utah	0.93	0.97	1.01
32	California	0.87	0.93	0.98
33	Hawaii	0.93	0.98	1.06
34	Alaska	0.95	0.97	1.00
Summary Statistics Describing Differences in Indices across Regions				
Median		0.93	0.97	1.00
Average		0.92	0.97	1.01
SD		0.03	0.02	0.03
Max – Min		0.13	0.15	0.16
Range: 90th – 10th Percentiles		0.06	0.04	0.04

Table B.2: Regional Price Indices Relative to National Index – Per Unit Ingredient Cost – NDC Basket

PDP Region		Regional Price Indices		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	1.00	1.00	1.00
0	Territories	1.13	1.13	1.12
1	Northern NE	1.02	1.02	1.03
2	Central NE	1.03	1.03	1.02
3	New York	1.03	1.03	1.04
4	New Jersey	1.06	1.03	1.03
5	Mid Atlantic	1.02	1.00	1.00
6	Penn., W. Virginia	1.04	1.04	1.03
7	Virginia	1.02	1.00	0.99
8	North Carolina	1.05	1.02	1.00
9	South Carolina	1.05	1.04	1.01
10	Georgia	1.02	1.01	1.00
11	Florida	1.01	1.01	1.00
12	Alabama, Tennessee	1.07	1.04	1.01
13	Michigan	0.98	0.96	0.96
14	Ohio	1.02	1.01	1.00
15	Indiana, Kentucky	1.05	1.03	1.01
16	Wisconsin	1.04	1.02	1.00
17	Illinois	1.05	1.03	1.01
18	Missouri	1.05	1.02	1.00
19	Arkansas	1.07	1.04	1.02
20	Mississippi	1.06	1.03	1.01
21	Louisiana	1.03	1.02	1.00
22	Texas	1.03	1.02	1.00
23	Oklahoma	1.06	1.04	1.03
24	Kansas	1.04	1.02	1.00
25	Upper Midwest	1.04	1.03	1.02
26	New Mexico	1.05	1.03	1.02
27	Colorado	0.99	1.00	0.98
28	Arizona	0.98	1.00	0.99
29	Nevada	1.01	1.00	0.99
30	Oregon, Washington	1.01	1.00	0.99
31	Idaho, Utah	1.04	1.02	1.01
32	California	0.98	0.99	0.98
33	Hawaii	1.04	1.04	1.06
34	Alaska	1.06	1.03	1.00
Summary Statistics Describing Differences in Relative Indices across Regions				
	Median	1.04	1.02	1.00
	Average	1.04	1.02	1.01
	SD	0.03	0.02	0.03
	Max - Min	0.15	0.16	0.16
	Range: 90 th – 10 th Percentiles	0.06	0.04	0.04

Table B.3: Regional Price Index – Per Unit Ingredient Cost – GSN Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.80	0.91	1.00
0	Territories	0.96	1.08	1.18
1	Northern NE	0.85	0.94	1.03
2	Central NE	0.87	0.94	1.04
3	New York	0.85	0.93	1.05
4	New Jersey	0.88	0.95	1.04
5	Mid Atlantic	0.81	0.89	0.98
6	Penn., W. Virginia	0.87	0.95	1.04
7	Virginia	0.80	0.91	0.98
8	North Carolina	0.85	0.93	1.00
9	South Carolina	0.85	0.95	1.02
10	Georgia	0.81	0.90	0.99
11	Florida	0.81	0.92	1.00
12	Alabama, Tennessee	0.88	0.95	1.01
13	Michigan	0.78	0.85	0.94
14	Ohio	0.83	0.93	1.01
15	Indiana, Kentucky	0.85	0.94	1.01
16	Wisconsin	0.85	0.93	1.00
17	Illinois	0.86	0.95	1.02
18	Missouri	0.85	0.92	1.00
19	Arkansas	0.86	0.94	1.02
20	Mississippi	0.85	0.95	1.01
21	Louisiana	0.84	0.94	1.00
22	Texas	0.84	0.93	1.00
23	Oklahoma	0.88	0.95	1.03
24	Kansas	0.83	0.92	1.00
25	Upper Midwest	0.86	0.94	1.02
26	New Mexico	0.85	0.93	1.02
27	Colorado	0.79	0.88	0.96
28	Arizona	0.80	0.91	0.99
29	Nevada	0.84	0.90	0.98
30	Oregon, Washington	0.81	0.90	0.98
31	Idaho, Utah	0.85	0.94	1.00
32	California	0.78	0.87	0.96
33	Hawaii	0.84	0.92	1.06
34	Alaska	0.86	0.93	1.02
Summary Statistics Describing Differences in Indices across Regions				
Median		0.85	0.93	1.01
Average		0.84	0.93	1.01
SD		0.03	0.04	0.04
Max - Min		0.18	0.23	0.24
Range: 90th – 10th Percentiles		0.07	0.05	0.06

Table B.4: Regional Price Indices Relative to National Index – Per Unit Ingredient Cost – GSN Basket

PDP Region		Regional Price Indices		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	1.00	1.00	1.00
0	Territories	1.19	1.19	1.18
1	Northern NE	1.05	1.03	1.03
2	Central NE	1.08	1.04	1.04
3	New York	1.06	1.03	1.05
4	New Jersey	1.10	1.04	1.04
5	Mid Atlantic	1.01	0.98	0.98
6	Penn., W. Virginia	1.08	1.04	1.04
7	Virginia	1.00	1.00	0.98
8	North Carolina	1.06	1.03	1.00
9	South Carolina	1.06	1.04	1.02
10	Georgia	1.01	0.99	0.99
11	Florida	1.00	1.02	1.00
12	Alabama, Tennessee	1.09	1.05	1.01
13	Michigan	0.97	0.94	0.94
14	Ohio	1.03	1.02	1.01
15	Indiana, Kentucky	1.06	1.04	1.01
16	Wisconsin	1.06	1.02	1.00
17	Illinois	1.07	1.04	1.02
18	Missouri	1.06	1.02	1.00
19	Arkansas	1.08	1.03	1.02
20	Mississippi	1.06	1.05	1.01
21	Louisiana	1.05	1.03	1.00
22	Texas	1.05	1.02	1.00
23	Oklahoma	1.09	1.04	1.03
24	Kansas	1.03	1.01	1.00
25	Upper Midwest	1.07	1.04	1.02
26	New Mexico	1.05	1.03	1.02
27	Colorado	0.98	0.97	0.96
28	Arizona	0.99	1.01	0.99
29	Nevada	1.05	0.99	0.98
30	Oregon, Washington	1.01	0.99	0.98
31	Idaho, Utah	1.05	1.03	1.00
32	California	0.97	0.96	0.96
33	Hawaii	1.04	1.01	1.06
34	Alaska	1.07	1.02	1.02
Summary Statistics Describing Differences in Relative Indices across Regions				
Median		1.05	1.03	1.01
Average		1.05	1.02	1.01
SD		0.04	0.04	0.04
Max - Min		0.23	0.26	0.24
Range: 90th – 10th Percentiles		0.09	0.06	0.06

Table B.5: Regional Price Index – Per Unit Ingredient Cost Plus Dispensing Fee – NDC Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.93	1.00	1.06
0	Territories	1.07	1.14	1.20
1	Northern NE	0.95	1.01	1.09
2	Central NE	0.96	1.03	1.09
3	New York	0.95	1.02	1.09
4	New Jersey	0.97	1.01	1.08
5	Mid Atlantic	0.97	1.02	1.09
6	Penn., W. Virginia	0.96	1.03	1.08
7	Virginia	0.95	1.00	1.05
8	North Carolina	0.98	1.01	1.05
9	South Carolina	0.98	1.03	1.07
10	Georgia	0.97	1.02	1.07
11	Florida	0.94	1.00	1.04
12	Alabama, Tennessee	1.00	1.03	1.07
13	Michigan	0.90	0.96	1.04
14	Ohio	0.95	1.01	1.07
15	Indiana, Kentucky	0.98	1.02	1.06
16	Wisconsin	0.97	1.02	1.06
17	Illinois	0.98	1.02	1.07
18	Missouri	0.97	1.01	1.06
19	Arkansas	0.99	1.03	1.07
20	Mississippi	0.99	1.03	1.06
21	Louisiana	0.95	1.00	1.05
22	Texas	0.96	1.01	1.05
23	Oklahoma	0.99	1.03	1.08
24	Kansas	0.96	1.01	1.05
25	Upper Midwest	0.97	1.02	1.08
26	New Mexico	0.98	1.02	1.08
27	Colorado	0.93	1.00	1.06
28	Arizona	0.91	0.99	1.05
29	Nevada	0.93	0.98	1.04
30	Oregon, Washington	0.94	1.01	1.07
31	Idaho, Utah	0.96	1.01	1.06
32	California	0.92	0.99	1.05
33	Hawaii	0.99	1.05	1.15
34	Alaska	1.01	1.04	1.09
Summary Statistics Describing Differences in Indices across Regions				
Median		0.97	1.02	1.07
Average		0.96	1.02	1.07
SD		0.03	0.03	0.03
Max – Min		0.17	0.18	0.16
Range: 90th – 10th Percentiles		0.06	0.04	0.04

Table B.6: Regional Price Indices Relative to National Index – Per Unit Ingredient Cost Plus Dispensing Fee – NDC Basket

PDP Region		Regional Price Indices		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	1.00	1.00	1.00
0	Territories	1.15	1.14	1.13
1	Northern NE	1.02	1.01	1.02
2	Central NE	1.03	1.03	1.03
3	New York	1.02	1.02	1.03
4	New Jersey	1.04	1.01	1.02
5	Mid Atlantic	1.03	1.02	1.03
6	Penn., W. Virginia	1.03	1.03	1.02
7	Virginia	1.02	1.00	0.99
8	North Carolina	1.05	1.02	0.99
9	South Carolina	1.05	1.03	1.01
10	Georgia	1.03	1.02	1.01
11	Florida	1.01	1.00	0.98
12	Alabama, Tennessee	1.07	1.03	1.01
13	Michigan	0.96	0.96	0.98
14	Ohio	1.02	1.01	1.01
15	Indiana, Kentucky	1.05	1.02	1.00
16	Wisconsin	1.04	1.02	1.01
17	Illinois	1.04	1.02	1.01
18	Missouri	1.04	1.01	1.00
19	Arkansas	1.06	1.04	1.01
20	Mississippi	1.06	1.03	1.00
21	Louisiana	1.01	1.00	0.99
22	Texas	1.03	1.01	0.99
23	Oklahoma	1.06	1.03	1.02
24	Kansas	1.03	1.01	0.99
25	Upper Midwest	1.03	1.03	1.02
26	New Mexico	1.05	1.02	1.02
27	Colorado	0.99	1.00	1.00
28	Arizona	0.97	0.99	0.99
29	Nevada	1.00	0.98	0.98
30	Oregon, Washington	1.01	1.01	1.01
31	Idaho, Utah	1.03	1.01	1.00
32	California	0.98	0.99	0.99
33	Hawaii	1.06	1.06	1.09
34	Alaska	1.08	1.04	1.03
Summary Statistics Describing Differences in Relative Indices across Regions				
Median		1.03	1.02	1.01
Average		1.03	1.02	1.01
SD		0.03	0.03	0.03
Max - Min		0.18	0.18	0.15
Range: 90th – 10th Percentiles		0.07	0.04	0.04

Table B.7: Regional Price Index – Per Unit Ingredient Cost Plus Dispensing Fee – GSN Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.85	0.96	1.06
0	Territories	1.03	1.17	1.27
1	Northern NE	0.87	0.97	1.09
2	Central NE	0.90	1.00	1.10
3	New York	0.88	0.98	1.11
4	New Jersey	0.91	0.99	1.09
5	Mid Atlantic	0.88	0.98	1.09
6	Penn., W. Virginia	0.90	1.00	1.10
7	Virginia	0.85	0.96	1.04
8	North Carolina	0.89	0.98	1.05
9	South Carolina	0.89	0.99	1.07
10	Georgia	0.87	0.97	1.07
11	Florida	0.84	0.96	1.04
12	Alabama, Tennessee	0.92	1.00	1.07
13	Michigan	0.80	0.89	1.04
14	Ohio	0.87	0.98	1.07
15	Indiana, Kentucky	0.89	0.99	1.06
16	Wisconsin	0.89	0.99	1.06
17	Illinois	0.89	0.99	1.07
18	Missouri	0.88	0.97	1.05
19	Arkansas	0.91	0.98	1.07
20	Mississippi	0.90	1.00	1.06
21	Louisiana	0.86	0.97	1.04
22	Texas	0.87	0.97	1.05
23	Oklahoma	0.91	1.00	1.09
24	Kansas	0.87	0.96	1.05
25	Upper Midwest	0.89	0.99	1.08
26	New Mexico	0.89	0.98	1.07
27	Colorado	0.84	0.95	1.06
28	Arizona	0.82	0.95	1.04
29	Nevada	0.86	0.93	1.02
30	Oregon, Washington	0.86	0.96	1.06
31	Idaho, Utah	0.87	0.98	1.06
32	California	0.83	0.94	1.04
33	Hawaii	0.91	1.01	1.17
34	Alaska	0.92	0.99	1.12
Summary Statistics Describing Differences in Indices across Regions				
Median		0.88	0.98	1.07
Average		0.88	0.98	1.07
SD		0.04	0.04	0.04
Max - Min		0.24	0.28	0.25
Range: 90th – 10th Percentiles		0.07	0.05	0.07

Table B.8: Regional Price Indices Relative to National Index – Per Unit Ingredient Cost Plus Dispensing Fee – GSN Basket

PDP Region		Regional Price Indices		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	1.00	1.00	1.00
0	Territories	1.22	1.22	1.20
1	Northern NE	1.03	1.01	1.03
2	Central NE	1.06	1.04	1.04
3	New York	1.04	1.02	1.05
4	New Jersey	1.07	1.03	1.03
5	Mid Atlantic	1.04	1.02	1.03
6	Penn., W. Virginia	1.06	1.04	1.03
7	Virginia	1.01	1.00	0.98
8	North Carolina	1.06	1.02	0.99
9	South Carolina	1.06	1.03	1.01
10	Georgia	1.02	1.01	1.01
11	Florida	1.00	1.00	0.98
12	Alabama, Tennessee	1.08	1.04	1.01
13	Michigan	0.94	0.93	0.98
14	Ohio	1.02	1.02	1.01
15	Indiana, Kentucky	1.06	1.02	1.00
16	Wisconsin	1.06	1.03	1.00
17	Illinois	1.05	1.03	1.01
18	Missouri	1.04	1.01	0.99
19	Arkansas	1.07	1.02	1.01
20	Mississippi	1.06	1.04	1.00
21	Louisiana	1.02	1.01	0.98
22	Texas	1.03	1.01	0.99
23	Oklahoma	1.07	1.04	1.03
24	Kansas	1.02	1.00	0.99
25	Upper Midwest	1.05	1.03	1.02
26	New Mexico	1.05	1.01	1.01
27	Colorado	0.99	0.99	1.00
28	Arizona	0.97	0.99	0.98
29	Nevada	1.02	0.97	0.96
30	Oregon, Washington	1.01	1.00	1.00
31	Idaho, Utah	1.03	1.02	1.00
32	California	0.98	0.97	0.98
33	Hawaii	1.08	1.05	1.11
34	Alaska	1.09	1.03	1.05
Summary Statistics Describing Differences in Relative Indices across Regions				
Median		1.04	1.02	1.01
Average		1.04	1.02	1.01
SD		0.05	0.04	0.04
Max - Min		0.28	0.29	0.24
Range: 90th – 10th Percentiles		0.08	0.05	0.06

APPENDIX C: DISPENSING FEE PRICE INDEX TABLES

The difference between the results shown in Section 5.1 and 5.2 are driven by the role of dispensing fees, which typically add 6 percent to the ingredient costs. The tables in Appendix C show per-claim dispensing fee indices comparable to the price indices in Section 5. The findings from these tables can be summarized as follows:

- There is substantial variation in per-claim dispensing fees for PDP claims, both within regions and across regions. At typical prices, the price index for dispensing fees ranges from 0.87 in Arizona to 1.88 in Alaska for the NDC basket and from 0.89 to 1.69 for the same regions in the GSN basket.
- Dispensing fees at the best price are more than 30 percent lower than the typical prices nationally for both baskets. The range is also narrower for dispensing fees at the 10 percentile prices, compared to typical prices, especially for the NDC basket.
- In addition to Alaska, the territories and Hawaii are outliers for PDP dispensing fees, with median prices for the NDC basket 1.30 and 1.50 times the national median, respectively.
- MA-PD dispensing fees have even greater variation than PDP, both within and across regions. Dispensing fees at best prices are 42 percent of the typical prices nationally for the NDC basket and 32 percent of the typical prices for the GSN baskets. At best prices, MA-PD dispensing fees range from 34 percent of the national best price in Louisiana to more than double the national best price in the territories, Hawaii and Alaska. California has high MA-PD dispensing fees at the typical prices, but lower prices than the national prices at the 10th percentile.

Table C.1: PDP Regional Price Index – Per Claim Dispensing Fee – NDC Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.69	0.82	1.00
0	Territories	0.82	1.08	1.30
1	Northern NE	0.77	0.91	1.00
2	Central NE	0.68	0.90	1.03
3	New York	0.78	0.93	1.07
4	New Jersey	0.77	0.82	0.95
5	Mid Atlantic	0.71	0.91	1.08
6	Penn., W. Virginia	0.77	0.82	1.04
7	Virginia	0.71	0.84	0.98
8	North Carolina	0.77	0.80	0.98
9	South Carolina	0.76	0.86	1.03
10	Georgia	0.75	0.94	1.11
11	Florida	0.45	0.77	0.97
12	Alabama, Tennessee	0.77	0.88	1.04
13	Michigan	0.67	0.82	1.03
14	Ohio	0.68	0.82	1.01
15	Indiana, Kentucky	0.65	0.82	0.99
16	Wisconsin	0.75	0.88	1.07
17	Illinois	0.60	0.82	0.99
18	Missouri	0.67	0.80	0.96
19	Arkansas	0.78	0.93	1.09
20	Mississippi	0.77	0.90	1.03
21	Louisiana	0.68	0.82	1.06
22	Texas	0.59	0.80	1.00
23	Oklahoma	0.76	0.88	1.06
24	Kansas	0.71	0.82	0.99
25	Upper Midwest	0.68	0.83	0.99
26	New Mexico	0.76	0.85	1.06
27	Colorado	0.64	0.82	1.00
28	Arizona	0.51	0.71	0.87
29	Nevada	0.56	0.79	0.97
30	Oregon, Washington	0.67	0.86	1.07
31	Idaho, Utah	0.64	0.87	1.07
32	California	0.65	0.84	0.96
33	Hawaii	0.81	1.03	1.50
34	Alaska	0.81	1.06	1.88
Summary Statistics Describing Differences in Indices across Regions				
Median		0.71	0.84	1.03
Average		0.70	0.86	1.06
SD		0.09	0.08	0.18
Max – Min		0.37	0.37	1.01
Range: 90th – 10th Percentiles		0.19	0.14	0.14

Table C.2: PDP Regional Price Indices Relative to National Index – Per Claim Dispensing Fee – NDC Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	1.00	1.00	1.00
0	Territories	1.19	1.31	1.30
1	Northern NE	1.11	1.11	1.00
2	Central NE	0.99	1.09	1.03
3	New York	1.13	1.13	1.07
4	New Jersey	1.12	1.00	0.95
5	Mid Atlantic	1.02	1.11	1.08
6	Penn., W. Virginia	1.11	1.00	1.04
7	Virginia	1.03	1.02	0.98
8	North Carolina	1.12	0.98	0.98
9	South Carolina	1.10	1.04	1.03
10	Georgia	1.09	1.14	1.11
11	Florida	0.65	0.94	0.97
12	Alabama, Tennessee	1.11	1.07	1.04
13	Michigan	0.97	1.00	1.03
14	Ohio	0.98	1.00	1.01
15	Indiana, Kentucky	0.94	1.00	0.99
16	Wisconsin	1.09	1.07	1.07
17	Illinois	0.86	1.00	0.99
18	Missouri	0.98	0.97	0.96
19	Arkansas	1.13	1.14	1.09
20	Mississippi	1.11	1.09	1.03
21	Louisiana	0.98	1.00	1.06
22	Texas	0.86	0.97	1.00
23	Oklahoma	1.10	1.07	1.06
24	Kansas	1.03	1.00	0.99
25	Upper Midwest	0.99	1.01	0.99
26	New Mexico	1.11	1.04	1.06
27	Colorado	0.93	1.00	1.00
28	Arizona	0.74	0.87	0.87
29	Nevada	0.81	0.96	0.97
30	Oregon, Washington	0.96	1.05	1.07
31	Idaho, Utah	0.92	1.05	1.07
32	California	0.94	1.02	0.96
33	Hawaii	1.17	1.26	1.50
34	Alaska	1.17	1.29	1.88
Summary Statistics Describing Differences in Indices across Regions				
Median		1.03	1.02	1.03
Average		1.02	1.05	1.06
SD		0.13	0.09	0.18
Max – Min		0.54	0.44	1.01
Range: 90 th – 10 th Percentiles		0.27	0.17	0.14

Table C.3: PDP Regional Price Index – Per Claim Dispensing Fee – GSN Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.64	0.85	1.00
0	Territories	0.80	0.99	1.18
1	Northern NE	0.63	0.88	1.01
2	Central NE	0.69	0.95	1.04
3	New York	0.76	0.95	1.05
4	New Jersey	0.75	0.94	0.99
5	Mid Atlantic	0.66	0.92	1.04
6	Penn., W. Virginia	0.70	0.89	1.00
7	Virginia	0.65	0.86	1.00
8	North Carolina	0.70	0.81	1.00
9	South Carolina	0.69	0.86	1.00
10	Georgia	0.75	0.96	1.09
11	Florida	0.45	0.76	0.98
12	Alabama, Tennessee	0.72	0.92	1.03
13	Michigan	0.63	0.87	1.03
14	Ohio	0.62	0.85	1.04
15	Indiana, Kentucky	0.63	0.84	1.03
16	Wisconsin	0.68	0.92	1.04
17	Illinois	0.47	0.83	1.02
18	Missouri	0.61	0.81	1.00
19	Arkansas	0.73	0.95	1.01
20	Mississippi	0.73	0.84	0.99
21	Louisiana	0.64	0.81	1.01
22	Texas	0.54	0.79	0.99
23	Oklahoma	0.60	0.90	1.07
24	Kansas	0.65	0.83	1.03
25	Upper Midwest	0.59	0.83	0.98
26	New Mexico	0.57	0.87	0.98
27	Colorado	0.60	0.83	1.00
28	Arizona	0.49	0.68	0.89
29	Nevada	0.56	0.74	0.97
30	Oregon, Washington	0.60	0.88	1.00
31	Idaho, Utah	0.60	0.87	0.99
32	California	0.62	0.81	0.98
33	Hawaii	0.84	0.99	1.42
34	Alaska	0.77	1.00	1.69
Summary Statistics Describing Differences in Indices across Regions				
Median		0.64	0.87	1.01
Average		0.65	0.87	1.04
SD		0.09	0.07	0.14
Max – Min		0.39	0.32	0.80
Range: 90th – 10th Percentiles		0.21	0.16	0.10

Table C.4: PDP Regional Price Indices Relative to National Index – Per Claim Dispensing Fee – GSN Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	1.00	1.00	1.00
0	Territories	1.25	1.16	1.18
1	Northern NE	0.98	1.03	1.01
2	Central NE	1.08	1.11	1.04
3	New York	1.19	1.11	1.05
4	New Jersey	1.17	1.11	0.99
5	Mid Atlantic	1.03	1.08	1.04
6	Penn., W. Virginia	1.10	1.05	1.00
7	Virginia	1.03	1.01	1.00
8	North Carolina	1.10	0.96	1.00
9	South Carolina	1.09	1.01	1.00
10	Georgia	1.18	1.13	1.09
11	Florida	0.71	0.89	0.98
12	Alabama, Tennessee	1.12	1.08	1.03
13	Michigan	0.98	1.03	1.03
14	Ohio	0.97	1.00	1.04
15	Indiana, Kentucky	0.99	0.99	1.03
16	Wisconsin	1.06	1.08	1.04
17	Illinois	0.74	0.98	1.02
18	Missouri	0.96	0.95	1.00
19	Arkansas	1.15	1.11	1.01
20	Mississippi	1.14	0.99	0.99
21	Louisiana	1.00	0.95	1.01
22	Texas	0.85	0.93	0.99
23	Oklahoma	0.94	1.06	1.07
24	Kansas	1.02	0.98	1.03
25	Upper Midwest	0.92	0.97	0.98
26	New Mexico	0.90	1.03	0.98
27	Colorado	0.94	0.98	1.00
28	Arizona	0.76	0.80	0.89
29	Nevada	0.88	0.87	0.97
30	Oregon, Washington	0.94	1.04	1.00
31	Idaho, Utah	0.94	1.02	0.99
32	California	0.98	0.95	0.98
33	Hawaii	1.32	1.17	1.42
34	Alaska	1.21	1.17	1.69
Summary Statistics Describing Differences in Indices across Regions				
Median		1.00	1.02	1.01
Average		1.02	1.02	1.04
SD		0.14	0.09	0.14
Max – Min		0.61	0.37	0.80
Range: 90 th – 10 th Percentiles		0.32	0.18	0.10

