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The Prescription Drug Landscape, Explored

A look at retail pharmaceutical spending from 2012 to 2016

The Pew Charitable Trusts

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Overview

Americans spend more on prescription medications each year than the citizens of any other country. Measuring drug spending remains a challenge, however, because of limited public data on how much the various payers and supply chain intermediaries pay for prescription drugs.

Several public and private organizations have recently published U.S. drug spending estimates using different methodologies. These estimates differ, but an analysis from The Pew Charitable Trusts indicates that spending on prescription drugs has increased in recent years. The federal Centers for Medicare & Medicaid Services (CMS) estimates that total retail prescription drug spending rose 26.8 percent between 2012 and 2016—a faster rate of growth than all other categories of personal health care expenditures. This rapid growth was largely attributable to the introduction of new specialty drugs, such as those to treat hepatitis C and various forms of cancer, according to an IQVIA report. Although the pace of rising spending slowed in 2016 and 2017, CMS projects that retail prescription spending will continue to outpace growth in other types of health care spending through 2026.

The complex drug supply and payment chain involves transactions among drug manufacturers, wholesalers, pharmacies, pharmacy benefit managers (PBMs), and health plans. To date, several reports have examined the role these various stakeholders play. This analysis, using primary research and a combination of third-party and government reports and data, quantifies the share of overall spending on retail prescription drugs retained by health plans and others in the supply and payment chain. The study differs from some prior analyses because it considers premium payments for retail prescription drug coverage. Including health insurers allows for a holistic view of spending on retail prescription drugs by patients and health plan sponsors, and incorporates both out-of-pocket expenditures and premium payments. This study builds on prior research and offers new perspectives on how the pharmaceutical supply and payment chain for retail drugs evolved from 2012 to 2016.

This study includes a survey of health plan and PBM personnel to estimate trends in the share of overall health insurance premiums attributable to the pharmacy benefit, and in the volume of rebates and other payments paid by pharmaceutical manufacturers to PBMs. It estimates the share of rebates and price concessions paid after the purchase of a drug that the PBMs passed through to health plans, and how that share has changed over time. By estimating the overall volume of manufacturer rebates and the percentage passed through to health plans, the study provides insights into the revenue that manufacturer rebates add to PBMs.

Key Findings

Important findings on retail prescription drug spending and the various stakeholders include:

- Net spending increased each year of the study period, from $250.7 billion in 2012 to $341.0 billion in 2016.
- Total health insurance premiums allocated to the pharmacy benefit of health plans increased from 12.8 percent in 2012 to 16.5 percent in 2016.
- Policies with capped out-of-pocket expenses and cost-sharing assistance from manufacturers helped shelter patients from rising drug costs throughout the study period.
- Net revenue for pharmacies on retail prescription drugs increased from $30.8 billion in 2012 to $76.9 billion in 2016.
- Manufacturer rebates grew from $39.7 billion in 2012 to $89.5 billion in 2016 and played a growing role in partially offsetting increases on list prices, which have risen more quickly than overall retail prescription drug spending.
- A survey of health plan and PBM personnel found that PBMs passed through 78 percent of manufacturer rebates to health plans in 2012 and 91 percent in 2016.

Methodology

The pharmaceutical supply and payment chain involves various stakeholders that manufacture, distribute, dispense, negotiate pricing, and pay for pharmaceuticals. As a drug makes its way to a patient, transactions occur among these stakeholders at numerous points, with no single source of information available to study the entire process. Consequently, this study relied on a compilation of third-party data sets, government and industry reports, and survey findings related to the various transactions occurring among stakeholders. The study addresses prescription drugs reimbursed through the pharmacy benefit and generally dispensed through retail, specialty, mail-order, or long-term care pharmacies. It does not consider drugs administered by a health care professional in a physician's office or hospital setting, or over-the-counter drugs purchased without a prescription.