Table C.5: MA-PD Regional Price Index – Per Claim Dispensing Fee – NDC Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.42	0.81	1.00
0	Territories	1.17	1.23	1.38
1	Northern NE	0.27	0.84	0.99
2	Central NE	0.37	0.91	1.00
3	New York	0.34	0.85	1.03
4	New Jersey	0.59	0.82	0.86
5	Mid Atlantic	0.73	1.27	1.70
6	Penn., W. Virginia	0.37	0.83	0.89
7	Virginia	0.52	0.85	1.13
8	North Carolina	0.74	0.81	0.85
9	South Carolina	0.58	0.82	0.95
10	Georgia	0.64	0.89	1.26
11	Florida	0.49	0.58	0.77
12	Alabama, Tennessee	0.81	0.90	1.09
13	Michigan	0.35	0.52	1.05
14	Ohio	0.57	0.84	0.97
15	Indiana, Kentucky	0.58	0.72	0.91
16	Wisconsin	0.58	0.81	1.06
17	Illinois	0.52	0.78	0.95
18	Missouri	0.62	0.82	0.97
19	Arkansas	0.68	0.93	0.98
20	Mississippi	0.56	0.84	0.99
21	Louisiana	0.14	0.58	0.81
22	Texas	0.55	0.84	1.08
23	Oklahoma	0.82	1.06	1.09
24	Kansas	0.47	0.71	0.85
25	Upper Midwest	0.39	0.78	1.04
26	New Mexico	0.81	0.94	1.02
27	Colorado	0.36	0.91	1.40
28	Arizona	0.36	0.72	0.87
29	Nevada	0.27	0.51	0.60
30	Oregon, Washington	0.38	0.91	1.22
31	Idaho, Utah	0.36	0.85	0.99
32	California	0.39	0.98	1.54
33	Hawaii	0.99	1.11	1.77
34	Alaska	0.86	1.09	1.34
Summary Statistics Describing Differences in Indices across Regions				
Median		0.55	0.84	1.00
Average		0.55	0.85	1.07
SD		0.22	0.17	0.25
Max – Min		1.03	0.76	1.17
Range: 90th – 10th Percentiles		0.47	0.44	0.54

Table C.6: MA-PD Regional Price Indices Relative to National Index – Per Claim Dispensing Fee – NDC Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	1.00	1.00	1.00
0	Territories	2.75	1.52	1.38
1	Northern NE	0.63	1.03	0.99
2	Central NE	0.86	1.13	1.00
3	New York	0.81	1.06	1.03
4	New Jersey	1.39	1.01	0.86
5	Mid Atlantic	1.73	1.58	1.70
6	Penn., W. Virginia	0.88	1.02	0.89
7	Virginia	1.23	1.05	1.13
8	North Carolina	1.74	1.01	0.85
9	South Carolina	1.37	1.02	0.95
10	Georgia	1.51	1.11	1.26
11	Florida	1.14	0.72	0.77
12	Alabama, Tennessee	1.90	1.11	1.09
13	Michigan	0.82	0.64	1.05
14	Ohio	1.34	1.04	0.97
15	Indiana, Kentucky	1.36	0.89	0.91
16	Wisconsin	1.37	1.01	1.06
17	Illinois	1.23	0.97	0.95
18	Missouri	1.45	1.01	0.97
19	Arkansas	1.59	1.15	0.98
20	Mississippi	1.31	1.04	0.99
21	Louisiana	0.34	0.71	0.81
22	Texas	1.29	1.04	1.08
23	Oklahoma	1.92	1.31	1.09
24	Kansas	1.11	0.88	0.85
25	Upper Midwest	0.91	0.96	1.04
26	New Mexico	1.91	1.17	1.02
27	Colorado	0.84	1.13	1.40
28	Arizona	0.85	0.90	0.87
29	Nevada	0.63	0.63	0.60
30	Oregon, Washington	0.91	1.13	1.22
31	Idaho, Utah	0.86	1.05	0.99
32	California	0.93	1.21	1.54
33	Hawaii	2.32	1.38	1.77
34	Alaska	2.03	1.35	1.34
Summary Statistics Describing Differences in Indices across Regions				
Median		1.29	1.04	1.00
Average		1.29	1.06	1.07
SD		0.52	0.21	0.25
Max – Min		2.41	0.95	1.17
Range: 90th – 10th Percentiles		1.10	0.55	0.54

Table C.7: MA-PD Regional Price Index – Per Claim Dispensing Fee – GSN Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	0.32	0.78	1.00
0	Territories	0.87	1.12	1.33
1	Northern NE	0.29	0.76	0.98
2	Central NE	0.21	0.88	1.00
3	New York	0.25	0.82	0.99
4	New Jersey	0.31	0.87	0.98
5	Mid Atlantic	0.69	1.02	2.23
6	Penn., W. Virginia	0.35	0.81	1.00
7	Virginia	0.56	0.83	0.99
8	North Carolina	0.58	0.75	0.87
9	South Carolina	0.61	0.86	0.88
10	Georgia	0.68	0.88	1.04
11	Florida	0.29	0.54	0.76
12	Alabama, Tennessee	0.57	0.89	0.99
13	Michigan	0.32	0.56	1.55
14	Ohio	0.39	0.79	1.00
15	Indiana, Kentucky	0.53	0.66	0.90
16	Wisconsin	0.42	0.76	1.01
17	Illinois	0.50	0.74	0.88
18	Missouri	0.42	0.82	0.98
19	Arkansas	0.56	0.86	0.90
20	Mississippi	0.54	0.76	0.92
21	Louisiana	0.18	0.60	0.79
22	Texas	0.42	0.84	0.99
23	Oklahoma	0.44	0.95	1.17
24	Kansas	0.48	0.71	0.84
25	Upper Midwest	0.30	0.76	1.03
26	New Mexico	0.53	0.87	0.99
27	Colorado	0.30	0.87	1.65
28	Arizona	0.29	0.68	0.82
29	Nevada	0.19	0.56	0.74
30	Oregon, Washington	0.30	0.86	1.05
31	Idaho, Utah	0.23	0.72	1.02
32	California	0.37	0.89	1.65
33	Hawaii	0.91	1.19	2.24
34	Alaska	0.53	0.95	1.43
Summary Statistics Describing Differences in Indices across Regions				
Median		0.42	0.82	0.99
Average		0.44	0.81	1.10
SD		0.18	0.14	0.36
Max – Min		0.73	0.65	1.50
Range: 90th – 10th Percentiles		0.41	0.33	0.78

Table C.8: MA-PD Regional Price Indices Relative to National Index – Per Claim Dispensing Fee – GSN Basket

PDP Region		Regional Price Index		
#	Name	Price Percentiles		
		10 th	25 th	50 th
US	National Index	1.00	1.00	1.00
0	Territories	2.76	1.44	1.33
1	Northern NE	0.92	0.98	0.98
2	Central NE	0.67	1.13	1.00
3	New York	0.80	1.06	0.99
4	New Jersey	0.98	1.12	0.98
5	Mid Atlantic	2.19	1.31	2.23
6	Penn., W. Virginia	1.11	1.04	1.00
7	Virginia	1.77	1.07	0.99
8	North Carolina	1.85	0.96	0.87
9	South Carolina	1.91	1.11	0.88
10	Georgia	2.15	1.13	1.04
11	Florida	0.93	0.70	0.76
12	Alabama, Tennessee	1.82	1.14	0.99
13	Michigan	1.02	0.73	1.55
14	Ohio	1.23	1.02	1.00
15	Indiana, Kentucky	1.66	0.85	0.90
16	Wisconsin	1.34	0.97	1.01
17	Illinois	1.58	0.96	0.88
18	Missouri	1.33	1.06	0.98
19	Arkansas	1.76	1.11	0.90
20	Mississippi	1.69	0.98	0.92
21	Louisiana	0.58	0.77	0.79
22	Texas	1.33	1.09	0.99
23	Oklahoma	1.39	1.23	1.17
24	Kansas	1.53	0.91	0.84
25	Upper Midwest	0.95	0.98	1.03
26	New Mexico	1.67	1.12	0.99
27	Colorado	0.96	1.12	1.65
28	Arizona	0.91	0.87	0.82
29	Nevada	0.60	0.72	0.74
30	Oregon, Washington	0.94	1.11	1.05
31	Idaho, Utah	0.72	0.93	1.02
32	California	1.16	1.15	1.65
33	Hawaii	2.88	1.53	2.24
34	Alaska	1.66	1.22	1.43
Summary Statistics Describing Differences in Indices across Regions				
Median		1.33	1.06	0.99
Average		1.39	1.05	1.10
SD		0.57	0.18	0.36
Max – Min		2.30	0.83	1.50
Range: 90th – 10th Percentiles		1.30	0.42	0.78

APPENDIX D: ADDITIONAL UTILIZATION TABLES

Section 6 presented findings on utilization for all Part D beneficiaries. In this appendix, we provide comparable findings for the PDP and MA-PD populations. In particular, we present findings on utilization, per capita expenditures and per capita expenditures, accounting for differences in health status.

Tables D.1 through D.6 present findings for utilization as measured by claims for the PDP and MA-PD populations overall, as well as for the PDP and MA-PD community and institutional populations. The key results from these breakdowns include:

- Nationally, PDP beneficiaries have more claims than MA-PD beneficiaries, 36 claims per year for PDP (Table D.1) compared to 25 claims per year for MA-PD (Table D.4) at the median.
- For both PDP and MA-PD, there is substantial variation in utilization within regions, as measured by claims.
- Variation in utilization across regions is lower than the variation within regions. The median number of claims ranges from 26 in region 28 (Arizona) to 43 in region 12 (Alabama, Tennessee) for PDP, and from 19 in Region 1 (Northern NE) to 34 in Region 12 (Alabama, Tennessee) for MA-PD.
- For both PDP and MA-PD, the region that exhibits the greatest variation is Alaska, where the most intense users of the Part D program having noticeably higher number of claims, even though Alaska is close to the national level at the median. In Alaska, PDP beneficiaries at the 90th percentile and 99th percentile file 119 claims and 499 claims respectively. This demonstrates that the 99th percentile beneficiary in Alaska files 16 times more claims than the median beneficiary. A similar pattern holds for MA-PD in Alaska, but this represents a very small number of beneficiaries.
- Institutional Part D beneficiaries have a larger number of claims, although the variation across regions is similar to that for community beneficiaries.

The patterns for per capita expenditures for the PDP and MA-PD beneficiaries as seen in Tables D.7 through D.30 can be summarized as:

- PDP beneficiaries have higher per capita expenditures than the Part D population as a whole, \$1,806 for median expenditures on ingredient costs (Table D.7) compared to \$1,553 for all Part D beneficiaries (Table 5.1). MA-PD beneficiaries have lower costs, \$1062 for the median per capita expenditures on ingredient costs (Table D.19). The inclusion of dispensing fees raises these expenditures by \$69 for MA-PD (Table D.25) and \$91 for PDP (Table D.13) annually.

- When examining community PDP beneficiaries, we see similar levels of regional variation in expenditures for both ingredient costs and dispensing fees compared to regional variation in expenditures on ingredient costs only. At the median for community beneficiaries, prices range from 25 percent below to 25 percent above the national median on both ingredient costs and dispensing fees, compared to 25 percent below to 27 percent above the national median when considering expenditures on ingredient costs only. As seen elsewhere, this is consistent with substantial variation in dispensing fees across PDP regions for community beneficiaries. This is less true for MA-PD expenditures.
- For PDP, community beneficiaries from New York, New Jersey and Alaska exhibit high levels of utilization, as measured by expenditures on ingredient costs and dispensing fees. New York beneficiaries show higher expenditures particularly near the median and lower percentiles, while Alaska beneficiaries spend more at the higher end of the distribution. For MA-PD, community beneficiaries in New Jersey and Louisiana exhibit high levels of utilization, as measured by expenditures on ingredient costs and fees. For all MA-PD beneficiaries, the median beneficiary in New Jersey and Louisiana spends 43 and 39 percent more than the national median beneficiary on ingredient costs (Table D.20).
- Institutional PDP beneficiaries in Alaska stand out as having high expenditures on ingredient cost plus dispensing fee with the median beneficiary in Alaska spending 31 percent more than the national median (Table D.18). For MA-PD institutional, Alaska, Indiana and Kentucky, and South Carolina exhibit the highest levels of utilization (Table D.30). The median beneficiary in Alaska spends 36 percent more than the national median, the median beneficiary in Indiana and Kentucky spends 41 percent more, and in South Carolina's median beneficiary spends 42 percent more. There are very few MA-PD institutional beneficiaries in Alaska.

Finally, we repeated the assessment of per capita expenditures adjusted for health status for the PDP population. Information on health status was not available for the MA-PD population. Tables D.31 through D.34 can be summarized as showing:

- For community PDP beneficiaries, the compositional adjustment eliminates almost one-half of the deviation in average expenditures and about one-fourth of the deviation in median expenditures, in large part increasing the value for the Territories and by reducing the extreme for Alaska and New York. Recognizing the exclusion of Alaska and the territories, the compositional adjustments only reduces the regional variation in expenditures by about one-eighth.
- Even after controlling for risk factors, there is substantial variation across regions in expenditures on ingredient costs. The range in spending varies from 24 percent below the national median (territories) to 16 percent above (Alaska) for community beneficiaries, and 26 percent below in Arizona to 21 percent above in Louisiana for institutional beneficiaries (Table D.32).

Table D.1: All PDP Beneficiaries: Claims Distribution

PDP Region		Total Annual Claims	% Beneficiaries with Claims	Attributes of Distribution of Claims Per Capita						
#	Name			Average	SD	Percentiles of Claims				
						10 th	50 th	75 th	90 th	99 th
US	National	654,173,568	91.2%	45	38	8	36	62	95	172
0	Territories	1,520,043	79.5%	33	27	5	27	45	66	123
1	Northern NE	8,074,737	91.3%	41	36	7	32	57	87	161
2	Central NE	28,206,978	92.1%	43	38	7	34	60	91	168
3	New York	36,512,444	89.1%	45	40	6	33	63	99	177
4	New Jersey	20,207,780	92.3%	42	37	7	32	57	90	169
5	Mid Atlantic	11,236,103	90.6%	38	34	6	28	51	82	159
6	Penn., W. Virginia	33,778,732	91.7%	48	40	8	39	67	101	180
7	Virginia	15,861,288	92.3%	44	36	8	35	61	92	168
8	North Carolina	26,917,232	93.7%	49	38	9	41	68	100	174
9	South Carolina	11,840,412	92.7%	46	35	9	39	64	93	160
10	Georgia	21,600,744	91.7%	48	39	9	39	66	96	169
11	Florida	36,487,912	91.6%	43	37	8	33	58	91	170
12	Alabama, Tennessee	34,897,448	92.9%	52	40	10	43	71	104	180
13	Michigan	20,297,826	91.4%	45	38	7	34	61	96	176
14	Ohio	25,667,170	91.3%	50	44	8	39	69	107	199
15	Indiana, Kentucky	33,875,616	92.7%	50	41	9	41	69	104	187
16	Wisconsin	12,083,840	91.9%	48	41	8	37	66	103	187
17	Illinois	32,127,848	90.4%	44	37	8	35	62	93	166
18	Missouri	18,758,532	92.2%	51	42	8	40	71	108	191
19	Arkansas	10,154,797	91.6%	46	35	9	39	65	94	160
20	Mississippi	10,896,542	92.5%	47	35	9	40	65	93	157
21	Louisiana	12,180,665	91.8%	51	39	9	43	71	103	175
22	Texas	39,565,860	91.2%	41	33	7	34	57	85	155
23	Oklahoma	9,221,398	91.6%	45	36	8	37	63	93	165
24	Kansas	9,035,506	93.2%	46	38	8	36	63	96	175
25	Upper Midwest	36,959,048	91.3%	43	37	7	34	60	92	169
26	New Mexico	3,159,899	86.0%	39	33	5	30	54	83	149
27	Colorado	5,518,690	89.1%	41	36	6	31	57	88	166
28	Arizona	5,571,640	86.6%	35	31	5	26	47	75	143
29	Nevada	2,518,085	86.1%	39	34	6	30	53	83	157
30	Oregon, Washington	16,883,016	89.9%	43	37	6	33	59	92	171
31	Idaho, Utah	5,945,820	90.3%	43	38	7	33	59	91	174
32	California	54,362,096	89.4%	42	36	6	32	58	89	162
33	Hawaii	1,176,788	85.7%	41	34	5	33	58	87	151
34	Alaska	1,071,021	86.1%	58	90	5	32	64	119	499
Summary Statistics Describing Differences in Attributes of the Distribution of Claims Per Capita across Regions										
Median		15,861,288	91.4%	44	37	7	34	61	93	169
Average		18,690,673	90.4%	45	38	7	35	61	93	177
SD		13,666,021	2.9%	5	10	1	4	6	10	58
Max - Min		53,291,075	14.1%	26	63	5	17	26	53	376
Range: 90th – 10th Percentiles		33,727,821	6.5%	12	7	4	11	16	21	34

Table D.2: Community PDP Beneficiaries: Claims Distribution

PDP Region		Total Annual Claims	% Beneficiaries with Claims	Attributes of Distribution of Claims Per Capita						
#	Name			Average	SD	Percentiles of Claims				
						10 th	50 th	75 th	90 th	99 th
US	National	577,052,352	91.4%	44	36	8	35	60	91	163
0	Territories	1,430,613	80.5%	33	26	5	28	46	66	118
1	Northern NE	7,273,580	91.7%	41	34	7	32	56	84	152
2	Central NE	24,551,116	92.4%	42	36	8	33	57	87	159
3	New York	30,033,136	89.2%	47	39	7	37	66	100	176
4	New Jersey	17,787,664	92.4%	40	35	7	31	55	85	160
5	Mid Atlantic	9,864,180	90.8%	37	32	7	28	50	77	147
6	Penn., W. Virginia	28,995,930	91.9%	46	37	8	38	65	95	165
7	Virginia	14,083,506	92.6%	43	34	8	35	59	88	156
8	North Carolina	24,592,106	93.9%	49	37	10	41	67	98	169
9	South Carolina	10,784,452	93.0%	46	34	9	39	63	91	153
10	Georgia	19,485,704	92.0%	47	37	9	39	65	94	162
11	Florida	32,623,988	91.9%	42	35	8	33	57	87	161
12	Alabama, Tennessee	31,236,476	93.0%	50	38	10	42	69	100	172
13	Michigan	17,965,858	91.7%	43	37	7	34	59	91	168
14	Ohio	21,117,480	91.5%	47	40	8	38	65	98	182
15	Indiana, Kentucky	29,556,418	92.9%	48	38	9	40	67	98	174
16	Wisconsin	10,117,943	92.1%	45	38	8	36	63	96	174
17	Illinois	28,215,634	90.6%	43	35	8	34	60	89	158
18	Missouri	16,429,223	92.3%	49	40	8	39	68	103	185
19	Arkansas	9,034,820	91.8%	45	33	9	39	63	90	151
20	Mississippi	9,801,980	92.7%	46	33	9	40	63	90	147
21	Louisiana	10,499,207	91.9%	50	37	9	42	69	98	167
22	Texas	34,465,352	91.4%	40	31	7	33	55	81	142
23	Oklahoma	8,102,808	91.8%	44	34	8	36	60	89	154
24	Kansas	7,859,924	93.3%	44	35	8	36	60	90	164
25	Upper Midwest	32,791,636	91.4%	42	35	7	33	58	87	158
26	New Mexico	2,866,175	86.4%	38	32	5	30	53	81	144
27	Colorado	4,879,169	89.3%	40	34	6	31	55	85	157
28	Arizona	5,219,380	87.3%	35	30	6	26	47	74	140
29	Nevada	2,292,275	86.7%	38	33	6	30	53	81	151
30	Oregon, Washington	15,638,377	90.2%	42	36	7	33	59	91	168
31	Idaho, Utah	5,417,918	90.6%	42	36	7	33	58	88	165
32	California	49,952,608	89.7%	41	35	6	32	57	86	158
33	Hawaii	1,071,158	86.1%	41	34	6	33	58	86	150
34	Alaska	1,014,551	87.1%	58	90	5	32	64	117	504
Summary Statistics Describing Differences in Attributes of the Distribution of Claims Per Capita across Regions										
Median		14,083,506	91.7%	43	35	8	34	59	89	159
Average		16,487,210	90.7%	44	37	7	35	60	90	169
SD		12,083,594	2.7%	5	10	1	4	6	9	60
Max - Min		48,938,057	13.4%	25	64	5	16	23	51	386
Range: 90th – 10th Percentiles		29,547,148	6.0%	11	7	3	10	14	18	30

Table D.3: Institutional PDP Beneficiaries: Claims Distribution

PDP Region		Total Annual Claims	% Beneficiaries with Claims	Attributes of Distribution of Claims Per Capita						
#	Name			Average	SD	Percentiles of Claims				
						10 th	50 th	75 th	90 th	99 th
US	National	46,761,512	98.3%	83	52	24	76	112	151	237
0	Territories	33,479	96.8%	79	54	23	70	106	148	241
1	Northern NE	488,913	98.0%	78	51	20	69	106	146	227
2	Central NE	2,321,139	98.6%	78	48	22	71	105	142	222
3	New York	3,078,581	96.8%	74	49	20	65	99	136	226
4	New Jersey	1,458,757	98.8%	79	50	22	71	106	144	236
5	Mid Atlantic	839,100	98.8%	82	53	23	74	110	151	247
6	Penn., W. Virginia	3,191,158	98.6%	89	55	25	81	121	163	254
7	Virginia	1,119,433	98.9%	86	54	25	77	115	156	251
8	North Carolina	1,359,959	98.8%	81	49	23	74	111	148	223
9	South Carolina	623,241	98.7%	77	47	21	71	106	142	212
10	Georgia	1,283,184	98.1%	81	53	23	74	108	146	236
11	Florida	2,266,481	97.9%	83	52	24	75	112	152	242
12	Alabama, Tennessee	2,268,039	99.1%	88	53	27	81	118	157	246
13	Michigan	1,477,203	98.3%	83	51	24	76	114	152	230
14	Ohio	2,982,863	99.0%	96	57	29	89	129	172	259
15	Indiana, Kentucky	2,672,414	99.0%	96	57	29	87	128	171	268
16	Wisconsin	1,283,668	96.7%	89	55	25	82	120	163	251
17	Illinois	2,544,707	98.5%	79	48	23	73	107	143	224
18	Missouri	1,507,834	98.6%	87	51	25	81	118	155	233
19	Arkansas	686,812	97.8%	81	47	24	75	109	145	215
20	Mississippi	676,066	97.0%	85	50	26	78	114	151	229
21	Louisiana	1,039,765	98.7%	85	48	26	79	114	150	219
22	Texas	2,994,238	98.7%	81	47	24	75	110	145	215
23	Oklahoma	662,466	98.8%	85	49	25	79	115	150	228
24	Kansas	780,518	98.3%	87	52	26	80	118	156	238
25	Upper Midwest	2,731,739	98.1%	85	52	24	78	115	154	239
26	New Mexico	178,473	96.4%	70	44	19	63	97	129	193
27	Colorado	389,589	98.1%	80	51	21	71	109	147	229
28	Arizona	138,539	97.5%	70	46	18	62	96	131	206
29	Nevada	116,497	97.9%	78	53	18	70	105	148	249
30	Oregon, Washington	672,392	97.8%	78	51	19	69	107	146	232
31	Idaho, Utah	305,573	96.2%	87	57	22	78	119	162	250
32	California	2,486,416	97.9%	75	47	20	67	101	137	216
33	Hawaii	70,789	98.1%	59	38	14	55	81	110	169
34	Alaska	31,489	96.5%	105	98	25	76	128	210	515
Summary Statistics Describing Differences in Attributes of the Distribution of Claims Per Capita across Regions										
Median		1,119,433	98.1%	81	51	23	75	110	148	232
Average		1,336,043	98.1%	82	52	23	74	111	150	239
SD		1,030,683	0.8%	8	9	3	7	10	16	52
Max - Min		3,159,669	2.8%	46	61	15	34	48	100	346
Range: 90th – 10th Percentiles		2,757,100	2.1%	15	9	7	15	21	27	40

Table D.4: All MA-PD Beneficiaries: Claims Distribution

PDP Region		Total Annual Claims	% Positive Claims Beneficiaries	Attributes of Distribution of Claims Per Capita						
#	Name			Average	SD	Percentiles of Claims				
						10 th	50 th	75 th	90 th	99 th
US	National	182,571,200	91.8%	33	29	5	25	46	71	130
0	Territories	10,956,722	91.9%	35	28	5	29	50	73	124
1	Northern NE	100,307	86.3%	26	26	3	19	36	58	122
2	Central NE	7,155,479	95.0%	34	29	6	26	46	71	137
3	New York	11,318,764	90.8%	31	27	5	23	42	65	124
4	New Jersey	2,221,124	90.6%	29	25	4	22	39	61	118
5	Mid Atlantic	1,012,289	91.2%	34	33	5	25	45	75	161
6	Penn., W. Virginia	16,766,357	92.7%	37	32	5	28	51	80	147
7	Virginia	1,745,176	90.7%	34	28	5	27	47	70	126
8	North Carolina	4,039,128	91.5%	37	29	6	30	52	75	135
9	South Carolina	1,330,875	87.6%	34	28	5	28	48	72	125
10	Georgia	2,069,010	87.8%	34	30	5	26	47	72	139
11	Florida	24,491,960	92.7%	37	29	6	31	53	76	126
12	Alabama, Tennessee	8,560,848	92.7%	41	32	7	34	57	84	146
13	Michigan	2,559,925	92.3%	27	24	4	20	36	57	112
14	Ohio	7,379,287	93.0%	33	28	5	26	46	69	130
15	Indiana, Kentucky	2,435,262	91.4%	38	32	5	29	52	80	150
16	Wisconsin	2,512,559	88.4%	33	31	4	25	46	72	148
17	Illinois	2,744,722	88.5%	34	28	5	28	49	73	126
18	Missouri	3,629,511	90.7%	33	27	5	27	47	70	122
19	Arkansas	799,579	85.8%	32	28	4	26	46	70	124
20	Mississippi	387,347	90.4%	36	27	6	30	50	72	122
21	Louisiana	2,912,015	93.2%	35	27	7	29	49	72	124
22	Texas	9,031,579	89.8%	32	26	5	26	45	67	118
23	Oklahoma	1,484,819	91.9%	35	28	5	28	49	72	128
24	Kansas	650,024	90.4%	33	28	5	25	46	70	128
25	Upper Midwest	6,818,366	90.4%	37	35	5	27	52	84	159
26	New Mexico	1,296,968	89.2%	30	26	4	23	42	65	117
27	Colorado	3,215,647	91.6%	29	26	5	22	39	63	125
28	Arizona	7,451,824	90.8%	34	31	5	25	46	73	144
29	Nevada	2,293,779	88.2%	30	25	4	23	41	63	115
30	Oregon, Washington	6,577,817	92.6%	34	31	5	25	46	74	146
31	Idaho, Utah	1,605,303	89.3%	31	28	4	24	43	67	127
32	California	23,818,030	92.9%	26	23	4	20	35	55	109
33	Hawaii	1,194,423	90.0%	29	24	4	22	40	61	111
34	Alaska	4,378	83.7%	31	35	2	20	41	90	176
Summary Statistics Describing Differences in Attributes of the Distribution of Claims Per Capita across Regions										
Median		2,559,925	90.7%	34	28	5	26	46	72	126
Average		5,216,320	90.5%	33	29	5	26	46	71	131
SD		6,072,957	2.3%	3	3	1	3	5	8	15
Max - Min		24,487,582	11.3%	15	12	5	15	22	35	67
Range: 90th – 10th Percentiles		10,464,101	5.1%	9	7	2	9	13	19	33

Table D.5: Community MA-PD Beneficiaries: Claims Distribution

PDP Region		Total Annual Claims	% Positive Claims Beneficiaries	Attributes of Distribution of Claims Per Capita						
#	Name			Average	SD	Percentiles of Claims				
						10 th	50 th	75 th	90 th	99 th
US	National	159,823,792	92.2%	33	28	5	26	46	70	127
0	Territories	9,713,712	92.4%	36	28	5	30	51	75	125
1	Northern NE	71,369	86.9%	27	25	4	20	37	60	119
2	Central NE	5,957,515	95.3%	33	27	6	26	45	68	121
3	New York	9,630,560	91.0%	30	26	5	24	42	64	119
4	New Jersey	1,980,807	91.2%	29	25	5	23	40	62	116
5	Mid Atlantic	693,165	92.5%	30	26	5	24	41	63	117
6	Penn., W. Virginia	14,905,900	92.9%	37	32	6	29	52	80	144
7	Virginia	1,454,068	91.0%	34	28	6	28	48	71	126
8	North Carolina	3,458,701	91.8%	37	29	6	31	52	75	131
9	South Carolina	1,093,468	90.0%	36	28	5	30	51	74	126
10	Georgia	1,565,676	89.2%	34	28	5	27	47	70	127
11	Florida	22,205,524	93.3%	38	29	7	32	54	77	126
12	Alabama, Tennessee	7,491,155	92.9%	42	33	7	35	59	85	147
13	Michigan	2,065,034	92.9%	28	24	5	22	37	58	110
14	Ohio	6,450,678	93.5%	33	27	5	26	46	68	121
15	Indiana, Kentucky	2,033,291	91.9%	39	33	6	31	54	82	151
16	Wisconsin	2,072,634	88.7%	34	30	5	26	47	72	142
17	Illinois	2,431,345	88.9%	35	28	5	29	50	73	124
18	Missouri	3,260,125	91.4%	34	27	5	28	48	71	121
19	Arkansas	625,291	88.2%	34	28	4	27	48	72	126
20	Mississippi	323,061	90.5%	36	28	6	31	52	73	123
21	Louisiana	2,565,918	93.6%	36	27	7	30	50	73	124
22	Texas	7,912,080	90.7%	33	26	5	27	46	68	118
23	Oklahoma	1,300,552	92.4%	35	28	6	29	49	72	126
24	Kansas	558,363	90.8%	33	28	5	26	47	70	128
25	Upper Midwest	5,203,055	90.5%	36	32	5	27	50	78	146
26	New Mexico	1,142,320	89.5%	30	26	4	24	43	65	114
27	Colorado	2,797,742	91.9%	29	25	5	22	39	61	117
28	Arizona	6,605,498	91.0%	33	30	5	25	46	72	139
29	Nevada	2,143,496	88.7%	30	25	5	23	41	63	113
30	Oregon, Washington	5,805,611	93.3%	34	30	5	26	47	74	143
31	Idaho, Utah	1,358,144	89.9%	32	28	4	25	44	68	127
32	California	21,828,350	93.3%	26	23	5	20	35	55	106
33	Hawaii	1,116,347	90.3%	29	24	4	23	40	61	110
34	Alaska	3,242	83.9%	34	37	2	24	44	91	184
Summary Statistics Describing Differences in Attributes of the Distribution of Claims Per Capita across Regions										
Median		2,143,496	91.0%	34	28	5	26	47	71	125
Average		4,566,394	91.0%	33	28	5	27	46	70	127
SD		5,494,736	2.2%	4	3	1	4	5	8	15
Max - Min		22,202,282	11.4%	16	14	5	15	24	36	78
Range: 90th – 10th Percentiles		9,095,317	4.6%	9	7	2	9	13	18	32

Table D.6: Institutional MA-PD Beneficiaries: Claims Distribution

PDP Region		Total Annual Claims	% Positive Claims Beneficiaries	Attributes of Distribution of Claims Per Capita						
#	Name			Average	SD	Percentiles of Claims				
						10 th	50 th	75 th	90 th	99 th
US	National	4,347,012	98.4%	76	50	19	68	105	144	228
0	Territories	6,084	98.9%	70	47	12	62	107	138	195
1	Northern NE	6,055	96.6%	71	48	20	66	95	126	275
2	Central NE	616,891	99.0%	78	48	21	71	106	143	219
3	New York	395,345	97.5%	68	45	16	60	93	128	203
4	New Jersey	29,111	97.3%	75	48	17	67	102	139	223
5	Mid Atlantic	210,812	98.4%	79	54	19	70	109	151	246
6	Penn., W. Virginia	342,379	99.0%	89	57	24	80	119	167	265
7	Virginia	10,510	97.0%	81	53	17	72	104	158	252
8	North Carolina	78,639	98.5%	78	50	24	70	108	146	234
9	South Carolina	3,146	94.7%	87	46	36	80	119	157	206
10	Georgia	149,980	98.8%	81	52	20	74	112	152	230
11	Florida	160,179	98.4%	81	53	21	73	110	150	239
12	Alabama, Tennessee	62,205	98.0%	83	48	25	76	112	147	216
13	Michigan	32,452	99.1%	71	47	15	64	100	135	200
14	Ohio	231,653	98.9%	91	56	25	84	123	164	260
15	Indiana, Kentucky	11,560	97.0%	90	65	17	73	127	195	257
16	Wisconsin	78,057	97.9%	89	55	24	84	121	166	245
17	Illinois	35,215	98.4%	73	48	18	65	99	140	225
18	Missouri	26,791	97.7%	69	45	12	67	98	128	192
19	Arkansas	2,192	100.0%	76	42	20	69	103	133	188
20	Mississippi	259	100.0%	65	31	18	79	83	83	83
21	Louisiana	15,396	98.2%	72	41	23	66	99	125	184
22	Texas	51,818	97.2%	68	44	17	62	92	127	210
23	Oklahoma	17,408	99.1%	83	55	20	72	114	152	260
24	Kansas	8,183	97.0%	63	45	15	56	89	124	172
25	Upper Midwest	844,832	99.0%	78	49	20	71	106	144	218
26	New Mexico	17,486	95.7%	65	41	16	61	90	119	175
27	Colorado	151,789	97.9%	68	49	13	59	95	135	214
28	Arizona	202,996	98.3%	74	50	17	65	102	142	222
29	Nevada	32,336	93.1%	78	55	16	67	107	155	257
30	Oregon, Washington	145,552	98.4%	77	51	18	68	107	146	230
31	Idaho, Utah	6,619	96.0%	69	48	16	61	96	130	257
32	California	338,558	98.2%	67	47	15	60	93	130	210
33	Hawaii	24,135	97.3%	52	34	11	49	72	96	151
34	Alaska	389	80.0%	97	53	54	82	134	172	172
Summary Statistics Describing Differences in Attributes of the Distribution of Claims Per Capita across Regions										
Median		32,452	98.2%	76	48	18	68	104	142	219
Average		124,200	97.3%	76	49	20	69	104	141	217
SD		187,854	3.3%	9	6	8	8	13	21	38
Max - Min		844,573	20.0%	45	34	43	35	62	112	192
Range: 90th – 10th Percentiles		336,541	3.2%	23	14	11	20	29	41	86

Table D.7: All PDP Beneficiaries: Ingredient Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$41,807,679,488	91.2%	\$2,877	\$4,155	\$204	\$1,806	\$3,467	\$6,397	\$18,809
0	Territories	\$86,617,824	79.5%	\$1,858	\$2,574	\$131	\$1,296	\$2,457	\$3,759	\$10,834
1	Northern NE	\$499,236,256	91.3%	\$2,561	\$3,729	\$170	\$1,561	\$3,094	\$5,747	\$16,968
2	Central NE	\$1,958,852,096	92.1%	\$3,013	\$4,353	\$191	\$1,808	\$3,636	\$6,877	\$20,168
3	New York	\$2,815,266,304	89.1%	\$3,452	\$5,117	\$233	\$2,013	\$4,201	\$7,984	\$22,825
4	New Jersey	\$1,619,011,200	92.3%	\$3,342	\$4,594	\$288	\$2,166	\$4,102	\$7,329	\$20,832
5	Mid Atlantic	\$841,442,688	90.6%	\$2,855	\$4,044	\$217	\$1,804	\$3,343	\$6,227	\$19,602
6	Penn., W. Virginia	\$1,995,309,440	91.7%	\$2,863	\$3,807	\$227	\$1,885	\$3,580	\$6,317	\$17,303
7	Virginia	\$954,930,048	92.3%	\$2,665	\$3,693	\$206	\$1,729	\$3,229	\$5,862	\$16,851
8	North Carolina	\$1,634,360,320	93.7%	\$2,997	\$4,110	\$253	\$1,950	\$3,641	\$6,657	\$18,422
9	South Carolina	\$720,781,632	92.7%	\$2,821	\$3,795	\$243	\$1,892	\$3,452	\$6,081	\$17,243
10	Georgia	\$1,236,472,960	91.7%	\$2,727	\$3,741	\$220	\$1,808	\$3,341	\$5,907	\$16,950
11	Florida	\$2,551,063,296	91.6%	\$2,995	\$4,445	\$254	\$1,935	\$3,473	\$6,417	\$20,388
12	Alabama, Tennessee	\$1,896,034,816	92.9%	\$2,798	\$3,744	\$230	\$1,843	\$3,446	\$6,166	\$17,089
13	Michigan	\$1,327,225,344	91.4%	\$2,920	\$4,198	\$184	\$1,753	\$3,477	\$6,731	\$19,585
14	Ohio	\$1,575,825,664	91.3%	\$3,096	\$4,251	\$219	\$1,932	\$3,746	\$7,122	\$19,574
15	Indiana, Kentucky	\$1,928,773,248	92.7%	\$2,867	\$3,734	\$235	\$1,895	\$3,494	\$6,364	\$17,634
16	Wisconsin	\$747,852,480	91.9%	\$2,952	\$4,289	\$189	\$1,702	\$3,494	\$6,903	\$20,305
17	Illinois	\$1,933,027,200	90.4%	\$2,670	\$3,728	\$211	\$1,757	\$3,266	\$5,753	\$16,790
18	Missouri	\$1,080,058,880	92.2%	\$2,927	\$4,165	\$196	\$1,778	\$3,497	\$6,697	\$19,239
19	Arkansas	\$541,447,744	91.6%	\$2,478	\$3,396	\$184	\$1,635	\$3,036	\$5,411	\$15,400
20	Mississippi	\$603,907,136	92.5%	\$2,601	\$3,436	\$220	\$1,772	\$3,233	\$5,587	\$15,403
21	Louisiana	\$723,370,880	91.8%	\$3,037	\$4,137	\$243	\$2,012	\$3,784	\$6,721	\$18,215
22	Texas	\$2,667,501,056	91.2%	\$2,794	\$3,807	\$225	\$1,865	\$3,440	\$6,082	\$17,030
23	Oklahoma	\$573,056,320	91.6%	\$2,802	\$3,787	\$210	\$1,837	\$3,440	\$6,203	\$17,361
24	Kansas	\$505,282,688	93.2%	\$2,564	\$3,583	\$192	\$1,622	\$3,053	\$5,634	\$16,736
25	Upper Midwest	\$2,075,671,296	91.3%	\$2,433	\$3,719	\$145	\$1,443	\$2,873	\$5,441	\$17,115
26	New Mexico	\$187,477,328	86.0%	\$2,291	\$3,581	\$107	\$1,380	\$2,836	\$5,143	\$15,569
27	Colorado	\$364,275,520	89.1%	\$2,714	\$4,476	\$155	\$1,594	\$3,183	\$6,027	\$19,448
28	Arizona	\$351,115,392	86.6%	\$2,184	\$3,315	\$129	\$1,411	\$2,663	\$4,586	\$14,400
29	Nevada	\$170,312,160	86.1%	\$2,622	\$4,364	\$152	\$1,596	\$3,052	\$5,614	\$19,155
30	Oregon, Washington	\$1,009,830,720	89.9%	\$2,565	\$4,004	\$143	\$1,498	\$2,992	\$5,753	\$18,532
31	Idaho, Utah	\$365,815,200	90.3%	\$2,644	\$3,880	\$151	\$1,580	\$3,083	\$5,952	\$18,577
32	California	\$4,113,335,808	89.4%	\$3,149	\$5,034	\$184	\$1,895	\$3,794	\$6,987	\$21,447
33	Hawaii	\$85,807,728	85.7%	\$3,004	\$4,536	\$128	\$1,660	\$3,631	\$7,061	\$21,603
34	Alaska	\$67,329,968	86.1%	\$3,667	\$5,369	\$142	\$1,949	\$4,328	\$9,123	\$25,587
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$954,930,048	91.4%	\$2,802	\$3,880	\$196	\$1,778	\$3,440	\$6,166	\$18,215
Average		\$1,194,505,104	90.4%	\$2,798	\$4,015	\$194	\$1,750	\$3,383	\$6,235	\$18,291
SD		\$941,621,370	2.9%	\$345	\$542	\$44	\$199	\$404	\$940	\$2,625
Max - Min		\$4,046,005,840	14.1%	\$1,809	\$2,795	\$181	\$870	\$1,871	\$5,364	\$14,753
Range: 90th – 10th Percentiles		\$2,182,011,752	6.5%	\$673	\$1,062	\$107	\$479	\$858	\$1,671	\$5,715

**Table D.8: All PDP Beneficiaries: Comparison of Ingredient Cost Distributions
Regional Statistics Measured Relative to National Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	91.2%	\$2,877	\$204	\$1,806	\$3,467	\$6,397	\$18,809
0	Territories	0.87	0.65	0.64	0.72	0.71	0.59	0.58
1	Northern NE	1.00	0.89	0.83	0.86	0.89	0.90	0.90
2	Central NE	1.01	1.05	0.94	1.00	1.05	1.08	1.07
3	New York	0.98	1.20	1.14	1.11	1.21	1.25	1.21
4	New Jersey	1.01	1.16	1.41	1.20	1.18	1.15	1.11
5	Mid Atlantic	0.99	0.99	1.06	1.00	0.96	0.97	1.04
6	Penn., W. Virginia	1.01	1.00	1.11	1.04	1.03	0.99	0.92
7	Virginia	1.01	0.93	1.01	0.96	0.93	0.92	0.90
8	North Carolina	1.03	1.04	1.24	1.08	1.05	1.04	0.98
9	South Carolina	1.02	0.98	1.19	1.05	1.00	0.95	0.92
10	Georgia	1.01	0.95	1.08	1.00	0.96	0.92	0.90
11	Florida	1.00	1.04	1.25	1.07	1.00	1.00	1.08
12	Alabama, Tennessee	1.02	0.97	1.13	1.02	0.99	0.96	0.91
13	Michigan	1.00	1.02	0.90	0.97	1.00	1.05	1.04
14	Ohio	1.00	1.08	1.07	1.07	1.08	1.11	1.04
15	Indiana, Kentucky	1.02	1.00	1.15	1.05	1.01	0.99	0.94
16	Wisconsin	1.01	1.03	0.93	0.94	1.01	1.08	1.08
17	Illinois	0.99	0.93	1.04	0.97	0.94	0.90	0.89
18	Missouri	1.01	1.02	0.96	0.98	1.01	1.05	1.02
19	Arkansas	1.00	0.86	0.90	0.91	0.88	0.85	0.82
20	Mississippi	1.01	0.90	1.08	0.98	0.93	0.87	0.82
21	Louisiana	1.01	1.06	1.19	1.11	1.09	1.05	0.97
22	Texas	1.00	0.97	1.10	1.03	0.99	0.95	0.91
23	Oklahoma	1.00	0.97	1.03	1.02	0.99	0.97	0.92
24	Kansas	1.02	0.89	0.94	0.90	0.88	0.88	0.89
25	Upper Midwest	1.00	0.85	0.71	0.80	0.83	0.85	0.91
26	New Mexico	0.94	0.80	0.52	0.76	0.82	0.80	0.83
27	Colorado	0.98	0.94	0.76	0.88	0.92	0.94	1.03
28	Arizona	0.95	0.76	0.63	0.78	0.77	0.72	0.77
29	Nevada	0.94	0.91	0.75	0.88	0.88	0.88	1.02
30	Oregon, Washington	0.99	0.89	0.70	0.83	0.86	0.90	0.99
31	Idaho, Utah	0.99	0.92	0.74	0.87	0.89	0.93	0.99
32	California	0.98	1.09	0.90	1.05	1.09	1.09	1.14
33	Hawaii	0.94	1.04	0.63	0.92	1.05	1.10	1.15
34	Alaska	0.94	1.27	0.69	1.08	1.25	1.43	1.36
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	0.97	0.96	0.98	0.99	0.96	0.97
Average		0.99	0.97	0.95	0.97	0.98	0.97	0.97
SD		0.03	0.12	0.21	0.11	0.12	0.15	0.14
Max - Min		0.15	0.63	0.89	0.48	0.54	0.84	0.78
Range: 90th – 10th Percentiles		0.07	0.24	0.53	0.27	0.25	0.26	0.30

Table D.9: Community PDP Beneficiaries: Ingredient Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$37,433,511,936	91.4%	\$2,841	\$4,180	\$204	\$1,791	\$3,381	\$6,224	\$18,973
0	Territories	\$81,448,432	80.5%	\$1,871	\$2,568	\$142	\$1,337	\$2,470	\$3,724	\$10,602
1	Northern NE	\$455,625,184	91.7%	\$2,542	\$3,756	\$173	\$1,558	\$3,043	\$5,629	\$17,065
2	Central NE	\$1,738,512,512	92.4%	\$2,961	\$4,361	\$190	\$1,774	\$3,517	\$6,680	\$20,266
3	New York	\$2,421,316,352	89.2%	\$3,792	\$5,505	\$250	\$2,270	\$4,655	\$8,714	\$24,276
4	New Jersey	\$1,465,213,440	92.4%	\$3,321	\$4,623	\$292	\$2,156	\$4,035	\$7,220	\$21,005
5	Mid Atlantic	\$761,963,328	90.8%	\$2,829	\$4,063	\$220	\$1,795	\$3,272	\$6,082	\$19,754
6	Penn., W. Virginia	\$1,738,078,976	91.9%	\$2,778	\$3,767	\$224	\$1,840	\$3,434	\$6,023	\$17,190
7	Virginia	\$858,006,656	92.6%	\$2,616	\$3,681	\$207	\$1,709	\$3,145	\$5,655	\$16,843
8	North Carolina	\$1,496,275,456	93.9%	\$2,963	\$4,104	\$256	\$1,935	\$3,562	\$6,500	\$18,547
9	South Carolina	\$663,911,616	93.0%	\$2,815	\$3,828	\$250	\$1,893	\$3,410	\$5,996	\$17,466
10	Georgia	\$1,122,756,992	92.0%	\$2,695	\$3,760	\$224	\$1,797	\$3,269	\$5,738	\$17,079
11	Florida	\$2,328,985,600	91.9%	\$2,974	\$4,494	\$259	\$1,924	\$3,400	\$6,274	\$20,731
12	Alabama, Tennessee	\$1,706,757,248	93.0%	\$2,750	\$3,748	\$229	\$1,817	\$3,348	\$5,961	\$17,204
13	Michigan	\$1,204,084,224	91.7%	\$2,896	\$4,245	\$183	\$1,728	\$3,385	\$6,646	\$19,841
14	Ohio	\$1,326,712,704	91.5%	\$2,976	\$4,233	\$213	\$1,858	\$3,508	\$6,708	\$19,556
15	Indiana, Kentucky	\$1,698,929,152	92.9%	\$2,786	\$3,692	\$233	\$1,856	\$3,355	\$6,054	\$17,603
16	Wisconsin	\$647,742,848	92.1%	\$2,906	\$4,344	\$186	\$1,664	\$3,352	\$6,714	\$20,718
17	Illinois	\$1,700,934,144	90.6%	\$2,586	\$3,685	\$212	\$1,723	\$3,141	\$5,432	\$16,585
18	Missouri	\$955,062,272	92.3%	\$2,864	\$4,165	\$195	\$1,738	\$3,353	\$6,474	\$19,357
19	Arkansas	\$481,494,112	91.8%	\$2,411	\$3,374	\$183	\$1,605	\$2,935	\$5,150	\$15,368
20	Mississippi	\$543,361,536	92.7%	\$2,540	\$3,409	\$221	\$1,746	\$3,136	\$5,341	\$15,375
21	Louisiana	\$620,366,656	91.9%	\$2,926	\$4,125	\$240	\$1,954	\$3,582	\$6,310	\$18,212
22	Texas	\$2,351,406,080	91.4%	\$2,711	\$3,780	\$225	\$1,828	\$3,304	\$5,753	\$16,959
23	Oklahoma	\$509,515,968	91.8%	\$2,738	\$3,759	\$210	\$1,808	\$3,334	\$5,939	\$17,368
24	Kansas	\$442,122,752	93.3%	\$2,469	\$3,510	\$189	\$1,583	\$2,921	\$5,272	\$16,313
25	Upper Midwest	\$1,868,538,112	91.4%	\$2,370	\$3,696	\$142	\$1,412	\$2,775	\$5,218	\$17,034
26	New Mexico	\$171,431,296	86.4%	\$2,266	\$3,604	\$106	\$1,373	\$2,791	\$5,000	\$15,735
27	Colorado	\$328,485,664	89.3%	\$2,683	\$4,530	\$155	\$1,580	\$3,118	\$5,873	\$19,478
28	Arizona	\$331,400,128	87.3%	\$2,196	\$3,324	\$133	\$1,432	\$2,672	\$4,582	\$14,486
29	Nevada	\$158,126,560	86.7%	\$2,638	\$4,448	\$157	\$1,614	\$3,044	\$5,566	\$19,580
30	Oregon, Washington	\$942,395,264	90.2%	\$2,557	\$4,026	\$145	\$1,501	\$2,964	\$5,678	\$18,651
31	Idaho, Utah	\$335,400,832	90.6%	\$2,601	\$3,847	\$151	\$1,571	\$3,021	\$5,752	\$18,431
32	California	\$3,834,208,000	89.7%	\$3,140	\$5,085	\$187	\$1,892	\$3,752	\$6,903	\$21,630
33	Hawaii	\$79,078,672	86.1%	\$3,023	\$4,613	\$128	\$1,665	\$3,615	\$7,096	\$21,975
34	Alaska	\$63,863,544	87.1%	\$3,672	\$5,366	\$144	\$1,962	\$4,330	\$9,106	\$25,481
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$858,006,656	91.7%	\$2,750	\$3,847	\$195	\$1,746	\$3,334	\$5,961	\$18,212
Average		\$1,069,528,923	90.7%	\$2,768	\$4,032	\$196	\$1,740	\$3,313	\$6,079	\$18,393
SD		\$849,188,772	2.7%	\$369	\$584	\$44	\$206	\$433	\$1,006	\$2,778
Max - Min		\$3,770,344,456	13.4%	\$1,921	\$2,936	\$186	\$934	\$2,185	\$5,382	\$14,880
Range: 90th – 10th Percentiles		\$1,980,027,677	6.0%	\$703	\$1,159	\$108	\$480	\$841	\$1,835	\$5,825