Each data source was incorporated into an overarching model that considered the different funding streams for retail prescription drugs—health insurance premiums allocated to the pharmacy benefit, patient cost-sharing, manufacturer direct assistance, and direct pharmacy reimbursement by federal payers (e.g., Medicaid, Department of Veterans Affairs, Department of Defense)—as well as the various stakeholders that make up the pharmaceutical supply and payment chain. This research uses a combination of data analysis, third-party studies, and survey findings to allocate funds across the stakeholders. The amount retained by each stakeholder generally reflects revenue received for the sale of a drug less the direct cost of that drug, and does not consider other operational or financing costs such as rent, sales expenses, general overhead, or taxes. For example, the amount of retail prescription drug spending retained by a pharmacy represents the total reimbursement for the drug less the cost of acquiring the drug after accounting for various price concessions.

The study prioritized government data and publications, and relied on third-party reports where no public or government data were available. Despite the range of accessible information on the pharmaceutical supply and payment chain, gaps persist. In these instances, primary research through telephone and web-based surveys was used to generate the required information. **Appendix A** contains more detailed information on the model design, study methodology, data sources, and assumptions for each stakeholder in the pharmaceutical supply and payment chain.

Results

This section presents three sets of results: net spending on retail prescription drug coverage and the amount retained by each stakeholder; total reimbursement to pharmacies for prescription drugs; and expenditures and revenues by stakeholder group.

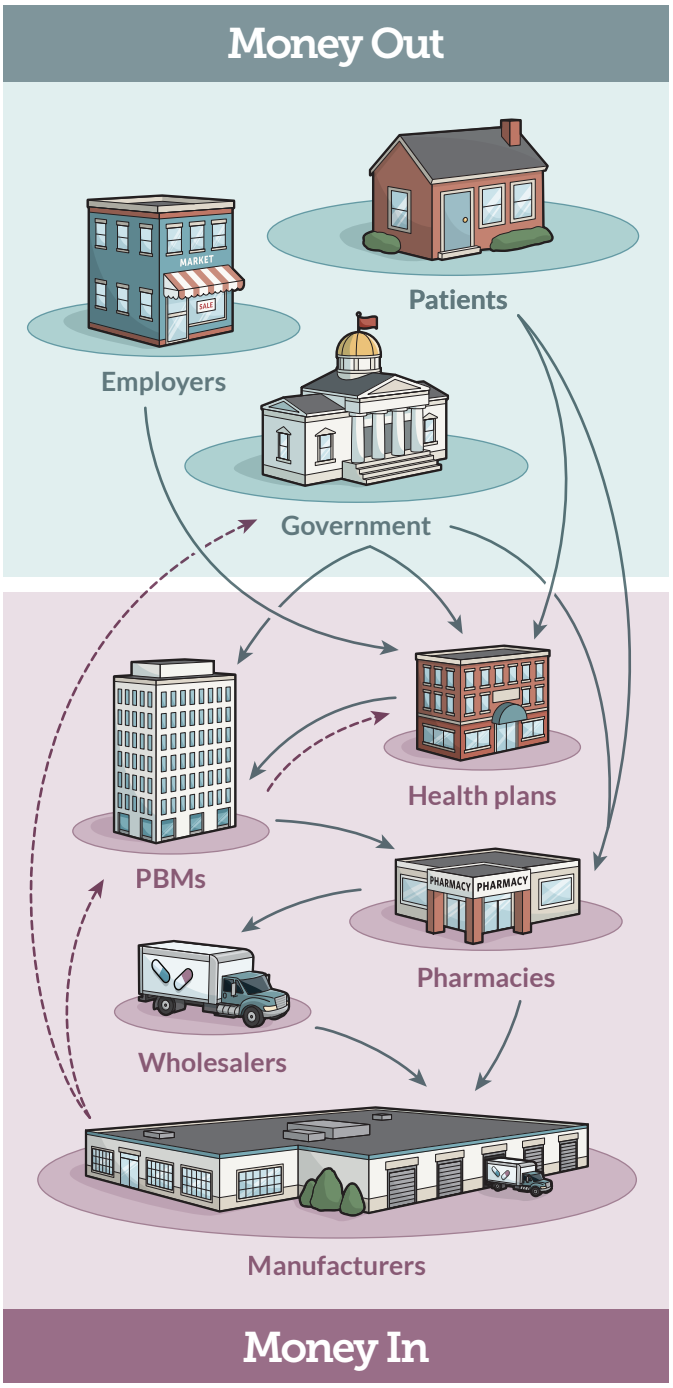
Figure 1 shows 2016 net spending on retail prescription drug coverage, the source of funds, and the amount retained by each stakeholder in the supply and payment chain. Net spending for retail prescription drug coverage includes the share of commercial insurance premiums allocated for the retail drug benefit; Medicare Part D spending on drug coverage, including government and enrollee premiums, reinsurance, and low-income and retiree subsidies; Medicaid fee-for-service and managed care spending on prescription drug coverage net of rebates; other federal health insurance program spending net of rebates; and patient out-of-pocket costs. These estimates may differ from others published, and also from results elsewhere in this study where rebate payments are netted against gross spending. Net spending information for 2012-16 is included in Table 1.