**Table D.10: Community PDP Beneficiaries: Comparison of Ingredient Cost Distributions
Regional Statistics Measured Relative to National Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	91.4%	\$2,841	\$204	\$1,791	\$3,381	\$6,224	\$18,973
0	Territories	0.88	0.66	0.70	0.75	0.73	0.60	0.56
1	Northern NE	1.00	0.89	0.84	0.87	0.90	0.90	0.90
2	Central NE	1.01	1.04	0.93	0.99	1.04	1.07	1.07
3	New York	0.98	1.33	1.22	1.27	1.38	1.40	1.28
4	New Jersey	1.01	1.17	1.43	1.20	1.19	1.16	1.11
5	Mid Atlantic	0.99	1.00	1.08	1.00	0.97	0.98	1.04
6	Penn., W. Virginia	1.01	0.98	1.10	1.03	1.02	0.97	0.91
7	Virginia	1.01	0.92	1.01	0.95	0.93	0.91	0.89
8	North Carolina	1.03	1.04	1.25	1.08	1.05	1.04	0.98
9	South Carolina	1.02	0.99	1.22	1.06	1.01	0.96	0.92
10	Georgia	1.01	0.95	1.09	1.00	0.97	0.92	0.90
11	Florida	1.01	1.05	1.27	1.07	1.01	1.01	1.09
12	Alabama, Tennessee	1.02	0.97	1.12	1.01	0.99	0.96	0.91
13	Michigan	1.00	1.02	0.90	0.96	1.00	1.07	1.05
14	Ohio	1.00	1.05	1.04	1.04	1.04	1.08	1.03
15	Indiana, Kentucky	1.02	0.98	1.14	1.04	0.99	0.97	0.93
16	Wisconsin	1.01	1.02	0.91	0.93	0.99	1.08	1.09
17	Illinois	0.99	0.91	1.04	0.96	0.93	0.87	0.87
18	Missouri	1.01	1.01	0.95	0.97	0.99	1.04	1.02
19	Arkansas	1.00	0.85	0.89	0.90	0.87	0.83	0.81
20	Mississippi	1.01	0.89	1.08	0.97	0.93	0.86	0.81
21	Louisiana	1.01	1.03	1.17	1.09	1.06	1.01	0.96
22	Texas	1.00	0.95	1.10	1.02	0.98	0.92	0.89
23	Oklahoma	1.00	0.96	1.03	1.01	0.99	0.95	0.92
24	Kansas	1.02	0.87	0.93	0.88	0.86	0.85	0.86
25	Upper Midwest	1.00	0.83	0.69	0.79	0.82	0.84	0.90
26	New Mexico	0.94	0.80	0.52	0.77	0.83	0.80	0.83
27	Colorado	0.98	0.94	0.76	0.88	0.92	0.94	1.03
28	Arizona	0.96	0.77	0.65	0.80	0.79	0.74	0.76
29	Nevada	0.95	0.93	0.77	0.90	0.90	0.89	1.03
30	Oregon, Washington	0.99	0.90	0.71	0.84	0.88	0.91	0.98
31	Idaho, Utah	0.99	0.92	0.74	0.88	0.89	0.92	0.97
32	California	0.98	1.11	0.91	1.06	1.11	1.11	1.14
33	Hawaii	0.94	1.06	0.63	0.93	1.07	1.14	1.16
34	Alaska	0.95	1.29	0.70	1.10	1.28	1.46	1.34
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	0.97	0.95	0.97	0.99	0.96	0.96
Average		0.99	0.97	0.96	0.97	0.98	0.98	0.97
SD		0.03	0.13	0.22	0.12	0.13	0.16	0.15
Max - Min		0.15	0.68	0.91	0.52	0.65	0.86	0.78
Range: 90th – 10th Percentiles		0.07	0.25	0.53	0.27	0.25	0.30	0.31

Table D.11: Institutional PDP Beneficiaries: Ingredient Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$2,530,800,640	98.3%	\$4,500	\$4,163	\$651	\$3,514	\$6,096	\$9,290	\$19,541
0	Territories	\$1,711,889	96.8%	\$4,037	\$3,618	\$597	\$3,242	\$5,403	\$8,318	\$15,209
1	Northern NE	\$25,555,604	98.0%	\$4,065	\$3,892	\$496	\$3,070	\$5,553	\$8,662	\$18,539
2	Central NE	\$135,446,800	98.6%	\$4,544	\$4,335	\$597	\$3,470	\$6,120	\$9,498	\$20,787
3	New York	\$156,009,328	96.8%	\$3,729	\$4,011	\$423	\$2,641	\$4,977	\$8,095	\$19,267
4	New Jersey	\$87,890,392	98.8%	\$4,746	\$4,431	\$756	\$3,685	\$6,354	\$9,719	\$21,081
5	Mid Atlantic	\$44,578,896	98.8%	\$4,379	\$4,088	\$659	\$3,419	\$5,844	\$9,027	\$19,723
6	Penn., W. Virginia	\$165,869,728	98.6%	\$4,643	\$4,291	\$728	\$3,694	\$6,254	\$9,351	\$19,983
7	Virginia	\$58,645,204	98.9%	\$4,504	\$4,071	\$754	\$3,517	\$6,070	\$9,112	\$19,688
8	North Carolina	\$79,361,712	98.8%	\$4,749	\$4,263	\$760	\$3,851	\$6,474	\$9,740	\$18,894
9	South Carolina	\$31,825,186	98.7%	\$3,939	\$3,535	\$544	\$3,115	\$5,402	\$8,165	\$16,698
10	Georgia	\$66,963,836	98.1%	\$4,230	\$3,619	\$643	\$3,384	\$5,831	\$8,727	\$17,347
11	Florida	\$122,515,408	97.9%	\$4,503	\$3,962	\$753	\$3,608	\$6,068	\$9,073	\$18,697
12	Alabama, Tennessee	\$113,985,208	99.1%	\$4,427	\$3,783	\$739	\$3,565	\$6,053	\$8,914	\$17,680
13	Michigan	\$74,403,968	98.3%	\$4,206	\$3,795	\$646	\$3,400	\$5,696	\$8,439	\$17,362
14	Ohio	\$159,947,056	99.0%	\$5,160	\$4,472	\$890	\$4,137	\$6,948	\$10,403	\$21,056
15	Indiana, Kentucky	\$139,122,416	99.0%	\$4,977	\$4,295	\$891	\$4,014	\$6,739	\$9,944	\$20,250
16	Wisconsin	\$63,468,400	96.7%	\$4,418	\$4,140	\$602	\$3,429	\$5,967	\$9,230	\$19,559
17	Illinois	\$148,312,080	98.5%	\$4,630	\$4,326	\$670	\$3,612	\$6,274	\$9,640	\$19,314
18	Missouri	\$78,867,464	98.6%	\$4,535	\$4,125	\$634	\$3,569	\$6,094	\$9,398	\$19,577
19	Arkansas	\$36,750,320	97.8%	\$4,311	\$3,792	\$660	\$3,441	\$5,910	\$8,890	\$17,074
20	Mississippi	\$37,058,372	97.0%	\$4,652	\$3,781	\$847	\$3,894	\$6,311	\$9,207	\$17,452
21	Louisiana	\$63,233,556	98.7%	\$5,159	\$4,201	\$933	\$4,300	\$7,011	\$10,146	\$19,312
22	Texas	\$181,415,408	98.7%	\$4,915	\$4,118	\$848	\$4,042	\$6,683	\$9,779	\$19,171
23	Oklahoma	\$36,790,892	98.8%	\$4,698	\$4,271	\$788	\$3,636	\$6,333	\$9,656	\$20,111
24	Kansas	\$41,377,588	98.3%	\$4,605	\$4,420	\$601	\$3,477	\$6,191	\$9,687	\$22,041
25	Upper Midwest	\$130,577,784	98.1%	\$4,055	\$4,101	\$497	\$2,985	\$5,462	\$8,660	\$19,635
26	New Mexico	\$9,511,281	96.4%	\$3,734	\$3,521	\$495	\$2,815	\$5,265	\$7,901	\$15,204
27	Colorado	\$20,957,524	98.1%	\$4,288	\$4,317	\$516	\$3,130	\$5,630	\$8,946	\$22,869
28	Arizona	\$6,367,263	97.5%	\$3,201	\$3,074	\$380	\$2,371	\$4,395	\$7,041	\$13,285
29	Nevada	\$5,536,224	97.9%	\$3,703	\$3,622	\$443	\$2,804	\$5,204	\$7,711	\$16,436
30	Oregon, Washington	\$34,510,308	97.8%	\$3,985	\$4,055	\$439	\$2,953	\$5,428	\$8,595	\$19,215
31	Idaho, Utah	\$16,912,996	96.2%	\$4,810	\$4,799	\$573	\$3,510	\$6,537	\$10,332	\$24,628
32	California	\$148,980,368	97.9%	\$4,464	\$4,334	\$567	\$3,391	\$6,010	\$9,470	\$20,476
33	Hawaii	\$4,360,360	98.1%	\$3,631	\$3,569	\$331	\$2,729	\$5,120	\$7,958	\$17,094
34	Alaska	\$1,979,808	96.5%	\$6,621	\$7,252	\$848	\$4,359	\$8,415	\$13,832	\$35,532
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$63,233,556	98.1%	\$4,464	\$4,101	\$643	\$3,470	\$6,053	\$9,112	\$19,312
Average		\$72,308,589	98.1%	\$4,436	\$4,122	\$644	\$3,436	\$6,001	\$9,179	\$19,436
SD		\$56,247,637	0.8%	\$586	\$648	\$156	\$464	\$712	\$1,119	\$3,569
Max - Min		\$179,703,519	2.8%	\$3,420	\$4,179	\$603	\$1,988	\$4,021	\$6,790	\$22,246
Range: 90 th – 10 th Percentiles		\$147,246,001	2.1%	\$1,221	\$834	\$407	\$1,221	\$1,482	\$2,039	\$5,090

**Table D.12: Institutional PDP Beneficiaries: Comparison of Ingredient Cost Distributions
Regional Statistics Measured Relative to National Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	98.3%	\$4,500	\$651	\$3,514	\$6,096	\$9,290	\$19,541
0	Territories	0.98	0.90	0.92	0.92	0.89	0.90	0.78
1	Northern NE	1.00	0.90	0.76	0.87	0.91	0.93	0.95
2	Central NE	1.00	1.01	0.92	0.99	1.00	1.02	1.06
3	New York	0.98	0.83	0.65	0.75	0.82	0.87	0.99
4	New Jersey	1.01	1.05	1.16	1.05	1.04	1.05	1.08
5	Mid Atlantic	1.01	0.97	1.01	0.97	0.96	0.97	1.01
6	Penn., W. Virginia	1.00	1.03	1.12	1.05	1.03	1.01	1.02
7	Virginia	1.01	1.00	1.16	1.00	1.00	0.98	1.01
8	North Carolina	1.00	1.06	1.17	1.10	1.06	1.05	0.97
9	South Carolina	1.00	0.88	0.84	0.89	0.89	0.88	0.85
10	Georgia	1.00	0.94	0.99	0.96	0.96	0.94	0.89
11	Florida	1.00	1.00	1.16	1.03	1.00	0.98	0.96
12	Alabama, Tennessee	1.01	0.98	1.13	1.01	0.99	0.96	0.90
13	Michigan	1.00	0.93	0.99	0.97	0.93	0.91	0.89
14	Ohio	1.01	1.15	1.37	1.18	1.14	1.12	1.08
15	Indiana, Kentucky	1.01	1.11	1.37	1.14	1.11	1.07	1.04
16	Wisconsin	0.98	0.98	0.92	0.98	0.98	0.99	1.00
17	Illinois	1.00	1.03	1.03	1.03	1.03	1.04	0.99
18	Missouri	1.00	1.01	0.97	1.02	1.00	1.01	1.00
19	Arkansas	1.00	0.96	1.01	0.98	0.97	0.96	0.87
20	Mississippi	0.99	1.03	1.30	1.11	1.04	0.99	0.89
21	Louisiana	1.00	1.15	1.43	1.22	1.15	1.09	0.99
22	Texas	1.00	1.09	1.30	1.15	1.10	1.05	0.98
23	Oklahoma	1.01	1.04	1.21	1.03	1.04	1.04	1.03
24	Kansas	1.00	1.02	0.92	0.99	1.02	1.04	1.13
25	Upper Midwest	1.00	0.90	0.76	0.85	0.90	0.93	1.00
26	New Mexico	0.98	0.83	0.76	0.80	0.86	0.85	0.78
27	Colorado	1.00	0.95	0.79	0.89	0.92	0.96	1.17
28	Arizona	0.99	0.71	0.58	0.67	0.72	0.76	0.68
29	Nevada	1.00	0.82	0.68	0.80	0.85	0.83	0.84
30	Oregon, Washington	1.00	0.89	0.67	0.84	0.89	0.93	0.98
31	Idaho, Utah	0.98	1.07	0.88	1.00	1.07	1.11	1.26
32	California	1.00	0.99	0.87	0.97	0.99	1.02	1.05
33	Hawaii	1.00	0.81	0.51	0.78	0.84	0.86	0.87
34	Alaska	0.98	1.47	1.30	1.24	1.38	1.49	1.82
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	0.99	0.99	0.99	0.99	0.98	0.99
Average		1.00	0.99	0.99	0.98	0.98	0.99	0.99
SD		0.01	0.13	0.24	0.13	0.12	0.12	0.18
Max - Min		0.03	0.76	0.93	0.57	0.66	0.73	1.14
Range: 90th – 10th Percentiles		0.02	0.27	0.63	0.35	0.24	0.22	0.26

Table D.13: All PDP Beneficiaries: Ingredient Plus Dispensing Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$43,424,301,056	91.2%	\$2,988	\$4,218	\$230	\$1,897	\$3,615	\$6,645	\$19,120
0	Territories	\$90,627,816	79.5%	\$1,944	\$2,621	\$150	\$1,374	\$2,564	\$3,906	\$11,110
1	Northern NE	\$518,932,960	91.3%	\$2,662	\$3,788	\$195	\$1,642	\$3,228	\$5,977	\$17,221
2	Central NE	\$2,029,011,328	92.1%	\$3,121	\$4,416	\$217	\$1,893	\$3,785	\$7,119	\$20,430
3	New York	\$2,907,724,544	89.1%	\$3,565	\$5,179	\$257	\$2,103	\$4,369	\$8,235	\$23,087
4	New Jersey	\$1,666,591,232	92.3%	\$3,440	\$4,654	\$310	\$2,240	\$4,238	\$7,552	\$21,096
5	Mid Atlantic	\$870,472,960	90.6%	\$2,954	\$4,105	\$241	\$1,882	\$3,471	\$6,452	\$19,879
6	Penn., W. Virginia	\$2,079,748,864	91.7%	\$2,985	\$3,878	\$257	\$1,983	\$3,742	\$6,578	\$17,657
7	Virginia	\$993,563,648	92.3%	\$2,773	\$3,756	\$233	\$1,815	\$3,371	\$6,108	\$17,153
8	North Carolina	\$1,700,039,168	93.7%	\$3,118	\$4,178	\$284	\$2,049	\$3,798	\$6,912	\$18,769
9	South Carolina	\$750,283,712	92.7%	\$2,937	\$3,852	\$274	\$1,993	\$3,608	\$6,324	\$17,555
10	Georgia	\$1,296,722,688	91.7%	\$2,860	\$3,811	\$254	\$1,925	\$3,517	\$6,184	\$17,286
11	Florida	\$2,631,331,328	91.6%	\$3,089	\$4,495	\$278	\$2,011	\$3,598	\$6,635	\$20,633
12	Alabama, Tennessee	\$1,984,729,216	92.9%	\$2,929	\$3,810	\$265	\$1,958	\$3,621	\$6,438	\$17,405
13	Michigan	\$1,380,977,664	91.4%	\$3,038	\$4,264	\$213	\$1,851	\$3,642	\$6,998	\$19,871
14	Ohio	\$1,643,406,464	91.3%	\$3,229	\$4,339	\$248	\$2,031	\$3,924	\$7,449	\$19,966
15	Indiana, Kentucky	\$2,016,013,184	92.7%	\$2,997	\$3,816	\$267	\$1,998	\$3,661	\$6,656	\$18,042
16	Wisconsin	\$780,602,176	91.9%	\$3,081	\$4,370	\$218	\$1,801	\$3,670	\$7,204	\$20,695
17	Illinois	\$2,009,172,224	90.4%	\$2,775	\$3,793	\$236	\$1,840	\$3,403	\$5,989	\$17,118
18	Missouri	\$1,125,337,984	92.2%	\$3,049	\$4,239	\$223	\$1,876	\$3,663	\$6,973	\$19,596
19	Arkansas	\$569,167,488	91.6%	\$2,605	\$3,460	\$215	\$1,750	\$3,202	\$5,664	\$15,720
20	Mississippi	\$630,159,360	92.5%	\$2,714	\$3,491	\$250	\$1,874	\$3,382	\$5,810	\$15,705
21	Louisiana	\$754,359,232	91.8%	\$3,167	\$4,205	\$274	\$2,122	\$3,960	\$6,986	\$18,563
22	Texas	\$2,762,376,960	91.2%	\$2,893	\$3,864	\$249	\$1,946	\$3,568	\$6,299	\$17,326
23	Oklahoma	\$597,458,944	91.6%	\$2,922	\$3,854	\$238	\$1,935	\$3,599	\$6,455	\$17,678
24	Kansas	\$528,615,872	93.2%	\$2,683	\$3,655	\$220	\$1,721	\$3,202	\$5,899	\$17,120
25	Upper Midwest	\$2,165,470,208	91.3%	\$2,538	\$3,783	\$167	\$1,527	\$3,008	\$5,675	\$17,440
26	New Mexico	\$195,044,192	86.0%	\$2,384	\$3,630	\$124	\$1,460	\$2,957	\$5,334	\$15,786
27	Colorado	\$378,031,328	89.1%	\$2,816	\$4,531	\$177	\$1,676	\$3,324	\$6,266	\$19,699
28	Arizona	\$362,382,560	86.6%	\$2,254	\$3,353	\$144	\$1,471	\$2,747	\$4,731	\$14,629
29	Nevada	\$175,711,584	86.1%	\$2,705	\$4,406	\$170	\$1,665	\$3,161	\$5,807	\$19,387
30	Oregon, Washington	\$1,052,559,232	89.9%	\$2,674	\$4,067	\$166	\$1,587	\$3,134	\$6,006	\$18,878
31	Idaho, Utah	\$380,388,448	90.3%	\$2,749	\$3,949	\$174	\$1,665	\$3,219	\$6,188	\$18,910
32	California	\$4,235,015,168	89.4%	\$3,242	\$5,084	\$204	\$1,971	\$3,923	\$7,190	\$21,662
33	Hawaii	\$89,392,584	85.7%	\$3,130	\$4,594	\$154	\$1,772	\$3,829	\$7,344	\$21,908
34	Alaska	\$72,877,576	86.1%	\$3,969	\$5,762	\$165	\$2,079	\$4,652	\$10,062	\$27,070
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$993,563,648	91.4%	\$2,929	\$3,949	\$223	\$1,876	\$3,598	\$6,438	\$18,563
Average		\$1,240,694,283	90.4%	\$2,914	\$4,087	\$220	\$1,842	\$3,535	\$6,497	\$18,630
SD		\$973,077,426	2.9%	\$366	\$569	\$47	\$205	\$430	\$1,027	\$2,725
Max - Min		\$4,162,137,592	14.1%	\$2,025	\$3,141	\$186	\$866	\$2,088	\$6,157	\$15,961
Range: 90 th – 10 th Percentiles		\$2,259,608,992	6.5%	\$665	\$1,070	\$115	\$510	\$874	\$1,738	\$5,682

Table D.14: All PDP Beneficiaries: Comparison of Ingredient Plus Dispensing Cost Distributions
Regional Statistics Measured Relative to National Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	91.2%	\$2,988	\$230	\$1,897	\$3,615	\$6,645	\$19,120
0	Territories	0.87	0.65	0.65	0.72	0.71	0.59	0.58
1	Northern NE	1.00	0.89	0.85	0.87	0.89	0.90	0.90
2	Central NE	1.01	1.04	0.94	1.00	1.05	1.07	1.07
3	New York	0.98	1.19	1.12	1.11	1.21	1.24	1.21
4	New Jersey	1.01	1.15	1.35	1.18	1.17	1.14	1.10
5	Mid Atlantic	0.99	0.99	1.04	0.99	0.96	0.97	1.04
6	Penn., W. Virginia	1.01	1.00	1.12	1.05	1.04	0.99	0.92
7	Virginia	1.01	0.93	1.01	0.96	0.93	0.92	0.90
8	North Carolina	1.03	1.04	1.24	1.08	1.05	1.04	0.98
9	South Carolina	1.02	0.98	1.19	1.05	1.00	0.95	0.92
10	Georgia	1.01	0.96	1.10	1.01	0.97	0.93	0.90
11	Florida	1.00	1.03	1.21	1.06	1.00	1.00	1.08
12	Alabama, Tennessee	1.02	0.98	1.15	1.03	1.00	0.97	0.91
13	Michigan	1.00	1.02	0.93	0.98	1.01	1.05	1.04
14	Ohio	1.00	1.08	1.08	1.07	1.09	1.12	1.04
15	Indiana, Kentucky	1.02	1.00	1.16	1.05	1.01	1.00	0.94
16	Wisconsin	1.01	1.03	0.95	0.95	1.02	1.08	1.08
17	Illinois	0.99	0.93	1.03	0.97	0.94	0.90	0.90
18	Missouri	1.01	1.02	0.97	0.99	1.01	1.05	1.02
19	Arkansas	1.00	0.87	0.93	0.92	0.89	0.85	0.82
20	Mississippi	1.01	0.91	1.09	0.99	0.94	0.87	0.82
21	Louisiana	1.01	1.06	1.19	1.12	1.10	1.05	0.97
22	Texas	1.00	0.97	1.08	1.03	0.99	0.95	0.91
23	Oklahoma	1.00	0.98	1.03	1.02	1.00	0.97	0.92
24	Kansas	1.02	0.90	0.96	0.91	0.89	0.89	0.90
25	Upper Midwest	1.00	0.85	0.72	0.81	0.83	0.85	0.91
26	New Mexico	0.94	0.80	0.54	0.77	0.82	0.80	0.83
27	Colorado	0.98	0.94	0.77	0.88	0.92	0.94	1.03
28	Arizona	0.95	0.75	0.63	0.78	0.76	0.71	0.77
29	Nevada	0.94	0.91	0.74	0.88	0.87	0.87	1.01
30	Oregon, Washington	0.99	0.89	0.72	0.84	0.87	0.90	0.99
31	Idaho, Utah	0.99	0.92	0.76	0.88	0.89	0.93	0.99
32	California	0.98	1.09	0.89	1.04	1.09	1.08	1.13
33	Hawaii	0.94	1.05	0.67	0.93	1.06	1.11	1.15
34	Alaska	0.94	1.33	0.72	1.10	1.29	1.51	1.42
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	0.98	0.97	0.99	1.00	0.97	0.97
Average		0.99	0.98	0.96	0.97	0.98	0.98	0.97
SD		0.03	0.12	0.20	0.11	0.12	0.15	0.14
Max - Min		0.15	0.68	0.81	0.46	0.58	0.93	0.83
Range: 90th - 10th Percentiles		0.07	0.22	0.50	0.27	0.25	0.26	0.30

Table D.15: Community PDP Beneficiaries: Ingredient Plus Dispensing Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$38,720,847,872	91.4%	\$2,939	\$4,231	\$230	\$1,875	\$3,511	\$6,425	\$19,238
0	Territories	\$85,134,536	80.5%	\$1,955	\$2,610	\$162	\$1,414	\$2,578	\$3,871	\$10,865
1	Northern NE	\$471,756,992	91.7%	\$2,632	\$3,804	\$197	\$1,633	\$3,161	\$5,815	\$17,317
2	Central NE	\$1,791,836,544	92.4%	\$3,051	\$4,410	\$215	\$1,851	\$3,639	\$6,872	\$20,484
3	New York	\$2,488,787,968	89.2%	\$3,898	\$5,561	\$275	\$2,353	\$4,807	\$8,944	\$24,536
4	New Jersey	\$1,502,025,856	92.4%	\$3,405	\$4,671	\$313	\$2,223	\$4,148	\$7,399	\$21,244
5	Mid Atlantic	\$784,985,728	90.8%	\$2,915	\$4,112	\$243	\$1,867	\$3,383	\$6,262	\$20,017
6	Penn., W. Virginia	\$1,801,847,552	91.9%	\$2,880	\$3,820	\$253	\$1,927	\$3,570	\$6,228	\$17,450
7	Virginia	\$888,734,976	92.6%	\$2,710	\$3,729	\$233	\$1,789	\$3,268	\$5,844	\$17,072
8	North Carolina	\$1,552,158,336	93.9%	\$3,074	\$4,162	\$288	\$2,031	\$3,707	\$6,729	\$18,849
9	South Carolina	\$688,867,648	93.0%	\$2,921	\$3,876	\$281	\$1,989	\$3,553	\$6,209	\$17,702
10	Georgia	\$1,173,818,752	92.0%	\$2,817	\$3,819	\$258	\$1,909	\$3,432	\$5,976	\$17,361
11	Florida	\$2,392,752,896	91.9%	\$3,056	\$4,534	\$283	\$1,994	\$3,506	\$6,446	\$20,909
12	Alabama, Tennessee	\$1,779,602,944	93.0%	\$2,868	\$3,801	\$264	\$1,926	\$3,506	\$6,190	\$17,461
13	Michigan	\$1,247,488,128	91.7%	\$3,001	\$4,300	\$212	\$1,819	\$3,523	\$6,862	\$20,120
14	Ohio	\$1,373,623,552	91.5%	\$3,081	\$4,296	\$240	\$1,945	\$3,643	\$6,934	\$19,897
15	Indiana, Kentucky	\$1,766,722,816	92.9%	\$2,898	\$3,755	\$265	\$1,952	\$3,497	\$6,283	\$17,947
16	Wisconsin	\$671,741,120	92.1%	\$3,013	\$4,408	\$214	\$1,750	\$3,493	\$6,945	\$20,976
17	Illinois	\$1,759,609,472	90.6%	\$2,675	\$3,733	\$236	\$1,797	\$3,258	\$5,618	\$16,855
18	Missouri	\$991,134,272	92.3%	\$2,973	\$4,227	\$221	\$1,829	\$3,497	\$6,705	\$19,673
19	Arkansas	\$504,623,968	91.8%	\$2,527	\$3,426	\$213	\$1,714	\$3,082	\$5,364	\$15,651
20	Mississippi	\$565,432,768	92.7%	\$2,643	\$3,452	\$252	\$1,844	\$3,275	\$5,528	\$15,624
21	Louisiana	\$644,637,056	91.9%	\$3,040	\$4,177	\$271	\$2,058	\$3,739	\$6,535	\$18,507
22	Texas	\$2,424,955,136	91.4%	\$2,796	\$3,821	\$249	\$1,904	\$3,417	\$5,921	\$17,186
23	Oklahoma	\$529,231,936	91.8%	\$2,844	\$3,812	\$238	\$1,901	\$3,478	\$6,151	\$17,643
24	Kansas	\$460,788,000	93.3%	\$2,573	\$3,566	\$217	\$1,675	\$3,055	\$5,473	\$16,571
25	Upper Midwest	\$1,941,777,408	91.4%	\$2,463	\$3,748	\$163	\$1,490	\$2,895	\$5,406	\$17,322
26	New Mexico	\$177,797,632	86.4%	\$2,350	\$3,644	\$123	\$1,447	\$2,905	\$5,175	\$15,980
27	Colorado	\$339,495,008	89.3%	\$2,773	\$4,575	\$176	\$1,655	\$3,237	\$6,076	\$19,697
28	Arizona	\$341,377,408	87.3%	\$2,263	\$3,358	\$149	\$1,490	\$2,752	\$4,714	\$14,761
29	Nevada	\$162,599,712	86.7%	\$2,713	\$4,484	\$175	\$1,679	\$3,142	\$5,715	\$19,791
30	Oregon, Washington	\$979,899,648	90.2%	\$2,659	\$4,083	\$168	\$1,586	\$3,096	\$5,905	\$18,965
31	Idaho, Utah	\$347,699,616	90.6%	\$2,697	\$3,903	\$174	\$1,651	\$3,146	\$5,964	\$18,735
32	California	\$3,936,705,024	89.7%	\$3,224	\$5,129	\$207	\$1,963	\$3,867	\$7,080	\$21,859
33	Hawaii	\$82,219,144	86.1%	\$3,143	\$4,668	\$154	\$1,774	\$3,796	\$7,355	\$22,197
34	Alaska	\$68,977,720	87.1%	\$3,966	\$5,754	\$168	\$2,093	\$4,643	\$10,019	\$27,054
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$888,734,976	91.7%	\$2,868	\$3,903	\$221	\$1,844	\$3,478	\$6,190	\$18,507
Average		\$1,106,309,922	90.7%	\$2,871	\$4,092	\$221	\$1,826	\$3,448	\$6,300	\$18,694
SD		\$873,927,005	2.7%	\$388	\$610	\$47	\$211	\$454	\$1,087	\$2,878
Max - Min		\$3,867,727,304	13.4%	\$2,011	\$3,144	\$190	\$939	\$2,229	\$6,148	\$16,189
Range: 90 th – 10 th Percentiles		\$2,042,164,029	6.0%	\$697	\$1,160	\$116	\$509	\$859	\$1,859	\$5,798

**Table D.16: Community PDP Beneficiaries: Comparison of Ingredient Plus Dispensing
Cost Distributions
Regional Statistics Measured Relative to National Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	91.4%	\$2,939	\$230	\$1,875	\$3,511	\$6,425	\$19,238
0	Territories	0.88	0.67	0.70	0.75	0.73	0.60	0.56
1	Northern NE	1.00	0.90	0.86	0.87	0.90	0.90	0.90
2	Central NE	1.01	1.04	0.93	0.99	1.04	1.07	1.06
3	New York	0.98	1.33	1.19	1.25	1.37	1.39	1.28
4	New Jersey	1.01	1.16	1.36	1.19	1.18	1.15	1.10
5	Mid Atlantic	0.99	0.99	1.06	1.00	0.96	0.97	1.04
6	Penn., W. Virginia	1.01	0.98	1.10	1.03	1.02	0.97	0.91
7	Virginia	1.01	0.92	1.01	0.95	0.93	0.91	0.89
8	North Carolina	1.03	1.05	1.25	1.08	1.06	1.05	0.98
9	South Carolina	1.02	0.99	1.22	1.06	1.01	0.97	0.92
10	Georgia	1.01	0.96	1.12	1.02	0.98	0.93	0.90
11	Florida	1.01	1.04	1.23	1.06	1.00	1.00	1.09
12	Alabama, Tennessee	1.02	0.98	1.15	1.03	1.00	0.96	0.91
13	Michigan	1.00	1.02	0.92	0.97	1.00	1.07	1.05
14	Ohio	1.00	1.05	1.04	1.04	1.04	1.08	1.03
15	Indiana, Kentucky	1.02	0.99	1.15	1.04	1.00	0.98	0.93
16	Wisconsin	1.01	1.03	0.93	0.93	0.99	1.08	1.09
17	Illinois	0.99	0.91	1.03	0.96	0.93	0.87	0.88
18	Missouri	1.01	1.01	0.96	0.98	1.00	1.04	1.02
19	Arkansas	1.00	0.86	0.93	0.91	0.88	0.83	0.81
20	Mississippi	1.01	0.90	1.09	0.98	0.93	0.86	0.81
21	Louisiana	1.01	1.03	1.18	1.10	1.07	1.02	0.96
22	Texas	1.00	0.95	1.08	1.02	0.97	0.92	0.89
23	Oklahoma	1.00	0.97	1.03	1.01	0.99	0.96	0.92
24	Kansas	1.02	0.88	0.94	0.89	0.87	0.85	0.86
25	Upper Midwest	1.00	0.84	0.71	0.79	0.82	0.84	0.90
26	New Mexico	0.94	0.80	0.53	0.77	0.83	0.81	0.83
27	Colorado	0.98	0.94	0.77	0.88	0.92	0.95	1.02
28	Arizona	0.96	0.77	0.65	0.79	0.78	0.73	0.77
29	Nevada	0.95	0.92	0.76	0.90	0.89	0.89	1.03
30	Oregon, Washington	0.99	0.90	0.73	0.85	0.88	0.92	0.99
31	Idaho, Utah	0.99	0.92	0.76	0.88	0.90	0.93	0.97
32	California	0.98	1.10	0.90	1.05	1.10	1.10	1.14
33	Hawaii	0.94	1.07	0.67	0.95	1.08	1.14	1.15
34	Alaska	0.95	1.35	0.73	1.12	1.32	1.56	1.41
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	0.98	0.96	0.98	0.99	0.96	0.96
Average		0.99	0.98	0.96	0.97	0.98	0.98	0.97
SD		0.03	0.13	0.20	0.11	0.13	0.17	0.15
Max - Min		0.15	0.68	0.83	0.50	0.63	0.96	0.84
Range: 90th – 10th Percentiles		0.07	0.24	0.50	0.28	0.25	0.29	0.30

Table D.17: Institutional PDP Beneficiaries: Ingredient Plus Dispensing Cost Distribution

PDP Region		Total Annual Expenditures	% Beneficiaries with Claims	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$2,750,144,000	98.3%	\$4,890	\$4,328	\$805	\$3,893	\$6,614	\$9,935	\$20,351
0	Territories	\$1,872,897	96.8%	\$4,417	\$3,818	\$704	\$3,652	\$5,794	\$8,979	\$15,888
1	Northern NE	\$27,980,310	98.0%	\$4,451	\$4,071	\$631	\$3,435	\$6,054	\$9,341	\$19,504
2	Central NE	\$146,931,312	98.6%	\$4,930	\$4,491	\$755	\$3,850	\$6,647	\$10,128	\$21,556
3	New York	\$170,648,368	96.8%	\$4,079	\$4,153	\$558	\$2,984	\$5,440	\$8,680	\$19,897
4	New Jersey	\$94,981,112	98.8%	\$5,129	\$4,601	\$903	\$4,055	\$6,845	\$10,338	\$21,939
5	Mid Atlantic	\$48,638,232	98.8%	\$4,778	\$4,262	\$808	\$3,807	\$6,370	\$9,658	\$20,705
6	Penn., W. Virginia	\$180,611,872	98.6%	\$5,055	\$4,463	\$888	\$4,102	\$6,811	\$9,993	\$20,837
7	Virginia	\$64,166,644	98.9%	\$4,928	\$4,257	\$921	\$3,931	\$6,629	\$9,814	\$20,513
8	North Carolina	\$85,749,304	98.8%	\$5,132	\$4,428	\$916	\$4,224	\$6,958	\$10,351	\$19,586
9	South Carolina	\$34,847,656	98.7%	\$4,313	\$3,691	\$694	\$3,495	\$5,878	\$8,770	\$17,639
10	Georgia	\$73,072,872	98.1%	\$4,616	\$3,783	\$805	\$3,770	\$6,339	\$9,330	\$18,074
11	Florida	\$133,261,152	97.9%	\$4,898	\$4,132	\$907	\$3,989	\$6,596	\$9,702	\$19,632
12	Alabama, Tennessee	\$124,642,848	99.1%	\$4,841	\$3,956	\$910	\$3,961	\$6,601	\$9,609	\$18,525
13	Michigan	\$81,501,008	98.3%	\$4,607	\$3,964	\$808	\$3,795	\$6,221	\$9,110	\$18,212
14	Ohio	\$174,286,720	99.0%	\$5,623	\$4,663	\$1,076	\$4,604	\$7,573	\$11,167	\$22,083
15	Indiana, Kentucky	\$152,151,296	99.0%	\$5,443	\$4,485	\$1,085	\$4,477	\$7,343	\$10,729	\$21,085
16	Wisconsin	\$69,620,808	96.7%	\$4,846	\$4,331	\$773	\$3,837	\$6,536	\$10,000	\$20,545
17	Illinois	\$160,653,440	98.5%	\$5,016	\$4,483	\$820	\$3,996	\$6,784	\$10,249	\$20,147
18	Missouri	\$85,194,312	98.6%	\$4,898	\$4,276	\$767	\$3,939	\$6,602	\$9,983	\$20,283
19	Arkansas	\$39,788,428	97.8%	\$4,668	\$3,939	\$811	\$3,797	\$6,349	\$9,473	\$17,920
20	Mississippi	\$39,864,772	97.0%	\$5,004	\$3,927	\$991	\$4,251	\$6,786	\$9,786	\$18,105
21	Louisiana	\$67,692,688	98.7%	\$5,522	\$4,345	\$1,074	\$4,673	\$7,450	\$10,727	\$20,032
22	Texas	\$194,906,624	98.7%	\$5,281	\$4,274	\$990	\$4,397	\$7,155	\$10,379	\$19,858
23	Oklahoma	\$39,803,716	98.8%	\$5,083	\$4,436	\$936	\$4,020	\$6,845	\$10,341	\$20,629
24	Kansas	\$44,673,872	98.3%	\$4,972	\$4,576	\$751	\$3,836	\$6,643	\$10,315	\$22,632
25	Upper Midwest	\$142,146,384	98.1%	\$4,414	\$4,256	\$639	\$3,343	\$5,930	\$9,256	\$20,367
26	New Mexico	\$10,316,638	96.4%	\$4,051	\$3,671	\$631	\$3,104	\$5,705	\$8,449	\$15,587
27	Colorado	\$22,804,618	98.1%	\$4,666	\$4,480	\$657	\$3,492	\$6,129	\$9,655	\$23,665
28	Arizona	\$7,044,926	97.5%	\$3,542	\$3,227	\$501	\$2,702	\$4,785	\$7,697	\$13,904
29	Nevada	\$6,106,714	97.9%	\$4,085	\$3,804	\$556	\$3,157	\$5,741	\$8,340	\$17,705
30	Oregon, Washington	\$37,770,220	97.8%	\$4,361	\$4,222	\$559	\$3,315	\$5,941	\$9,200	\$19,773
31	Idaho, Utah	\$18,384,580	96.2%	\$5,229	\$5,000	\$717	\$3,910	\$7,114	\$11,023	\$25,596
32	California	\$161,083,632	97.9%	\$4,827	\$4,479	\$708	\$3,750	\$6,501	\$10,044	\$21,095
33	Hawaii	\$4,679,995	98.1%	\$3,897	\$3,684	\$398	\$2,982	\$5,439	\$8,379	\$17,543
34	Alaska	\$2,263,920	96.5%	\$7,572	\$7,714	\$1,150	\$5,095	\$9,861	\$16,559	\$35,782
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$67,692,688	98.1%	\$4,846	\$4,262	\$805	\$3,837	\$6,596	\$9,786	\$20,032
Average		\$78,575,540	98.1%	\$4,833	\$4,295	\$794	\$3,821	\$6,526	\$9,873	\$20,195
SD		\$61,067,286	0.8%	\$668	\$693	\$179	\$510	\$841	\$1,411	\$3,526
Max - Min		\$193,033,727	2.8%	\$4,030	\$4,487	\$753	\$2,393	\$5,075	\$8,861	\$21,879
Range: 90 th – 10 th Percentiles		\$160,246,654	2.1%	\$1,296	\$854	\$482	\$1,314	\$1,545	\$2,164	\$4,821

Table D.18: Institutional PDP Beneficiaries: Comparison of Ingredient Plus Dispensing Cost Distributions – Regional Statistics Measured Relative to National Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	98.3%	\$4,890	\$805	\$3,893	\$6,614	\$9,935	\$20,351
0	Territories	0.98	0.90	0.87	0.94	0.88	0.90	0.78
1	Northern NE	1.00	0.91	0.78	0.88	0.92	0.94	0.96
2	Central NE	1.00	1.01	0.94	0.99	1.00	1.02	1.06
3	New York	0.98	0.83	0.69	0.77	0.82	0.87	0.98
4	New Jersey	1.01	1.05	1.12	1.04	1.03	1.04	1.08
5	Mid Atlantic	1.01	0.98	1.00	0.98	0.96	0.97	1.02
6	Penn., W. Virginia	1.00	1.03	1.10	1.05	1.03	1.01	1.02
7	Virginia	1.01	1.01	1.14	1.01	1.00	0.99	1.01
8	North Carolina	1.00	1.05	1.14	1.08	1.05	1.04	0.96
9	South Carolina	1.00	0.88	0.86	0.90	0.89	0.88	0.87
10	Georgia	1.00	0.94	1.00	0.97	0.96	0.94	0.89
11	Florida	1.00	1.00	1.13	1.02	1.00	0.98	0.96
12	Alabama, Tennessee	1.01	0.99	1.13	1.02	1.00	0.97	0.91
13	Michigan	1.00	0.94	1.00	0.97	0.94	0.92	0.89
14	Ohio	1.01	1.15	1.34	1.18	1.15	1.12	1.09
15	Indiana, Kentucky	1.01	1.11	1.35	1.15	1.11	1.08	1.04
16	Wisconsin	0.98	0.99	0.96	0.99	0.99	1.01	1.01
17	Illinois	1.00	1.03	1.02	1.03	1.03	1.03	0.99
18	Missouri	1.00	1.00	0.95	1.01	1.00	1.00	1.00
19	Arkansas	1.00	0.95	1.01	0.98	0.96	0.95	0.88
20	Mississippi	0.99	1.02	1.23	1.09	1.03	0.99	0.89
21	Louisiana	1.00	1.13	1.33	1.20	1.13	1.08	0.98
22	Texas	1.00	1.08	1.23	1.13	1.08	1.04	0.98
23	Oklahoma	1.01	1.04	1.16	1.03	1.03	1.04	1.01
24	Kansas	1.00	1.02	0.93	0.99	1.00	1.04	1.11
25	Upper Midwest	1.00	0.90	0.79	0.86	0.90	0.93	1.00
26	New Mexico	0.98	0.83	0.78	0.80	0.86	0.85	0.77
27	Colorado	1.00	0.95	0.82	0.90	0.93	0.97	1.16
28	Arizona	0.99	0.72	0.62	0.69	0.72	0.77	0.68
29	Nevada	1.00	0.84	0.69	0.81	0.87	0.84	0.87
30	Oregon, Washington	1.00	0.89	0.69	0.85	0.90	0.93	0.97
31	Idaho, Utah	0.98	1.07	0.89	1.00	1.08	1.11	1.26
32	California	1.00	0.99	0.88	0.96	0.98	1.01	1.04
33	Hawaii	1.00	0.80	0.49	0.77	0.82	0.84	0.86
34	Alaska	0.98	1.55	1.43	1.31	1.49	1.67	1.76
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	0.99	1.00	0.99	1.00	0.99	0.98
Average		1.00	0.99	0.99	0.98	0.99	0.99	0.99
SD		0.01	0.14	0.22	0.13	0.13	0.14	0.17
Max - Min		0.03	0.82	0.94	0.61	0.77	0.89	1.08
Range: 90th – 10th Percentiles		0.02	0.27	0.60	0.34	0.23	0.22	0.24

Table D.19: All MA-PD Beneficiaries: Ingredient Cost Distribution

PDP Region		Total Annual Expenditures	% Positive Cost Beneficiaries	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$9,398,524,928	91.8%	\$1,700	\$2,655	\$107	\$1,062	\$2,219	\$3,620	\$10,830
0	Territories	\$515,992,192	91.9%	\$1,661	\$2,104	\$123	\$1,103	\$2,265	\$3,659	\$8,822
1	Northern NE	\$5,870,313	86.3%	\$1,530	\$2,298	\$62	\$960	\$2,089	\$3,270	\$9,666
2	Central NE	\$381,432,800	95.0%	\$1,810	\$2,500	\$137	\$1,220	\$2,346	\$3,825	\$10,331
3	New York	\$708,668,864	90.8%	\$1,910	\$2,960	\$133	\$1,237	\$2,418	\$4,073	\$11,378
4	New Jersey	\$176,953,408	90.6%	\$2,273	\$3,515	\$147	\$1,522	\$2,796	\$4,748	\$14,087
5	Mid Atlantic	\$60,747,064	91.2%	\$2,068	\$3,046	\$130	\$1,245	\$2,585	\$4,555	\$13,537
6	Penn., W. Virginia	\$980,563,456	92.7%	\$2,150	\$3,301	\$135	\$1,334	\$2,580	\$4,602	\$14,976
7	Virginia	\$88,754,432	90.7%	\$1,712	\$2,612	\$108	\$1,107	\$2,240	\$3,557	\$10,609
8	North Carolina	\$199,124,592	91.5%	\$1,816	\$2,914	\$126	\$1,221	\$2,366	\$3,743	\$11,001
9	South Carolina	\$66,333,036	87.6%	\$1,701	\$2,422	\$101	\$1,093	\$2,290	\$3,646	\$10,396
10	Georgia	\$103,691,424	87.8%	\$1,698	\$2,748	\$88	\$1,005	\$2,209	\$3,650	\$11,368
11	Florida	\$1,001,513,600	92.7%	\$1,524	\$2,336	\$110	\$1,005	\$2,071	\$3,261	\$8,320
12	Alabama, Tennessee	\$411,630,432	92.7%	\$1,978	\$2,851	\$144	\$1,304	\$2,474	\$4,171	\$12,406
13	Michigan	\$149,970,560	92.3%	\$1,576	\$2,454	\$98	\$1,034	\$2,076	\$3,262	\$9,720
14	Ohio	\$380,342,304	93.0%	\$1,699	\$2,395	\$109	\$1,161	\$2,288	\$3,491	\$9,794
15	Indiana, Kentucky	\$128,388,328	91.4%	\$1,980	\$2,847	\$110	\$1,257	\$2,482	\$4,191	\$13,036
16	Wisconsin	\$116,004,352	88.4%	\$1,546	\$2,486	\$79	\$934	\$2,019	\$3,316	\$10,438
17	Illinois	\$128,394,952	88.5%	\$1,611	\$2,305	\$96	\$1,030	\$2,173	\$3,512	\$9,447
18	Missouri	\$157,690,608	90.7%	\$1,452	\$2,049	\$90	\$959	\$1,997	\$3,081	\$8,215
19	Arkansas	\$37,940,768	85.8%	\$1,542	\$2,191	\$73	\$939	\$2,086	\$3,383	\$10,095
20	Mississippi	\$18,796,470	90.4%	\$1,732	\$2,360	\$123	\$1,192	\$2,345	\$3,583	\$9,739
21	Louisiana	\$170,102,000	93.2%	\$2,066	\$2,668	\$174	\$1,481	\$2,693	\$4,348	\$10,398
22	Texas	\$470,602,240	89.8%	\$1,677	\$2,342	\$116	\$1,124	\$2,268	\$3,508	\$9,760
23	Oklahoma	\$71,916,336	91.9%	\$1,676	\$2,492	\$111	\$1,093	\$2,239	\$3,455	\$10,307
24	Kansas	\$31,566,600	90.4%	\$1,582	\$2,620	\$87	\$1,029	\$2,128	\$3,318	\$9,485
25	Upper Midwest	\$344,018,560	90.4%	\$1,888	\$2,792	\$93	\$1,137	\$2,385	\$4,277	\$12,027
26	New Mexico	\$63,000,460	89.2%	\$1,454	\$2,245	\$70	\$879	\$1,937	\$3,196	\$9,038
27	Colorado	\$163,672,464	91.6%	\$1,484	\$2,651	\$82	\$830	\$1,876	\$3,129	\$11,026
28	Arizona	\$375,692,768	90.8%	\$1,693	\$2,807	\$95	\$1,002	\$2,155	\$3,586	\$12,035
29	Nevada	\$120,397,280	88.2%	\$1,550	\$2,272	\$94	\$964	\$2,056	\$3,477	\$8,932
30	Oregon, Washington	\$339,101,504	92.6%	\$1,760	\$3,100	\$92	\$979	\$2,147	\$3,705	\$14,311
31	Idaho, Utah	\$83,794,040	89.3%	\$1,613	\$2,459	\$75	\$1,014	\$2,177	\$3,397	\$10,417
32	California	\$1,270,149,632	92.9%	\$1,394	\$2,521	\$87	\$802	\$1,778	\$2,987	\$9,146
33	Hawaii	\$75,473,688	90.0%	\$1,812	\$2,617	\$97	\$1,192	\$2,385	\$3,992	\$9,938
34	Alaska	\$233,336	83.7%	\$1,679	\$2,012	\$39	\$1,177	\$2,423	\$4,069	\$9,276
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$149,970,560	90.7%	\$1,693	\$2,500	\$98	\$1,093	\$2,240	\$3,583	\$10,331
Average		\$268,529,282	90.5%	\$1,723	\$2,580	\$104	\$1,102	\$2,253	\$3,686	\$10,671
SD		\$305,074,870	2.3%	\$210	\$345	\$27	\$165	\$225	\$455	\$1,705
Max - Min		\$1,269,916,296	11.3%	\$879	\$1,502	\$135	\$720	\$1,018	\$1,761	\$6,761
Range: 90 th – 10 th Percentiles		\$596,844,511	5.1%	\$527	\$794	\$62	\$349	\$533	\$1,091	\$4,351

**Table D.20: All MA-PD Beneficiaries: Comparison of Ingredient Cost Distributions
Regional Statistics Measured Relative to National Values**

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	91.8%	\$1,700	\$107	\$1,062	\$2,219	\$3,620	\$10,830
0	Territories	1.00	0.98	1.15	1.04	1.02	1.01	0.81
1	Northern NE	0.94	0.90	0.59	0.90	0.94	0.90	0.89
2	Central NE	1.04	1.06	1.29	1.15	1.06	1.06	0.95
3	New York	0.99	1.12	1.25	1.16	1.09	1.13	1.05
4	New Jersey	0.99	1.34	1.38	1.43	1.26	1.31	1.30
5	Mid Atlantic	0.99	1.22	1.22	1.17	1.16	1.26	1.25
6	Penn., W. Virginia	1.01	1.26	1.27	1.26	1.16	1.27	1.38
7	Virginia	0.99	1.01	1.01	1.04	1.01	0.98	0.98
8	North Carolina	1.00	1.07	1.18	1.15	1.07	1.03	1.02
9	South Carolina	0.95	1.00	0.94	1.03	1.03	1.01	0.96
10	Georgia	0.96	1.00	0.83	0.95	1.00	1.01	1.05
11	Florida	1.01	0.90	1.03	0.95	0.93	0.90	0.77
12	Alabama, Tennessee	1.01	1.16	1.35	1.23	1.11	1.15	1.15
13	Michigan	1.01	0.93	0.92	0.97	0.94	0.90	0.90
14	Ohio	1.01	1.00	1.02	1.09	1.03	0.96	0.90
15	Indiana, Kentucky	1.00	1.16	1.03	1.18	1.12	1.16	1.20
16	Wisconsin	0.96	0.91	0.74	0.88	0.91	0.92	0.96
17	Illinois	0.96	0.95	0.90	0.97	0.98	0.97	0.87
18	Missouri	0.99	0.85	0.85	0.90	0.90	0.85	0.76
19	Arkansas	0.93	0.91	0.68	0.88	0.94	0.93	0.93
20	Mississippi	0.99	1.02	1.16	1.12	1.06	0.99	0.90
21	Louisiana	1.02	1.21	1.63	1.39	1.21	1.20	0.96
22	Texas	0.98	0.99	1.09	1.06	1.02	0.97	0.90
23	Oklahoma	1.00	0.99	1.04	1.03	1.01	0.95	0.95
24	Kansas	0.99	0.93	0.82	0.97	0.96	0.92	0.88
25	Upper Midwest	0.99	1.11	0.87	1.07	1.08	1.18	1.11
26	New Mexico	0.97	0.86	0.66	0.83	0.87	0.88	0.83
27	Colorado	1.00	0.87	0.77	0.78	0.85	0.86	1.02
28	Arizona	0.99	1.00	0.89	0.94	0.97	0.99	1.11
29	Nevada	0.96	0.91	0.88	0.91	0.93	0.96	0.82
30	Oregon, Washington	1.01	1.03	0.86	0.92	0.97	1.02	1.32
31	Idaho, Utah	0.97	0.95	0.71	0.95	0.98	0.94	0.96
32	California	1.01	0.82	0.81	0.76	0.80	0.83	0.84
33	Hawaii	0.98	1.07	0.91	1.12	1.07	1.10	0.92
34	Alaska	0.91	0.99	0.37	1.11	1.09	1.12	0.86
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		0.99	1.00	0.92	1.03	1.01	0.99	0.95
Average		0.99	1.01	0.97	1.04	1.02	1.02	0.99
SD		0.03	0.12	0.26	0.16	0.10	0.13	0.16
Max - Min		0.12	0.52	1.27	0.68	0.46	0.49	0.62
Range: 90th – 10th Percentiles		0.06	0.31	0.59	0.33	0.24	0.30	0.40