Figure 1

Net 2016 Spending on Retail Prescription Drug Coverage and Payments

Spending by source of funds and amount retained by each stakeholder group

Prescription drug payments involve financial transactions among a range of supply-chain entities. This figure depicts the flow of money in the system and provides estimates for total spending and amount retained by each entity after accounting for purchases and discounts, such as rebates, and other transactions.



→ Payments --→ Rebates

Patients: $103.8 billion
Contributions to insurance premiums for retail drug coverage; out-of-pocket spending

Employers: $97.5 billion
Contributions to insurance premiums for retail drug coverage

Government: $139.8 billion
Federal and state spending on retail drug coverage in Medicare Part D, Medicaid fee-for-service, and the share of premiums for retail drug coverage in Medicaid managed care; share of subsidies for health exchange plans attributable to the pharmacy benefit and retail drug expenditures by the Department of Veterans Affairs, the Department of Defense, and other government programs

Health plans, including Medicare Part D and Medicaid managed care plans: $19.6 billion
Spending retained by plans providing retail prescription drug coverage

Pharmacy Benefit Managers (PBMs): $22.4 billion
Spending retained by PBMs, including from manufacturer rebates, administration fees and spread pricing

Pharmacies: $76.9 billion
Spending retained by entities dispensing prescriptions covered through the pharmacy benefit, including mail-order, specialty, and long-term care pharmacies

Wholesalers: $17.6 billion
Spending retained by entities distributing drugs from manufacturers to pharmacies

Manufacturers: $204.6 billion
Spending retained by entities producing and selling branded and generic prescription drugs

Note: This graphic is a simplified representation that does not include all transactions in the drug supply and payment chain.

Table 1

Net Spending for Retail Prescription Drug Coverage, 2012-16

	2012	2013	2014	2015	2016
	(in billions)				
Total commercial pharmacy benefit premiums*	$108.5	$123.3	$137.5	$156.4	$171.2
Total Part D premiums and payments†	$68.5	$73.0	$82.0	$91.6	$95.7
Total direct payer pharmacy payments net of rebates (Medicaid fee-for-service and other government programs)‡	$20.4	$18.5	$22.5	$24.2	$21.8
Patient out-of-pocket payments to pharmacies§	$53.3	$54.8	$54.3	$53.4	$52.4
Total net spending for retail prescription drug coverage	**$250.7**	**$269.6**	**$296.3**	**$325.6**	**$341.0**

* Employer and patient contributions for retail prescription drug coverage in commercial insurance premiums; Medicaid premiums for drug coverage paid to managed care organizations, net of rebates.

† Enrollee premiums and Medicare payments for Part D drug coverage, which are net of rebates, including direct subsidies, reinsurance, low-income subsidies, risk sharing, and retiree drug subsidies.

‡ Medicaid fee-for-service reimbursement for retail prescription drugs net of rebates; other federal health program payments for retail drugs, as reported in the CMS National Health Expenditures (e.g., Children's Health Insurance Program, Department of Veterans Affairs, Department of Defense) net of rebates.