Table D.21: Community MA-PD Beneficiaries: Ingredient Cost Distribution

PDP Region		Total Annual Expenditures	% Positive Cost Beneficiaries	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$8,127,638,016	92.2%	\$1,692	\$2,624	\$111	\$1,072	\$2,215	\$3,588	\$10,533
0	Territories	\$456,635,840	92.4%	\$1,706	\$2,114	\$132	\$1,152	\$2,323	\$3,738	\$8,885
1	Northern NE	\$3,965,097	86.9%	\$1,517	\$2,007	\$68	\$991	\$2,087	\$3,270	\$9,641
2	Central NE	\$313,826,080	95.3%	\$1,730	\$2,390	\$141	\$1,204	\$2,284	\$3,599	\$9,310
3	New York	\$606,547,456	91.0%	\$1,915	\$2,928	\$138	\$1,254	\$2,431	\$4,071	\$11,182
4	New Jersey	\$157,505,824	91.2%	\$2,317	\$3,522	\$157	\$1,572	\$2,866	\$4,835	\$14,015
5	Mid Atlantic	\$42,478,308	92.5%	\$1,865	\$2,771	\$127	\$1,148	\$2,386	\$3,986	\$12,187
6	Penn., W. Virginia	\$863,131,520	92.9%	\$2,161	\$3,294	\$140	\$1,350	\$2,595	\$4,614	\$14,980
7	Virginia	\$72,540,104	91.0%	\$1,716	\$2,616	\$111	\$1,116	\$2,242	\$3,563	\$10,480
8	North Carolina	\$167,586,640	91.8%	\$1,806	\$2,945	\$130	\$1,235	\$2,367	\$3,709	\$10,608
9	South Carolina	\$53,324,424	90.0%	\$1,765	\$2,391	\$114	\$1,178	\$2,352	\$3,763	\$10,209
10	Georgia	\$76,287,192	89.2%	\$1,633	\$2,662	\$90	\$1,002	\$2,158	\$3,453	\$10,677
11	Florida	\$888,788,736	93.3%	\$1,528	\$2,333	\$116	\$1,023	\$2,081	\$3,261	\$8,078
12	Alabama, Tennessee	\$354,851,520	92.9%	\$1,993	\$2,856	\$150	\$1,320	\$2,495	\$4,202	\$12,418
13	Michigan	\$117,493,496	92.9%	\$1,577	\$2,395	\$102	\$1,058	\$2,086	\$3,263	\$9,264
14	Ohio	\$324,945,888	93.5%	\$1,652	\$2,263	\$110	\$1,154	\$2,264	\$3,399	\$8,987
15	Indiana, Kentucky	\$105,002,576	91.9%	\$2,009	\$2,889	\$113	\$1,280	\$2,519	\$4,261	\$13,146
16	Wisconsin	\$93,787,720	88.7%	\$1,535	\$2,480	\$81	\$946	\$2,014	\$3,277	\$9,970
17	Illinois	\$109,973,536	88.9%	\$1,587	\$2,166	\$98	\$1,036	\$2,161	\$3,456	\$8,956
18	Missouri	\$138,325,040	91.4%	\$1,444	\$2,014	\$93	\$965	\$1,995	\$3,062	\$7,948
19	Arkansas	\$29,160,876	88.2%	\$1,587	\$2,211	\$77	\$985	\$2,150	\$3,470	\$10,169
20	Mississippi	\$15,425,705	90.5%	\$1,740	\$2,371	\$124	\$1,203	\$2,360	\$3,621	\$9,298
21	Louisiana	\$148,950,032	93.6%	\$2,090	\$2,668	\$186	\$1,519	\$2,723	\$4,370	\$10,272
22	Texas	\$406,687,776	90.7%	\$1,688	\$2,323	\$124	\$1,150	\$2,281	\$3,517	\$9,556
23	Oklahoma	\$61,713,668	92.4%	\$1,665	\$2,465	\$118	\$1,104	\$2,231	\$3,422	\$9,887
24	Kansas	\$26,455,182	90.8%	\$1,573	\$2,650	\$90	\$1,040	\$2,118	\$3,284	\$9,231
25	Upper Midwest	\$262,107,216	90.5%	\$1,804	\$2,709	\$93	\$1,117	\$2,316	\$3,966	\$11,336
26	New Mexico	\$54,208,836	89.5%	\$1,431	\$2,132	\$72	\$885	\$1,924	\$3,154	\$8,475
27	Colorado	\$141,612,496	91.9%	\$1,457	\$2,639	\$84	\$829	\$1,844	\$3,047	\$10,524
28	Arizona	\$330,250,560	91.0%	\$1,673	\$2,778	\$97	\$1,002	\$2,136	\$3,517	\$11,757
29	Nevada	\$112,500,432	88.7%	\$1,556	\$2,265	\$97	\$976	\$2,068	\$3,487	\$8,851
30	Oregon, Washington	\$296,687,104	93.3%	\$1,761	\$3,000	\$98	\$994	\$2,148	\$3,680	\$14,311
31	Idaho, Utah	\$69,394,712	89.9%	\$1,625	\$2,393	\$79	\$1,043	\$2,209	\$3,433	\$10,260
32	California	\$1,154,932,096	93.3%	\$1,392	\$2,501	\$91	\$814	\$1,782	\$2,976	\$8,907
33	Hawaii	\$70,396,472	90.3%	\$1,814	\$2,560	\$105	\$1,217	\$2,396	\$3,972	\$9,736
34	Alaska	\$157,691	83.9%	\$1,678	\$1,727	\$73	\$1,205	\$2,804	\$4,069	\$8,912
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$117,493,496	91.0%	\$1,678	\$2,480	\$105	\$1,116	\$2,242	\$3,517	\$9,970
Average		\$232,218,224	91.0%	\$1,714	\$2,526	\$109	\$1,116	\$2,263	\$3,650	\$10,355
SD		\$272,554,179	2.2%	\$211	\$370	\$27	\$169	\$247	\$444	\$1,743
Max - Min		\$1,154,774,405	11.4%	\$924	\$1,795	\$117	\$758	\$1,085	\$1,859	\$7,032
Range: 90th – 10th Percentiles		\$518,774,781	4.6%	\$516	\$815	\$62	\$349	\$561	\$1,030	\$3,986

Table D.22: Community MA-PD Beneficiaries: Comparison of Ingredient Cost Distributions
Regional Statistics Measured Relative to National Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	92.2%	\$1,692	\$111	\$1,072	\$2,215	\$3,588	\$10,533
0	Territories	1.00	1.01	1.19	1.07	1.05	1.04	0.84
1	Northern NE	0.94	0.90	0.62	0.92	0.94	0.91	0.92
2	Central NE	1.03	1.02	1.27	1.12	1.03	1.00	0.88
3	New York	0.99	1.13	1.24	1.17	1.10	1.13	1.06
4	New Jersey	0.99	1.37	1.41	1.47	1.29	1.35	1.33
5	Mid Atlantic	1.00	1.10	1.14	1.07	1.08	1.11	1.16
6	Penn., W. Virginia	1.01	1.28	1.26	1.26	1.17	1.29	1.42
7	Virginia	0.99	1.01	1.00	1.04	1.01	0.99	0.99
8	North Carolina	1.00	1.07	1.17	1.15	1.07	1.03	1.01
9	South Carolina	0.98	1.04	1.03	1.10	1.06	1.05	0.97
10	Georgia	0.97	0.97	0.81	0.93	0.97	0.96	1.01
11	Florida	1.01	0.90	1.05	0.95	0.94	0.91	0.77
12	Alabama, Tennessee	1.01	1.18	1.36	1.23	1.13	1.17	1.18
13	Michigan	1.01	0.93	0.92	0.99	0.94	0.91	0.88
14	Ohio	1.01	0.98	0.99	1.08	1.02	0.95	0.85
15	Indiana, Kentucky	1.00	1.19	1.01	1.19	1.14	1.19	1.25
16	Wisconsin	0.96	0.91	0.73	0.88	0.91	0.91	0.95
17	Illinois	0.96	0.94	0.88	0.97	0.98	0.96	0.85
18	Missouri	0.99	0.85	0.84	0.90	0.90	0.85	0.75
19	Arkansas	0.96	0.94	0.69	0.92	0.97	0.97	0.97
20	Mississippi	0.98	1.03	1.12	1.12	1.07	1.01	0.88
21	Louisiana	1.01	1.23	1.67	1.42	1.23	1.22	0.98
22	Texas	0.98	1.00	1.12	1.07	1.03	0.98	0.91
23	Oklahoma	1.00	0.98	1.07	1.03	1.01	0.95	0.94
24	Kansas	0.98	0.93	0.81	0.97	0.96	0.92	0.88
25	Upper Midwest	0.98	1.07	0.84	1.04	1.05	1.11	1.08
26	New Mexico	0.97	0.85	0.65	0.83	0.87	0.88	0.80
27	Colorado	1.00	0.86	0.76	0.77	0.83	0.85	1.00
28	Arizona	0.99	0.99	0.87	0.93	0.96	0.98	1.12
29	Nevada	0.96	0.92	0.87	0.91	0.93	0.97	0.84
30	Oregon, Washington	1.01	1.04	0.88	0.93	0.97	1.03	1.36
31	Idaho, Utah	0.97	0.96	0.71	0.97	1.00	0.96	0.97
32	California	1.01	0.82	0.82	0.76	0.80	0.83	0.85
33	Hawaii	0.98	1.07	0.94	1.13	1.08	1.11	0.92
34	Alaska	0.91	0.99	0.66	1.12	1.27	1.13	0.85
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		0.99	0.99	0.94	1.04	1.01	0.98	0.95
Average		0.99	1.01	0.98	1.04	1.02	1.02	0.98
SD		0.02	0.12	0.24	0.16	0.11	0.12	0.17
Max - Min		0.12	0.55	1.06	0.71	0.49	0.52	0.67
Range: 90th – 10th Percentiles		0.05	0.31	0.56	0.33	0.25	0.29	0.38

Table D.23: Institutional MA-PD Beneficiaries: Ingredient Cost Distribution

PDP Region		Total Annual Expenditures	% Positive Cost Beneficiaries	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$213,269,680	98.4%	\$3,751	\$3,719	\$427	\$2,821	\$5,153	\$8,043	\$16,810
0	Territories	\$335,305	98.9%	\$3,854	\$4,432	\$355	\$2,641	\$4,925	\$8,320	\$33,167
1	Northern NE	\$285,638	96.6%	\$3,360	\$3,405	\$500	\$2,395	\$4,414	\$6,297	\$22,297
2	Central NE	\$32,180,610	99.0%	\$4,049	\$3,720	\$544	\$3,198	\$5,517	\$8,458	\$16,269
3	New York	\$17,749,526	97.5%	\$3,034	\$3,367	\$321	\$2,108	\$4,104	\$6,686	\$14,990
4	New Jersey	\$1,668,534	97.3%	\$4,289	\$4,644	\$533	\$3,246	\$5,370	\$9,069	\$23,505
5	Mid Atlantic	\$10,497,639	98.4%	\$3,954	\$3,834	\$531	\$2,966	\$5,356	\$8,294	\$17,607
6	Penn., W. Virginia	\$16,944,336	99.0%	\$4,403	\$3,953	\$659	\$3,583	\$6,002	\$8,885	\$17,176
7	Virginia	\$489,528	97.0%	\$3,766	\$3,124	\$416	\$3,012	\$5,168	\$7,846	\$15,416
8	North Carolina	\$4,164,887	98.5%	\$4,136	\$3,620	\$643	\$3,264	\$5,761	\$8,533	\$17,679
9	South Carolina	\$162,060	94.7%	\$4,502	\$3,541	\$666	\$4,006	\$5,852	\$9,381	\$17,597
10	Georgia	\$8,115,826	98.8%	\$4,396	\$3,581	\$594	\$3,664	\$6,193	\$8,986	\$16,754
11	Florida	\$8,180,971	98.4%	\$4,130	\$3,760	\$579	\$3,224	\$5,579	\$8,802	\$17,585
12	Alabama, Tennessee	\$3,298,481	98.0%	\$4,386	\$3,365	\$847	\$3,786	\$6,131	\$8,782	\$15,424
13	Michigan	\$1,744,211	99.1%	\$3,800	\$3,531	\$399	\$2,885	\$5,267	\$8,833	\$16,407
14	Ohio	\$12,553,581	98.9%	\$4,956	\$4,752	\$860	\$3,960	\$6,672	\$9,970	\$20,093
15	Indiana, Kentucky	\$581,890	97.0%	\$4,511	\$3,725	\$500	\$3,856	\$6,330	\$9,513	\$14,582
16	Wisconsin	\$3,882,671	97.9%	\$4,432	\$4,644	\$547	\$3,375	\$6,046	\$9,117	\$20,463
17	Illinois	\$1,948,758	98.4%	\$4,051	\$3,694	\$603	\$3,195	\$5,475	\$8,360	\$19,191
18	Missouri	\$1,240,522	97.7%	\$3,181	\$2,925	\$267	\$2,518	\$4,612	\$6,693	\$12,583
19	Arkansas	\$95,656	100.0%	\$3,298	\$3,071	\$326	\$2,629	\$3,888	\$7,074	\$12,415
20	Mississippi	\$14,719	100.0%	\$3,680	\$2,011	\$1,904	\$3,126	\$4,928	\$6,563	\$6,563
21	Louisiana	\$890,140	98.2%	\$4,140	\$2,796	\$879	\$3,861	\$5,823	\$8,168	\$11,224
22	Texas	\$2,602,066	97.2%	\$3,401	\$3,112	\$439	\$2,621	\$4,634	\$7,271	\$14,735
23	Oklahoma	\$949,188	99.1%	\$4,499	\$4,180	\$867	\$3,565	\$6,175	\$9,173	\$23,517
24	Kansas	\$380,940	97.0%	\$2,930	\$3,118	\$171	\$1,952	\$4,153	\$6,855	\$14,833
25	Upper Midwest	\$40,125,512	99.0%	\$3,693	\$3,618	\$417	\$2,775	\$5,094	\$8,006	\$16,102
26	New Mexico	\$839,851	95.7%	\$3,146	\$2,591	\$312	\$2,530	\$4,373	\$6,601	\$12,263
27	Colorado	\$7,283,990	97.9%	\$3,245	\$3,814	\$246	\$2,191	\$4,428	\$7,321	\$20,095
28	Arizona	\$8,788,145	98.3%	\$3,199	\$3,316	\$299	\$2,263	\$4,420	\$7,188	\$15,770
29	Nevada	\$1,402,499	93.1%	\$3,371	\$3,240	\$404	\$2,470	\$4,670	\$6,767	\$15,794
30	Oregon, Washington	\$6,820,495	98.4%	\$3,607	\$3,996	\$390	\$2,640	\$4,787	\$7,585	\$17,656
31	Idaho, Utah	\$328,142	96.0%	\$3,418	\$3,603	\$484	\$2,110	\$5,101	\$7,605	\$22,536
32	California	\$15,257,890	98.2%	\$3,035	\$3,298	\$297	\$2,200	\$4,082	\$6,718	\$14,981
33	Hawaii	\$1,448,403	97.3%	\$3,115	\$2,785	\$303	\$2,643	\$4,182	\$6,583	\$12,333
34	Alaska	\$17,078	80.0%	\$4,270	\$2,327	\$2,212	\$3,890	\$6,176	\$7,087	\$7,087
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$1,744,211	98.2%	\$3,800	\$3,541	\$500	\$2,966	\$5,168	\$8,006	\$16,269
Average		\$6,093,420	97.3%	\$3,807	\$3,500	\$580	\$2,981	\$5,191	\$7,925	\$16,762
SD		\$9,118,856	3.3%	\$545	\$618	\$414	\$611	\$770	\$1,039	\$4,850
Max - Min		\$40,110,793	20.0%	\$2,026	\$2,741	\$2,041	\$2,055	\$2,784	\$3,673	\$26,604
Range: 90th – 10th Percentiles		\$16,045,909	3.2%	\$1,342	\$1,541	\$566	\$1,664	\$2,008	\$2,507	\$10,142

Table D.24: Institutional MA-PD Beneficiaries: Comparison of Ingredient Cost Distributions
Regional Statistics Measured Relative to National Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	98.4%	\$3,751	\$427	\$2,821	\$5,153	\$8,043	\$16,810
0	Territories	1.00	1.03	0.83	0.94	0.96	1.03	1.97
1	Northern NE	0.98	0.90	1.17	0.85	0.86	0.78	1.33
2	Central NE	1.01	1.08	1.27	1.13	1.07	1.05	0.97
3	New York	0.99	0.81	0.75	0.75	0.80	0.83	0.89
4	New Jersey	0.99	1.14	1.25	1.15	1.04	1.13	1.40
5	Mid Atlantic	1.00	1.05	1.24	1.05	1.04	1.03	1.05
6	Penn., W. Virginia	1.01	1.17	1.54	1.27	1.16	1.10	1.02
7	Virginia	0.99	1.00	0.97	1.07	1.00	0.98	0.92
8	North Carolina	1.00	1.10	1.50	1.16	1.12	1.06	1.05
9	South Carolina	0.96	1.20	1.56	1.42	1.14	1.17	1.05
10	Georgia	1.00	1.17	1.39	1.30	1.20	1.12	1.00
11	Florida	1.00	1.10	1.35	1.14	1.08	1.09	1.05
12	Alabama, Tennessee	1.00	1.17	1.98	1.34	1.19	1.09	0.92
13	Michigan	1.01	1.01	0.93	1.02	1.02	1.10	0.98
14	Ohio	1.00	1.32	2.01	1.40	1.29	1.24	1.20
15	Indiana, Kentucky	0.99	1.20	1.17	1.37	1.23	1.18	0.87
16	Wisconsin	0.99	1.18	1.28	1.20	1.17	1.13	1.22
17	Illinois	1.00	1.08	1.41	1.13	1.06	1.04	1.14
18	Missouri	0.99	0.85	0.62	0.89	0.89	0.83	0.75
19	Arkansas	1.02	0.88	0.76	0.93	0.75	0.88	0.74
20	Mississippi	1.02	0.98	4.46	1.11	0.96	0.82	0.39
21	Louisiana	1.00	1.10	2.06	1.37	1.13	1.02	0.67
22	Texas	0.99	0.91	1.03	0.93	0.90	0.90	0.88
23	Oklahoma	1.01	1.20	2.03	1.26	1.20	1.14	1.40
24	Kansas	0.99	0.78	0.40	0.69	0.81	0.85	0.88
25	Upper Midwest	1.01	0.98	0.98	0.98	0.99	1.00	0.96
26	New Mexico	0.97	0.84	0.73	0.90	0.85	0.82	0.73
27	Colorado	0.99	0.86	0.57	0.78	0.86	0.91	1.20
28	Arizona	1.00	0.85	0.70	0.80	0.86	0.89	0.94
29	Nevada	0.95	0.90	0.95	0.88	0.91	0.84	0.94
30	Oregon, Washington	1.00	0.96	0.91	0.94	0.93	0.94	1.05
31	Idaho, Utah	0.98	0.91	1.13	0.75	0.99	0.95	1.34
32	California	1.00	0.81	0.70	0.78	0.79	0.84	0.89
33	Hawaii	0.99	0.83	0.71	0.94	0.81	0.82	0.73
34	Alaska	0.81	1.14	5.18	1.38	1.20	0.88	0.42
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.01	1.17	1.05	1.00	1.00	0.97
Average		0.99	1.01	1.36	1.06	1.01	0.99	1.00
SD		0.03	0.15	0.97	0.22	0.15	0.13	0.29
Max - Min		0.20	0.54	4.78	0.73	0.54	0.46	1.58
Range: 90th – 10th Percentiles		0.03	0.36	1.33	0.59	0.39	0.31	0.60

Table D.25: All MA-PD Beneficiaries: Ingredient Plus Dispensing Cost Distribution

PDP Region		Total Annual Expenditures	% Positive Cost Beneficiaries	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$9,820,089,344	91.8%	\$1,777	\$2,694	\$127	\$1,131	\$2,314	\$3,756	\$11,100
0	Territories	\$541,627,008	91.9%	\$1,744	\$2,150	\$139	\$1,176	\$2,382	\$3,823	\$9,061
1	Northern NE	\$6,073,056	86.3%	\$1,582	\$2,338	\$72	\$1,004	\$2,144	\$3,388	\$9,881
2	Central NE	\$396,415,584	95.0%	\$1,881	\$2,550	\$156	\$1,274	\$2,423	\$3,968	\$10,658
3	New York	\$730,457,088	90.8%	\$1,969	\$2,990	\$148	\$1,287	\$2,490	\$4,191	\$11,598
4	New Jersey	\$180,989,904	90.6%	\$2,325	\$3,543	\$159	\$1,566	\$2,860	\$4,854	\$14,285
5	Mid Atlantic	\$65,233,320	91.2%	\$2,221	\$3,119	\$170	\$1,393	\$2,780	\$4,840	\$14,029
6	Penn., W. Virginia	\$1,013,588,480	92.7%	\$2,223	\$3,346	\$153	\$1,392	\$2,668	\$4,756	\$15,238
7	Virginia	\$93,020,904	90.7%	\$1,794	\$2,650	\$127	\$1,185	\$2,345	\$3,711	\$10,843
8	North Carolina	\$206,639,168	91.5%	\$1,884	\$2,949	\$143	\$1,281	\$2,447	\$3,867	\$11,257
9	South Carolina	\$68,788,928	87.6%	\$1,764	\$2,453	\$116	\$1,152	\$2,368	\$3,769	\$10,637
10	Georgia	\$109,691,784	87.8%	\$1,796	\$2,797	\$112	\$1,097	\$2,340	\$3,822	\$11,712
11	Florida	\$1,041,674,624	92.7%	\$1,586	\$2,361	\$127	\$1,062	\$2,153	\$3,367	\$8,505
12	Alabama, Tennessee	\$428,284,672	92.7%	\$2,058	\$2,890	\$164	\$1,377	\$2,576	\$4,318	\$12,675
13	Michigan	\$157,237,248	92.3%	\$1,652	\$2,491	\$120	\$1,098	\$2,167	\$3,399	\$9,972
14	Ohio	\$396,398,592	93.0%	\$1,770	\$2,436	\$129	\$1,226	\$2,370	\$3,616	\$10,094
15	Indiana, Kentucky	\$133,380,104	91.4%	\$2,057	\$2,900	\$126	\$1,318	\$2,571	\$4,362	\$13,342
16	Wisconsin	\$121,484,680	88.4%	\$1,619	\$2,545	\$92	\$987	\$2,108	\$3,460	\$10,840
17	Illinois	\$133,438,976	88.5%	\$1,674	\$2,339	\$110	\$1,084	\$2,262	\$3,627	\$9,637
18	Missouri	\$164,430,992	90.7%	\$1,514	\$2,081	\$106	\$1,015	\$2,078	\$3,189	\$8,437
19	Arkansas	\$39,429,324	85.8%	\$1,603	\$2,224	\$85	\$992	\$2,169	\$3,497	\$10,280
20	Mississippi	\$19,499,482	90.4%	\$1,797	\$2,388	\$141	\$1,248	\$2,437	\$3,688	\$9,930
21	Louisiana	\$174,466,064	93.2%	\$2,119	\$2,690	\$192	\$1,532	\$2,764	\$4,433	\$10,540
22	Texas	\$487,532,192	89.8%	\$1,737	\$2,372	\$131	\$1,178	\$2,345	\$3,619	\$9,962
23	Oklahoma	\$74,889,600	91.9%	\$1,745	\$2,526	\$129	\$1,157	\$2,327	\$3,586	\$10,531
24	Kansas	\$32,757,190	90.4%	\$1,641	\$2,648	\$104	\$1,084	\$2,205	\$3,426	\$9,741
25	Upper Midwest	\$359,620,992	90.4%	\$1,974	\$2,860	\$108	\$1,201	\$2,480	\$4,472	\$12,476
26	New Mexico	\$65,496,864	89.2%	\$1,512	\$2,276	\$82	\$927	\$2,017	\$3,301	\$9,202
27	Colorado	\$176,746,784	91.6%	\$1,603	\$2,692	\$116	\$953	\$2,030	\$3,315	\$11,332
28	Arizona	\$389,512,416	90.8%	\$1,755	\$2,844	\$109	\$1,053	\$2,230	\$3,709	\$12,282
29	Nevada	\$123,765,528	88.2%	\$1,594	\$2,295	\$105	\$1,001	\$2,113	\$3,557	\$9,127
30	Oregon, Washington	\$358,461,408	92.6%	\$1,860	\$3,162	\$115	\$1,061	\$2,272	\$3,902	\$14,644
31	Idaho, Utah	\$86,983,216	89.3%	\$1,675	\$2,495	\$88	\$1,063	\$2,257	\$3,514	\$10,660
32	California	\$1,361,942,912	92.9%	\$1,495	\$2,563	\$116	\$902	\$1,911	\$3,146	\$9,446
33	Hawaii	\$79,881,768	90.0%	\$1,918	\$2,664	\$128	\$1,293	\$2,515	\$4,170	\$10,260
34	Alaska	\$248,207	83.7%	\$1,786	\$2,105	\$56	\$1,205	\$2,715	\$4,458	\$9,304
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$157,237,248	90.7%	\$1,764	\$2,550	\$120	\$1,157	\$2,345	\$3,709	\$10,540
Average		\$280,573,973	90.5%	\$1,798	\$2,621	\$122	\$1,166	\$2,352	\$3,832	\$10,926
SD		\$320,618,332	2.3%	\$214	\$347	\$29	\$164	\$233	\$477	\$1,744
Max - Min		\$1,361,694,705	11.3%	\$830	\$1,462	\$136	\$664	\$948	\$1,708	\$6,800
Range: 90th – 10th Percentiles		\$618,831,799	5.1%	\$510	\$818	\$72	\$396	\$603	\$1,125	\$4,590

Table D.26: All MA-PD Beneficiaries: Regional of Ingredient Plus Dispensing Cost Distributions

Regional Statistics Measured Relative to National Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	98.4%	\$4,094	\$544	\$3,152	\$5,608	\$8,622	\$17,617
0	Territories	1.00	1.02	0.81	0.97	1.01	1.06	1.93
1	Northern NE	0.98	0.90	1.17	0.87	0.88	0.80	1.29
2	Central NE	1.01	1.07	1.27	1.12	1.07	1.05	0.96
3	New York	0.99	0.81	0.79	0.76	0.80	0.83	0.89
4	New Jersey	0.99	1.13	1.14	1.13	1.04	1.14	1.36
5	Mid Atlantic	1.00	1.05	1.19	1.05	1.04	1.02	1.05
6	Penn., W. Virginia	1.01	1.16	1.46	1.24	1.15	1.10	1.04
7	Virginia	0.99	1.02	0.94	1.04	1.01	0.97	0.90
8	North Carolina	1.00	1.09	1.45	1.13	1.11	1.05	1.04
9	South Carolina	0.96	1.20	1.56	1.42	1.12	1.16	1.04
10	Georgia	1.00	1.16	1.35	1.28	1.19	1.12	1.00
11	Florida	1.00	1.10	1.28	1.14	1.09	1.10	1.04
12	Alabama, Tennessee	1.00	1.16	1.87	1.31	1.16	1.08	0.92
13	Michigan	1.01	1.00	0.91	0.99	1.02	1.09	0.97
14	Ohio	1.00	1.32	1.90	1.38	1.29	1.23	1.19
15	Indiana, Kentucky	0.99	1.20	1.18	1.41	1.28	1.20	0.92
16	Wisconsin	0.99	1.19	1.27	1.19	1.18	1.16	1.21
17	Illinois	1.00	1.08	1.32	1.15	1.06	1.07	1.13
18	Missouri	0.99	0.84	0.66	0.89	0.90	0.83	0.74
19	Arkansas	1.02	0.88	0.78	0.90	0.79	0.86	0.76
20	Mississippi	1.02	0.98	3.58	1.12	0.95	0.80	0.39
21	Louisiana	1.00	1.08	1.82	1.29	1.14	1.02	0.65
22	Texas	0.99	0.90	0.96	0.93	0.90	0.90	0.87
23	Oklahoma	1.01	1.17	1.79	1.23	1.15	1.12	1.39
24	Kansas	0.99	0.79	0.45	0.70	0.82	0.86	0.87
25	Upper Midwest	1.01	0.98	0.97	0.97	0.98	1.00	0.96
26	New Mexico	0.97	0.84	0.74	0.92	0.86	0.83	0.72
27	Colorado	0.99	0.87	0.60	0.81	0.87	0.91	1.16
28	Arizona	1.00	0.86	0.75	0.82	0.86	0.90	0.96
29	Nevada	0.95	0.91	0.95	0.90	0.92	0.86	0.97
30	Oregon, Washington	1.00	0.98	0.94	0.96	0.95	0.97	1.03
31	Idaho, Utah	0.98	0.92	1.21	0.78	0.99	0.94	1.30
32	California	1.00	0.83	0.76	0.80	0.81	0.84	0.88
33	Hawaii	0.99	0.82	0.68	0.90	0.81	0.82	0.73
34	Alaska	0.81	1.17	4.68	1.36	1.22	0.92	0.45
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.02	1.17	1.04	1.01	1.00	0.97
Average		0.99	1.01	1.29	1.05	1.01	0.99	0.99
SD		0.03	0.14	0.81	0.20	0.14	0.13	0.28
Max - Min		0.20	0.53	4.23	0.72	0.50	0.43	1.54
Range: 90th – 10th Percentiles		0.03	0.35	1.15	0.54	0.37	0.32	0.57

Table D.27: Community MA-PD Beneficiaries: Ingredient Plus Dispensing Cost Distribution

PDP Region		Total Annual Expenditures	% Positive Cost Beneficiaries	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$8,488,631,296	92.2%	\$1,767	\$2,659	\$132	\$1,142	\$2,310	\$3,718	\$10,771
0	Territories	\$479,259,488	92.4%	\$1,790	\$2,160	\$149	\$1,227	\$2,439	\$3,902	\$9,132
1	Northern NE	\$4,096,649	86.9%	\$1,568	\$2,041	\$78	\$1,025	\$2,140	\$3,380	\$9,792
2	Central NE	\$324,670,720	95.3%	\$1,790	\$2,421	\$159	\$1,255	\$2,359	\$3,710	\$9,531
3	New York	\$624,041,344	91.0%	\$1,970	\$2,954	\$153	\$1,303	\$2,500	\$4,179	\$11,344
4	New Jersey	\$161,021,232	91.2%	\$2,368	\$3,549	\$169	\$1,618	\$2,934	\$4,936	\$14,220
5	Mid Atlantic	\$45,724,992	92.5%	\$2,008	\$2,817	\$169	\$1,303	\$2,556	\$4,220	\$12,551
6	Penn., W. Virginia	\$891,765,824	92.9%	\$2,233	\$3,336	\$158	\$1,410	\$2,682	\$4,761	\$15,213
7	Virginia	\$76,228,488	91.0%	\$1,803	\$2,655	\$134	\$1,199	\$2,353	\$3,724	\$10,734
8	North Carolina	\$173,812,816	91.8%	\$1,873	\$2,974	\$147	\$1,297	\$2,449	\$3,825	\$10,831
9	South Carolina	\$55,348,920	90.0%	\$1,832	\$2,423	\$132	\$1,241	\$2,435	\$3,878	\$10,420
10	Georgia	\$80,781,864	89.2%	\$1,730	\$2,696	\$117	\$1,100	\$2,295	\$3,612	\$10,916
11	Florida	\$924,621,568	93.3%	\$1,589	\$2,356	\$134	\$1,081	\$2,165	\$3,367	\$8,240
12	Alabama, Tennessee	\$369,297,504	92.9%	\$2,074	\$2,894	\$172	\$1,395	\$2,598	\$4,349	\$12,664
13	Michigan	\$123,251,712	92.9%	\$1,654	\$2,430	\$124	\$1,125	\$2,182	\$3,401	\$9,498
14	Ohio	\$338,499,648	93.5%	\$1,721	\$2,294	\$131	\$1,220	\$2,348	\$3,517	\$9,220
15	Indiana, Kentucky	\$109,229,392	91.9%	\$2,090	\$2,944	\$130	\$1,344	\$2,616	\$4,437	\$13,493
16	Wisconsin	\$98,143,352	88.7%	\$1,607	\$2,533	\$96	\$1,000	\$2,102	\$3,421	\$10,250
17	Illinois	\$114,338,208	88.9%	\$1,650	\$2,197	\$112	\$1,092	\$2,250	\$3,570	\$9,144
18	Missouri	\$144,339,376	91.4%	\$1,507	\$2,044	\$110	\$1,022	\$2,078	\$3,170	\$8,194
19	Arkansas	\$30,327,406	88.2%	\$1,651	\$2,245	\$91	\$1,045	\$2,233	\$3,591	\$10,359
20	Mississippi	\$16,009,000	90.5%	\$1,806	\$2,399	\$141	\$1,263	\$2,452	\$3,732	\$9,389
21	Louisiana	\$152,742,160	93.6%	\$2,143	\$2,689	\$204	\$1,570	\$2,796	\$4,453	\$10,414
22	Texas	\$421,437,792	90.7%	\$1,749	\$2,351	\$140	\$1,205	\$2,359	\$3,628	\$9,711
23	Oklahoma	\$64,300,600	92.4%	\$1,735	\$2,496	\$137	\$1,168	\$2,318	\$3,552	\$10,132
24	Kansas	\$27,453,488	90.8%	\$1,633	\$2,676	\$105	\$1,095	\$2,196	\$3,390	\$9,439
25	Upper Midwest	\$272,412,992	90.5%	\$1,875	\$2,756	\$108	\$1,172	\$2,398	\$4,112	\$11,649
26	New Mexico	\$56,359,952	89.5%	\$1,488	\$2,160	\$85	\$936	\$2,007	\$3,258	\$8,657
27	Colorado	\$152,968,384	91.9%	\$1,573	\$2,673	\$119	\$953	\$1,999	\$3,229	\$10,845
28	Arizona	\$341,893,248	91.0%	\$1,732	\$2,810	\$112	\$1,052	\$2,209	\$3,629	\$12,004
29	Nevada	\$115,521,528	88.7%	\$1,598	\$2,285	\$108	\$1,013	\$2,123	\$3,564	\$8,956
30	Oregon, Washington	\$313,530,880	93.3%	\$1,861	\$3,061	\$122	\$1,077	\$2,272	\$3,870	\$14,621
31	Idaho, Utah	\$72,076,048	89.9%	\$1,688	\$2,429	\$93	\$1,096	\$2,291	\$3,551	\$10,445
32	California	\$1,238,510,848	93.3%	\$1,493	\$2,541	\$121	\$915	\$1,914	\$3,131	\$9,174
33	Hawaii	\$74,445,064	90.3%	\$1,918	\$2,605	\$133	\$1,317	\$2,525	\$4,149	\$10,045
34	Alaska	\$169,021	83.9%	\$1,798	\$1,832	\$74	\$1,237	\$2,990	\$4,458	\$9,122
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$123,251,712	91.0%	\$1,749	\$2,533	\$130	\$1,172	\$2,348	\$3,629	\$10,250
Average		\$242,532,329	91.0%	\$1,789	\$2,564	\$128	\$1,182	\$2,359	\$3,790	\$10,581
SD		\$286,570,758	2.2%	\$211	\$368	\$29	\$166	\$250	\$457	\$1,770
Max - Min		\$1,238,341,827	11.4%	\$880	\$1,716	\$130	\$703	\$1,076	\$1,805	\$7,018
Range: 90 th – 10 th Percentiles		\$537,238,155	4.6%	\$513	\$806	\$73	\$368	\$566	\$1,134	\$4,122

Table D.28: Community MA-PD Beneficiaries: Comparison of Ingredient Plus Dispensing Cost Distributions Regional Statistics Measured Relative to National Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	92.2%	\$1,767	\$132	\$1,142	\$2,310	\$3,718	\$10,771
0	Territories	1.00	1.01	1.13	1.07	1.06	1.05	0.85
1	Northern NE	0.94	0.89	0.59	0.90	0.93	0.91	0.91
2	Central NE	1.03	1.01	1.20	1.10	1.02	1.00	0.88
3	New York	0.99	1.11	1.16	1.14	1.08	1.12	1.05
4	New Jersey	0.99	1.34	1.28	1.42	1.27	1.33	1.32
5	Mid Atlantic	1.00	1.14	1.28	1.14	1.11	1.13	1.17
6	Penn., W. Virginia	1.01	1.26	1.20	1.23	1.16	1.28	1.41
7	Virginia	0.99	1.02	1.01	1.05	1.02	1.00	1.00
8	North Carolina	1.00	1.06	1.12	1.14	1.06	1.03	1.01
9	South Carolina	0.98	1.04	1.00	1.09	1.05	1.04	0.97
10	Georgia	0.97	0.98	0.88	0.96	0.99	0.97	1.01
11	Florida	1.01	0.90	1.01	0.95	0.94	0.91	0.77
12	Alabama, Tennessee	1.01	1.17	1.30	1.22	1.12	1.17	1.18
13	Michigan	1.01	0.94	0.94	0.98	0.94	0.91	0.88
14	Ohio	1.01	0.97	0.99	1.07	1.02	0.95	0.86
15	Indiana, Kentucky	1.00	1.18	0.98	1.18	1.13	1.19	1.25
16	Wisconsin	0.96	0.91	0.73	0.88	0.91	0.92	0.95
17	Illinois	0.96	0.93	0.85	0.96	0.97	0.96	0.85
18	Missouri	0.99	0.85	0.83	0.90	0.90	0.85	0.76
19	Arkansas	0.96	0.93	0.69	0.92	0.97	0.97	0.96
20	Mississippi	0.98	1.02	1.07	1.11	1.06	1.00	0.87
21	Louisiana	1.01	1.21	1.55	1.37	1.21	1.20	0.97
22	Texas	0.98	0.99	1.06	1.05	1.02	0.98	0.90
23	Oklahoma	1.00	0.98	1.04	1.02	1.00	0.96	0.94
24	Kansas	0.98	0.92	0.80	0.96	0.95	0.91	0.88
25	Upper Midwest	0.98	1.06	0.82	1.03	1.04	1.11	1.08
26	New Mexico	0.97	0.84	0.64	0.82	0.87	0.88	0.80
27	Colorado	1.00	0.89	0.90	0.83	0.87	0.87	1.01
28	Arizona	0.99	0.98	0.85	0.92	0.96	0.98	1.11
29	Nevada	0.96	0.90	0.82	0.89	0.92	0.96	0.83
30	Oregon, Washington	1.01	1.05	0.93	0.94	0.98	1.04	1.36
31	Idaho, Utah	0.97	0.96	0.71	0.96	0.99	0.95	0.97
32	California	1.01	0.84	0.92	0.80	0.83	0.84	0.85
33	Hawaii	0.98	1.09	1.01	1.15	1.09	1.12	0.93
34	Alaska	0.91	1.02	0.56	1.08	1.29	1.20	0.85
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		0.99	0.99	0.98	1.03	1.02	0.98	0.95
Average		0.99	1.01	0.97	1.03	1.02	1.02	0.98
SD		0.02	0.12	0.22	0.15	0.11	0.12	0.16
Max - Min		0.12	0.50	0.99	0.62	0.47	0.49	0.65
Range: 90th – 10th Percentiles		0.05	0.29	0.56	0.32	0.25	0.31	0.38

Table D.29: Institutional MA-PD Beneficiaries: Ingredient Plus Dispensing Cost Distribution

PDP Region		Total Annual Expenditures	% Positive Cost Beneficiaries	Attributes of Distribution of Expenditures Per Capita						
#	Name			Average	SD	Percentiles of Expenditures				
						10 th	50 th	75 th	90 th	99 th
US	National	\$232,761,040	98.4%	\$4,094	\$3,875	\$544	\$3,152	\$5,608	\$8,622	\$17,617
0	Territories	\$364,081	98.9%	\$4,185	\$4,596	\$443	\$3,043	\$5,645	\$9,114	\$34,068
1	Northern NE	\$313,158	96.6%	\$3,684	\$3,543	\$637	\$2,739	\$4,962	\$6,865	\$22,738
2	Central NE	\$34,960,096	99.0%	\$4,399	\$3,865	\$691	\$3,540	\$5,987	\$9,026	\$16,977
3	New York	\$19,504,794	97.5%	\$3,334	\$3,491	\$430	\$2,402	\$4,508	\$7,190	\$15,616
4	New Jersey	\$1,801,879	97.3%	\$4,632	\$4,791	\$619	\$3,566	\$5,845	\$9,834	\$23,987
5	Mid Atlantic	\$11,426,602	98.4%	\$4,304	\$4,007	\$648	\$3,310	\$5,811	\$8,831	\$18,585
6	Penn., W. Virginia	\$18,327,432	99.0%	\$4,763	\$4,112	\$793	\$3,923	\$6,471	\$9,441	\$18,302
7	Virginia	\$540,295	97.0%	\$4,156	\$3,313	\$510	\$3,292	\$5,641	\$8,381	\$15,787
8	North Carolina	\$4,511,656	98.5%	\$4,480	\$3,792	\$790	\$3,570	\$6,243	\$9,041	\$18,264
9	South Carolina	\$177,260	94.7%	\$4,924	\$3,710	\$847	\$4,476	\$6,297	\$10,010	\$18,317
10	Georgia	\$8,800,719	98.8%	\$4,767	\$3,760	\$734	\$4,028	\$6,683	\$9,682	\$17,705
11	Florida	\$8,917,765	98.4%	\$4,502	\$3,939	\$697	\$3,601	\$6,108	\$9,442	\$18,409
12	Alabama, Tennessee	\$3,568,423	98.0%	\$4,745	\$3,528	\$1,016	\$4,131	\$6,509	\$9,293	\$16,135
13	Michigan	\$1,887,471	99.1%	\$4,112	\$3,687	\$497	\$3,123	\$5,696	\$9,402	\$17,069
14	Ohio	\$13,656,543	98.9%	\$5,391	\$4,921	\$1,036	\$4,362	\$7,252	\$10,568	\$20,993
15	Indiana, Kentucky	\$635,975	97.0%	\$4,930	\$3,980	\$644	\$4,435	\$7,172	\$10,308	\$16,237
16	Wisconsin	\$4,249,545	97.9%	\$4,851	\$4,801	\$694	\$3,747	\$6,600	\$10,042	\$21,362
17	Illinois	\$2,119,717	98.4%	\$4,407	\$3,851	\$721	\$3,623	\$5,917	\$9,200	\$19,825
18	Missouri	\$1,346,950	97.7%	\$3,454	\$3,051	\$361	\$2,817	\$5,029	\$7,195	\$13,027
19	Arkansas	\$104,713	100.0%	\$3,611	\$3,245	\$426	\$2,826	\$4,458	\$7,409	\$13,460
20	Mississippi	\$15,971	100.0%	\$3,993	\$2,102	\$1,948	\$3,545	\$5,304	\$6,932	\$6,932
21	Louisiana	\$952,423	98.2%	\$4,430	\$2,926	\$991	\$4,077	\$6,414	\$8,812	\$11,436
22	Texas	\$2,820,465	97.2%	\$3,687	\$3,256	\$524	\$2,945	\$5,054	\$7,753	\$15,257
23	Oklahoma	\$1,010,837	99.1%	\$4,791	\$4,330	\$975	\$3,881	\$6,475	\$9,630	\$24,545
24	Kansas	\$419,265	97.0%	\$3,225	\$3,293	\$244	\$2,207	\$4,593	\$7,419	\$15,306
25	Upper Midwest	\$43,614,560	99.0%	\$4,015	\$3,775	\$530	\$3,072	\$5,514	\$8,580	\$16,887
26	New Mexico	\$915,986	95.7%	\$3,431	\$2,724	\$403	\$2,907	\$4,802	\$7,135	\$12,743
27	Colorado	\$8,007,779	97.9%	\$3,567	\$3,949	\$325	\$2,562	\$4,877	\$7,824	\$20,365
28	Arizona	\$9,721,749	98.3%	\$3,539	\$3,480	\$406	\$2,576	\$4,838	\$7,717	\$16,848
29	Nevada	\$1,547,809	93.1%	\$3,721	\$3,436	\$520	\$2,828	\$5,137	\$7,401	\$17,173
30	Oregon, Washington	\$7,597,601	98.4%	\$4,018	\$4,178	\$513	\$3,031	\$5,335	\$8,330	\$18,106
31	Idaho, Utah	\$361,668	96.0%	\$3,767	\$3,791	\$658	\$2,445	\$5,525	\$8,127	\$22,901
32	California	\$16,982,414	98.2%	\$3,378	\$3,447	\$414	\$2,531	\$4,529	\$7,232	\$15,477
33	Hawaii	\$1,558,367	97.3%	\$3,351	\$2,903	\$369	\$2,848	\$4,537	\$7,048	\$12,931
34	Alaska	\$19,078	80.0%	\$4,769	\$2,556	\$2,544	\$4,297	\$6,839	\$7,939	\$7,939
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions										
Median		\$1,887,471	98.2%	\$4,156	\$3,710	\$637	\$3,292	\$5,645	\$8,580	\$17,069
Average		\$6,650,316	97.3%	\$4,152	\$3,661	\$703	\$3,323	\$5,675	\$8,519	\$17,477
SD		\$9,930,248	3.3%	\$580	\$625	\$442	\$643	\$808	\$1,103	\$4,889
Max - Min		\$43,598,589	20.0%	\$2,166	\$2,819	\$2,300	\$2,269	\$2,793	\$3,703	\$27,136
Range: 90 th – 10 th Percentiles		\$17,544,216	3.2%	\$1,423	\$1,575	\$620	\$1,684	\$2,085	\$2,778	\$9,999

Table D.30: Institutional MA-PD Beneficiaries: Comparison of Ingredient Plus Dispensing Cost Distributions Regional Statistics Measured Relative to National Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
US	National	98.4%	\$4,094	\$544	\$3,152	\$5,608	\$8,622	\$17,617
0	Territories	1.00	1.02	0.81	0.97	1.01	1.06	1.93
1	Northern NE	0.98	0.90	1.17	0.87	0.88	0.80	1.29
2	Central NE	1.01	1.07	1.27	1.12	1.07	1.05	0.96
3	New York	0.99	0.81	0.79	0.76	0.80	0.83	0.89
4	New Jersey	0.99	1.13	1.14	1.13	1.04	1.14	1.36
5	Mid Atlantic	1.00	1.05	1.19	1.05	1.04	1.02	1.05
6	Penn., W. Virginia	1.01	1.16	1.46	1.24	1.15	1.10	1.04
7	Virginia	0.99	1.02	0.94	1.04	1.01	0.97	0.90
8	North Carolina	1.00	1.09	1.45	1.13	1.11	1.05	1.04
9	South Carolina	0.96	1.20	1.56	1.42	1.12	1.16	1.04
10	Georgia	1.00	1.16	1.35	1.28	1.19	1.12	1.00
11	Florida	1.00	1.10	1.28	1.14	1.09	1.10	1.04
12	Alabama, Tennessee	1.00	1.16	1.87	1.31	1.16	1.08	0.92
13	Michigan	1.01	1.00	0.91	0.99	1.02	1.09	0.97
14	Ohio	1.00	1.32	1.90	1.38	1.29	1.23	1.19
15	Indiana, Kentucky	0.99	1.20	1.18	1.41	1.28	1.20	0.92
16	Wisconsin	0.99	1.19	1.27	1.19	1.18	1.16	1.21
17	Illinois	1.00	1.08	1.32	1.15	1.06	1.07	1.13
18	Missouri	0.99	0.84	0.66	0.89	0.90	0.83	0.74
19	Arkansas	1.02	0.88	0.78	0.90	0.79	0.86	0.76
20	Mississippi	1.02	0.98	3.58	1.12	0.95	0.80	0.39
21	Louisiana	1.00	1.08	1.82	1.29	1.14	1.02	0.65
22	Texas	0.99	0.90	0.96	0.93	0.90	0.90	0.87
23	Oklahoma	1.01	1.17	1.79	1.23	1.15	1.12	1.39
24	Kansas	0.99	0.79	0.45	0.70	0.82	0.86	0.87
25	Upper Midwest	1.01	0.98	0.97	0.97	0.98	1.00	0.96
26	New Mexico	0.97	0.84	0.74	0.92	0.86	0.83	0.72
27	Colorado	0.99	0.87	0.60	0.81	0.87	0.91	1.16
28	Arizona	1.00	0.86	0.75	0.82	0.86	0.90	0.96
29	Nevada	0.95	0.91	0.95	0.90	0.92	0.86	0.97
30	Oregon, Washington	1.00	0.98	0.94	0.96	0.95	0.97	1.03
31	Idaho, Utah	0.98	0.92	1.21	0.78	0.99	0.94	1.30
32	California	1.00	0.83	0.76	0.80	0.81	0.84	0.88
33	Hawaii	0.99	0.82	0.68	0.90	0.81	0.82	0.73
34	Alaska	0.81	1.17	4.68	1.36	1.22	0.92	0.45
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.02	1.17	1.04	1.01	1.00	0.97
Average		0.99	1.01	1.29	1.05	1.01	0.99	0.99
SD		0.03	0.14	0.81	0.20	0.14	0.13	0.28
Max - Min		0.20	0.53	4.23	0.72	0.50	0.43	1.54
Range: 90 th – 10 th Percentiles		0.03	0.35	1.15	0.54	0.37	0.32	0.57

Table D.31: Community PDP Beneficiaries: Comparison of Ingredient Cost Distributions Adjusting for Population Composition - Regional Statistics Measured Relative to Average Regional Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
Average Regional		91.9%	\$2,802	\$205	\$1,777	\$3,337	\$6,120	\$18,172
0	Territories	0.91	0.79	0.56	0.76	0.80	0.80	0.83
1	Northern NE	1.01	0.92	0.82	0.90	0.89	0.85	0.86
2	Central NE	1.01	1.00	0.96	0.98	0.97	0.97	0.95
3	New York	0.98	1.17	1.24	1.16	1.20	1.27	1.29
4	New Jersey	1.00	1.17	1.39	1.19	1.23	1.27	1.20
5	Mid Atlantic	0.99	0.99	0.98	0.99	1.00	1.00	1.02
6	Penn., W. Virginia	1.00	1.03	1.05	1.02	1.03	1.05	1.02
7	Virginia	1.01	0.97	1.02	0.98	0.97	0.95	0.91
8	North Carolina	1.02	1.03	1.24	1.09	1.04	1.03	1.00
9	South Carolina	1.01	1.00	1.19	1.08	1.03	1.00	0.97
10	Georgia	1.00	0.96	1.09	1.00	1.00	0.98	0.98
11	Florida	0.99	0.99	1.03	0.99	1.00	0.98	1.06
12	Alabama, Tennessee	1.01	0.95	1.08	0.98	0.96	0.93	0.98
13	Michigan	1.01	1.01	0.89	0.96	1.00	1.01	1.04
14	Ohio	1.00	1.02	1.03	1.01	0.99	1.00	1.01
15	Indiana, Kentucky	1.02	1.02	1.17	1.06	1.03	1.02	0.99
16	Wisconsin	1.02	1.07	1.06	1.01	1.02	1.01	1.02
17	Illinois	1.00	1.03	1.13	1.05	1.05	1.01	0.94
18	Missouri	1.01	1.03	1.08	1.01	1.00	1.00	1.04
19	Arkansas	1.01	0.92	0.95	0.93	0.92	0.89	0.86
20	Mississippi	1.02	0.93	1.19	1.00	0.97	0.92	0.90
21	Louisiana	1.01	0.99	1.20	1.07	1.03	1.01	0.95
22	Texas	1.00	0.94	1.02	0.99	0.98	0.99	0.99
23	Oklahoma	1.01	1.04	1.13	1.08	1.05	1.07	1.06
24	Kansas	1.02	1.05	1.08	1.03	1.03	1.01	0.99
25	Upper Midwest	1.01	1.01	0.98	0.98	0.99	1.00	0.93
26	New Mexico	0.97	0.81	0.62	0.76	0.80	0.77	0.79
27	Colorado	1.00	1.03	1.03	1.02	1.01	1.02	0.97
28	Arizona	0.98	0.90	0.79	0.91	0.92	0.88	0.91
29	Nevada	0.97	0.98	0.85	0.95	0.98	0.99	1.03
30	Oregon, Washington	1.01	0.97	0.85	0.94	0.95	0.92	0.91
31	Idaho, Utah	1.01	1.04	1.01	1.04	1.03	1.04	0.97
32	California	0.99	1.06	0.97	1.02	1.04	1.07	1.15
33	Hawaii	0.97	0.97	0.77	0.88	0.91	0.96	1.11
34	Alaska	0.99	1.20	0.99	1.16	1.22	1.30	1.22
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.01	1.00	1.03	1.00	1.00	1.00	0.99
Average		1.00	1.00	1.01	1.00	1.00	1.00	1.00
SD		0.02	0.08	0.17	0.09	0.09	0.11	0.11
Max - Min		0.11	0.41	0.83	0.43	0.43	0.53	0.50
Range: 90th - 10th Percentiles		0.04	0.15	0.39	0.18	0.13	0.19	0.26

Table D.32: Institutional PDP Beneficiaries: Comparison of Ingredient Cost Distributions Adjusting for Population Composition - Regional Statistics Measured Relative to Average Regional Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
Average Regional		98.6%	\$4,441	\$648	\$3,453	\$5,935	\$9,057	\$18,630
0	Territories	--	--	--	--	--	--	--
1	Northern NE	1.00	1.04	1.00	1.04	1.00	1.07	1.03
2	Central NE	1.01	1.07	0.99	1.13	1.07	1.09	1.08
3	New York	0.99	0.87	0.65	0.81	0.87	0.89	0.96
4	New Jersey	1.00	1.02	1.16	1.02	1.01	0.99	1.08
5	Mid Atlantic	1.00	0.95	0.77	0.89	0.93	0.97	1.05
6	Penn., W. Virginia	1.00	1.08	1.28	1.15	1.11	1.06	1.08
7	Virginia	1.00	0.94	0.95	0.88	0.93	0.94	0.94
8	North Carolina	1.00	1.06	1.28	1.10	1.09	1.04	0.84
9	South Carolina	1.01	0.89	0.79	0.87	0.91	0.90	0.84
10	Georgia	1.00	0.94	0.78	0.92	0.94	0.92	0.92
11	Florida	1.00	0.94	1.03	0.93	0.93	0.94	0.85
12	Alabama, Tennessee	1.00	0.95	1.12	0.98	0.98	0.93	0.79
13	Michigan	1.01	1.01	1.07	1.06	1.02	1.03	1.02
14	Ohio	1.00	1.07	1.32	1.11	1.09	1.07	1.00
15	Indiana, Kentucky	1.00	1.14	1.08	1.16	1.18	1.18	1.25
16	Wisconsin	0.99	1.12	1.25	1.14	1.13	1.13	1.20
17	Illinois	1.00	1.02	1.21	1.04	1.02	1.00	1.18
18	Missouri	1.01	1.05	1.06	1.11	1.07	1.06	1.02
19	Arkansas	1.00	0.95	0.92	0.98	0.98	0.96	0.85
20	Mississippi	0.98	1.07	1.44	1.14	1.09	1.06	1.26
21	Louisiana	1.00	1.12	1.45	1.21	1.22	1.14	1.07
22	Texas	1.01	1.09	1.08	1.15	1.08	1.12	1.08
23	Oklahoma	1.01	1.07	1.43	1.10	1.04	1.01	0.93
24	Kansas	1.00	1.12	1.42	1.11	1.09	1.11	1.32
25	Upper Midwest	1.01	1.06	1.07	1.02	1.02	1.05	1.07
26	New Mexico	0.96	0.87	0.83	0.84	0.86	0.88	0.74
27	Colorado	1.00	0.94	0.78	0.89	0.93	0.92	0.81
28	Arizona	0.99	0.79	0.60	0.74	0.78	0.81	0.78
29	Nevada	0.99	0.84	0.53	0.77	0.82	0.84	0.84
30	Oregon, Washington	1.00	0.91	0.77	0.86	0.91	0.95	0.86
31	Idaho, Utah	0.98	1.12	0.96	1.08	1.09	1.09	1.18
32	California	0.99	0.99	0.76	0.93	0.98	1.06	1.08
33	Hawaii	1.00	0.91	0.69	0.85	0.91	0.94	1.07
34	Alaska	--	--	--	--	--	--	--
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.02	1.03	1.02	1.01	1.01	1.02
Average		1.00	1.00	1.02	1.00	1.00	1.00	1.00
SD		0.01	0.09	0.26	0.13	0.10	0.09	0.15
Max - Min		0.05	0.35	0.93	0.47	0.44	0.37	0.57
Range: 90th - 10th Percentiles		0.02	0.24	0.70	0.31	0.23	0.23	0.38

Table D.33: Community PDP Beneficiaries: Comparison of Ingredient Plus Dispensing Cost Distributions
Adjusting for Population Composition - Regional Statistics Measured Relative to Average Regional Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
Average Regional		91.9%	\$2,749	\$219	\$1,763	\$3,283	\$5,987	\$17,537
0	Territories	0.91	0.79	0.57	0.75	0.80	0.80	0.82
1	Northern NE	1.01	0.92	0.83	0.91	0.89	0.85	0.86
2	Central NE	1.01	1.00	0.96	0.98	0.97	0.96	0.94
3	New York	0.98	1.17	1.19	1.15	1.20	1.25	1.28
4	New Jersey	1.00	1.16	1.32	1.18	1.22	1.26	1.19
5	Mid Atlantic	0.99	0.99	0.96	0.99	0.99	0.99	1.02
6	Penn., W. Virginia	1.00	1.03	1.05	1.03	1.03	1.05	1.02
7	Virginia	1.01	0.97	1.03	0.99	0.98	0.96	0.92
8	North Carolina	1.02	1.04	1.24	1.10	1.05	1.03	1.01
9	South Carolina	1.01	1.00	1.21	1.08	1.04	1.00	0.98
10	Georgia	1.00	0.97	1.12	1.01	1.01	0.98	0.97
11	Florida	0.99	0.99	1.00	0.99	0.99	0.98	1.06
12	Alabama, Tennessee	1.01	0.96	1.12	1.00	0.97	0.95	0.98
13	Michigan	1.01	1.01	0.90	0.96	1.00	1.00	1.03
14	Ohio	1.00	1.02	1.04	1.01	0.99	1.01	1.00
15	Indiana, Kentucky	1.02	1.03	1.20	1.07	1.03	1.03	0.99
16	Wisconsin	1.02	1.07	1.08	1.02	1.03	1.02	1.02
17	Illinois	1.00	1.03	1.13	1.05	1.05	1.01	0.94
18	Missouri	1.01	1.03	1.08	1.02	1.01	1.01	1.04
19	Arkansas	1.01	0.92	0.98	0.95	0.93	0.89	0.87
20	Mississippi	1.02	0.93	1.20	1.01	0.97	0.93	0.90
21	Louisiana	1.01	0.99	1.20	1.07	1.03	1.01	0.94
22	Texas	1.00	0.94	0.99	0.98	0.98	0.99	0.99
23	Oklahoma	1.01	1.05	1.14	1.08	1.06	1.07	1.06
24	Kansas	1.02	1.05	1.10	1.04	1.04	1.02	0.98
25	Upper Midwest	1.01	1.02	0.97	0.98	1.00	1.00	0.93
26	New Mexico	0.97	0.81	0.64	0.77	0.80	0.78	0.80
27	Colorado	1.00	1.03	1.02	1.02	1.02	1.02	0.97
28	Arizona	0.98	0.90	0.79	0.91	0.92	0.89	0.92
29	Nevada	0.97	0.98	0.85	0.96	0.98	0.99	1.03
30	Oregon, Washington	1.01	0.97	0.87	0.95	0.95	0.93	0.91
31	Idaho, Utah	1.01	1.04	1.02	1.04	1.04	1.04	0.96
32	California	0.99	1.05	0.93	1.01	1.04	1.07	1.15
33	Hawaii	0.97	0.96	0.79	0.88	0.91	0.95	1.11
34	Alaska	0.99	1.15	0.92	1.07	1.12	1.22	1.20
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.01	1.00	1.02	1.01	1.00	1.00	0.98
Average		1.00	1.00	1.01	1.00	1.00	1.00	0.99
SD		0.02	0.08	0.17	0.09	0.08	0.10	0.10
Max – Min		0.11	0.37	0.76	0.42	0.42	0.48	0.48
Range: 90th – 10th Percentiles		0.04	0.14	0.39	0.18	0.14	0.18	0.25

Table D.34: Institutional PDP Beneficiaries: Comparison of Ingredient Plus Dispensing Cost Distributions
Adjusting for Population Composition - Regional Statistics Measured Relative to Average Regional Values

PDP Region		% Beneficiaries with Positive Expenditures	Attributes of Distribution of Expenditures Per Capita					
#	Name		Average	Percentiles of Expenditures				
				10 th	50 th	75 th	90 th	99 th
Average Regional		98.6%	\$4,577	\$770	\$3,633	\$6,103	\$9,186	\$18,344
0	Territories	--	--	--	--	--	--	--
1	Northern NE	1.00	1.05	1.03	1.04	1.03	1.07	1.01
2	Central NE	1.01	1.07	0.97	1.13	1.08	1.08	1.11
3	New York	0.99	0.88	0.71	0.83	0.88	0.90	0.97
4	New Jersey	1.00	1.02	1.12	1.00	1.02	0.99	1.10
5	Mid Atlantic	1.00	0.96	0.81	0.90	0.95	0.98	1.01
6	Penn., W. Virginia	1.00	1.08	1.22	1.15	1.10	1.06	1.03
7	Virginia	1.00	0.95	0.99	0.90	0.95	0.94	0.99
8	North Carolina	1.00	1.05	1.22	1.10	1.06	1.04	0.85
9	South Carolina	1.01	0.90	0.81	0.89	0.90	0.90	0.83
10	Georgia	1.00	0.93	0.84	0.92	0.94	0.91	0.92
11	Florida	1.00	0.95	1.00	0.94	0.94	0.95	0.86
12	Alabama, Tennessee	1.00	0.96	1.12	0.99	0.98	0.93	0.81
13	Michigan	1.01	1.02	1.06	1.06	1.03	1.03	1.01
14	Ohio	1.00	1.07	1.33	1.11	1.09	1.07	1.00
15	Indiana, Kentucky	1.00	1.15	1.11	1.17	1.18	1.18	1.27
16	Wisconsin	0.99	1.13	1.19	1.15	1.15	1.14	1.27
17	Illinois	1.00	1.02	1.15	1.05	1.03	1.00	1.28
18	Missouri	1.01	1.05	1.07	1.10	1.07	1.06	1.03
19	Arkansas	1.00	0.94	0.88	0.96	0.98	0.94	0.85
20	Mississippi	0.98	1.06	1.31	1.11	1.07	1.05	1.21
21	Louisiana	1.00	1.10	1.35	1.18	1.18	1.13	1.05
22	Texas	1.01	1.08	1.02	1.12	1.08	1.09	1.07
23	Oklahoma	1.01	1.06	1.41	1.10	1.05	1.00	0.91
24	Kansas	1.00	1.11	1.28	1.12	1.08	1.10	1.31
25	Upper Midwest	1.01	1.06	1.08	1.02	1.02	1.06	1.08
26	New Mexico	0.96	0.87	0.80	0.83	0.86	0.88	0.77
27	Colorado	1.00	0.94	0.78	0.89	0.93	0.93	0.83
28	Arizona	0.99	0.81	0.65	0.76	0.80	0.81	0.80
29	Nevada	0.99	0.85	0.59	0.78	0.84	0.88	0.83
30	Oregon, Washington	1.00	0.91	0.81	0.87	0.92	0.95	0.86
31	Idaho, Utah	0.98	1.11	0.94	1.08	1.08	1.08	1.20
32	California	0.99	0.99	0.79	0.93	0.99	1.07	1.07
33	Hawaii	1.00	0.89	0.66	0.83	0.88	0.92	1.06
34	Alaska	--	--	--	--	--	--	--
Summary Statistics Describing Differences in Attributes of the Distribution of Expenditures Per Capita across Regions								
Median		1.00	1.02	1.02	1.02	1.02	1.00	1.01
Average		1.00	1.00	1.00	1.00	1.00	1.00	1.01
SD		0.01	0.09	0.22	0.12	0.10	0.09	0.15
Max – Min		0.05	0.34	0.82	0.42	0.38	0.37	0.53
Range: 90th – 10th Percentiles		0.02	0.23	0.58	0.32	0.22	0.20	0.43

APPENDIX E: AVAILABILITY OF BEST PRICES ACROSS COUNTIES IN ALASKA

Based on the regional prices indices evaluated at the median, Alaska appears to have higher Part D prescription drug prices than the rest of the United States, especially when considering ingredient cost plus dispensing fee for the GSN market basket (Table 5.7). Yet the same indices evaluated at the 10th and 25th percentiles are only 3% and 6% above the national values. This difference suggests that the typical prices may reflect different beneficiary choices in Alaska, rather than major differences in available prices.

If the best prices are generally available to all Alaska beneficiaries, we can infer that beneficiary choice plays a substantial role in the median price index. However, given the vast size of Alaska and the low population density, it is possible that “best” prices are actually prices only available in Anchorage or other population centers, and comparable prices are not available to other residents. If so, 10th, 25th and 50th percentile prices could all reflect different geographic areas rather than different beneficiary choices.

For this reason, we conducted additional analysis to determine whether the best prices were available throughout Alaska. To do so, we examined available prices for drugs in Alaska’s boroughs and Census Areas, which we refer to as counties. Out of 39 Social Security County Code areas, only 24 had PDP enrollees. With just over 21,000 PDP enrollees statewide, only three counties in Alaska have more than 2,000 enrollees (Table E.1) and only six have more than 500 enrollees. Given these small populations, the number of different drugs observed in any area may be quite small, even at the GSN level. This makes it difficult to confirm whether all drugs were available at best prices in each area.

To understand whether best prices were available in every area, we tried two different strategies. First, we looked at those GSNs that were commonly available in Alaska and examined whether best prices were available in each area. As we describe below, only a fraction of GSNs were observed frequently enough to use the PDE claims. Second, we looked at mail order prices for each GSN. Because mail order prices are available statewide, and because these prices are published through the Medicare PlanFinder, we can compare mail order prices even when there are no observed claims for these drugs in a given area.

Table E.1: Enrollment of PDP Beneficiaries by County in Alaska, 2007

County	Population	Percent Total
Total	21,315	100.0%
Anchorage	9,008	42.3%
Matanuska Susitna	2,447	11.5%
Kenai-Cook Inlet	2,395	11.2%
Fairbanks North Star	1,987	9.3%
Juneau	1,191	5.6%
Ketchikan Gateway	699	3.3%
Bethel	491	2.3%
Wade Hampton	361	1.7%
Nome	350	1.6%
Wrangell Petersburg	337	1.6%
Sitka	310	1.5%
Dillingham	246	1.2%
Southeast Fairbanks	236	1.1%
Bristol Bay	228	1.1%
Kodiak Island	185	0.9%
Haines	153	0.7%
Skagway-Yakutat	125	0.6%
Barrow-North Slope	113	0.5%
Cordova-McCarthy	100	0.5%
Upper Yukon	94	0.4%
Angoon	48	0.2%
Kenai Peninsula	2	0.0%
Skagway Hoonah Angoo	2	0.0%
Valdez Cordova	1	0.0%

E.1 Claims

Ideally, we would like to check the PDE claims prices seen in each county in Alaska and confirm that the best price is available in each county. Unfortunately, given the small number of enrollees in Alaska, there are relatively few GSNs in the market basket that we observe across multiple counties. To have a sufficient comparison group, we examined GSNs that were observed in at least 10 PDE claims from each of at least 3 counties in Alaska, where in fact only 3 counties had more than 2000 enrollees. As shown in Table E.2, only 576 GSNs met these county-claim number criteria. With the 10 claim restriction, only 40 percent of the 576 GSNs observed are available at the best price at the 10th percentile. However, we do observe that nearly three quarters of these GSNs are available in all counties at the 25th percentile price,

representing 58.1 percent of all expenditures in the Alaska GSN market basket. While we do not observe 10th percentile prices for a majority of GSNs, we cannot determine whether we do not see the best price everywhere because our number of claims is too low or because the best prices are not available. We do know that we increase our likelihood of observing the best statewide price in claims for each county as we move to more common GSNs. For example, 10th percentile prices are observed in all counties for 80.7 percent of the GSNs for which we have at least 30 claims in at least 3 counties, and 97 percent are observed at 25th percentile prices.

Table E.2: Availability of GSNs at Best Prices in All Counties for GSNs Purchased in at Least Three Counties According to PDE Data

Claims per County Restriction	# GSNs	% Available in All Counties at 10 th Percentile	% Available in All Counties at 25 th Percentile
10	576	40.1%	74.5%
20	367	67.0%	93.7%
30	274	80.7%	97.1%

E.2 Mail Order Prices based on PlanFinder

Since the observed PDE prices allow only minimal comparisons across counties, we turned to mail order pricing as another strategy that beneficiaries could choose to get best prices. If a best price is available by mail order, it is available throughout the state. Therefore, we investigate whether GSNs are available best prices, defined as the 10th and 25th percentile of per-unit ingredient cost plus dispensing fee in Alaska, through mail order for any plan in Alaska. For this exercise, we use PlanFinder prices across all plans, checking whether or not there are plans that offer mail order prices that are at or below the 10th or 25th percentile price for that GSN statewide.²³

²³ We had to make a number of assumptions to arrive at a GSN price for a given plan using PlanFinder. First, even with a given plan at one point in time, PlanFinder may list multiple prices for a GSN; for example, different prices for the different NDCs. In this case, we use the minimum price within the GSN, since these are pharmaceutically equivalent products. Second, PlanFinder does not list a per-unit dispensing fee, but only a total dispensing fee per claim, so the per-unit dispensing fee will depend on the quantity dispensed. To ensure that our PlanFinder prices

Out of 1,225 GSNs in the market basket for the price index, more than 96 percent are available by mail order at a price that is at or below the 10th percentile price for the state, and more than 99 percent are available at the 25th percentile price. Only 42 of these GSNs have minimum mail order prices above the best price, and the number drops to just 11 at the 25th percentile. For these GSNs, we went back to the PDE claims to determine whether the best prices were available through local purchase in all counties. Of the 42 GSNs not available at the best price by mail order, 31 were purchased locally at the 10th percentile price or below. All of the 11 GSNs with mail order prices above the 25th percentile price had at least one claim purchased at best price by an enrollee in every county for which the GSN had at least 10 claims. Based on these findings, we conclude that best prices (either 10th or 25th percentile prices) are available for all GSNs for all areas of Alaska with 10 or more claims for that GSN, either by mail order or through local purchase.

Table E.3: Availability of GSNs at Best Prices

Sample	Number GSNs at 10th Percentile	Number GSNs at 25th Percentile
In GSN market basket	1,225	1,225
Available at best prices by mail order according to PlanFinder	1,183	1,214
Not available at best prices by mail order according to PlanFinder	42	11
Available in all counties at best prices according to PDE claims	31	11
Not available in all counties at best prices according to PDE claims	11	0

E.3 Accuracy of PlanFinder Prices

We rely on PlanFinder prices to address the limited number of claims observed for each GSN within Alaska. An obvious concern is whether prices identified through PlanFinder are lower than those actually available to enrollees. The only way to check the accuracy of PlanFinder for this analysis is to compare the mail order prices for actual PDE claims to the PlanFinder mail order price for that enrollee’s plan and pharmacy. If the PlanFinder prices are

represented an upper bound we added the entire dispensing fee to the per-unit ingredient cost, leading to a likely overstatement of the real price through mail order. Similarly, where different dispensing fees were listed for generic versus branded versions of the GSN, we added the higher of the two fees. Finally, we used the price listed for the latest posted period of the PlanFinder prices.

greater than or equal to the PDE claim prices, then our conclusion that a GSN is available at best price still holds.

Only 455 of the GSNs in the market basket had mail order PDE claims in Alaska. For this group of 455 GSNs where we have both PlanFinder prices and PDE claim prices, we considered a series of tests to identify any GSNs for which we have evidence that the PlanFinder price underestimates the realized price in mail order PDE claims, as shown in Table E.4. First, we exclude GSNs where the median price for the mail order PDE claims themselves is lower than the best price. We find 45 GSNs with median PDE claim prices below the 10th percentile price and 106 below the 25th percentile price. For these GSNs, we have evidence that the best price is available, even without the PlanFinder price information. For the remaining GSNs (410 for 10th percentile and 349 for the 25th percentile), we also conclude that if the PDE price is always below the PlanFinder price, the PlanFinder price is not an underestimate. This leaves 106 GSNs for 10th percentile prices and 94 at the 25th percentile. We can further conclude that the PlanFinder price is not an underestimate if the PDE price is usually lower than the PlanFinder price. Depending on the best price point used, these exclusions leave 63 to 58 GSNs for which the PlanFinder price appears to overestimate the actual mail order prices available in Alaska.

Table E.4: PlanFinder and PDE Mail-Order Price Comparison

Sample	Remaining GSNs at 10 th Percentile	Remaining GSNs at 25 th Percentile
GSN has mail-order PDE claim and is in GSN market basket	455	455
Excluding GSNs where median PDE price is less than best price and has more than ten claims	410	349
Excluding GSNs where PlanFinder price is never lower than PDE price	106	94
Excluding GSNs where the PDE price is less than PlanFinder price for at least 50% of claims	63	58
Of remaining, number where PlanFinder price adjusted for underestimate is higher than best price	13	3
Of these, number with more than five claims	1	0

Our analysis of PlanFinder prices checked whether PlanFinder prices were at or below the 10th or 25th percentile price. Of GSNs for which the PlanFinder price appears to be an

underestimate of the mail order prices observed by enrollees (63 or 58 for 10th or 25th percentile price points), the question remains as to whether the best prices are really available for these products. To check this, we calculate the difference between a plan-pharmacy's mail order price as shown in the PDE claims and as shown in PlanFinder. The median difference is our best approximation for the magnitude of the underestimate. We then adjust the minimum PlanFinder prices up to account for this underestimate. After this adjustment, we only observe 13 GSNs with actual prices above the 10th percentile price, and just 3 GSNs with actual prices above the 25th percentile prices. However, only none of the 13 GSNs with prices above the 10th percentile have more than five mail order PDE claims, and none of the GSNs with prices above the 25th percentile have five or more mail order claims. As such, we have reason to suspect that the correction for the underestimate is unreliable in all but one case at the 10th percentile. Even if we believe that best prices may not be uniformly available for these GSNs, the effect of these GSNs on our broader conclusion is negligible, since these GSNs together represent less than 1 percent of PDP expenditures (at all prices) in Alaska and an even smaller share of PDP expenditures nationally.