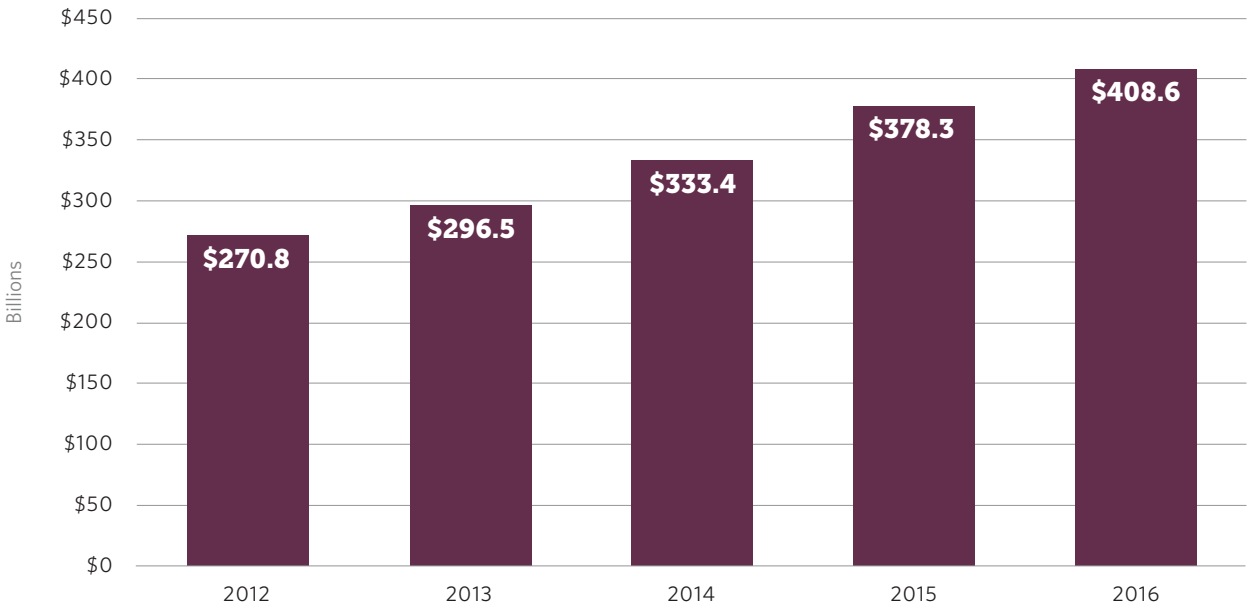
§ Out-of-pocket payments to pharmacies; excludes patient share of premiums (which are reflected in the commercial pharmacy benefit premiums and Total Part D premiums and payments sections), copay coupons, and Part D coverage gap discounts.

Retail Prescription Drug Reimbursement

The study defined retail prescription drug reimbursement as payments received by retail pharmacies for prescription drugs, which is distinct from net spending for retail prescription drug coverage because it does not take insurance premiums or rebates into account. It includes direct reimbursements to pharmacies by PBMs, health plans, patients (including manufacturer assistance programs) and certain government payers (e.g., Medicaid, Department of Defense). Retail prescription drug reimbursement increased from $270.8 billion in 2012 to $408.6 billion in 2016 (Figure 2), growth that may be attributable to a variety of factors, including the availability of new drug therapies, increases in drug list prices, and expanded access to insurance coverage.

Figure 2

Total Retail Prescription Drug Reimbursement to Pharmacies, 2012-16



Results by Stakeholder Group

This section presents results by stakeholder group—patients, commercial health insurers, Medicare Part D plans, Medicaid and other government payers, PBMs, pharmacies, and pharmaceutical manufacturers—with a focus on emerging trends and insights not reported in previous studies. Consolidation and vertical integration in the health care industry have resulted in some companies having subsidiaries that operate in multiple stakeholder groups. For example, companies may have several business units that span the functions of PBM, Part D plan sponsor and mail-order pharmacy. For purposes of this study, any vertically integrated entity is represented in each of the stakeholder groups in which it operates, with the study methodology ensuring that dollars are not counted twice across groups. Detailed tables of the study results are provided in **Appendix B**, and survey results are reported in **Appendix C**.

Patients

The number of patients with health insurance coverage increased by 13.2 percent from 2012 to 2016 (Table 2),[1] driven by greater access to individual health coverage under the Affordable Care Act, increases in Medicare Part D enrollment, and Medicaid expansion. As access to prescription drug coverage expanded, aggregate patient payments also increased for retail pharmaceuticals. From 2012 to 2016, patient payments, including both cost-sharing and premium payments, grew from $86.6 billion to $103.8 billion (Figure 3). As a share of net spending on retail prescription drug coverage, however, patient payments declined during the same time frame from 34.5 percent of total spending to 30.4 percent.

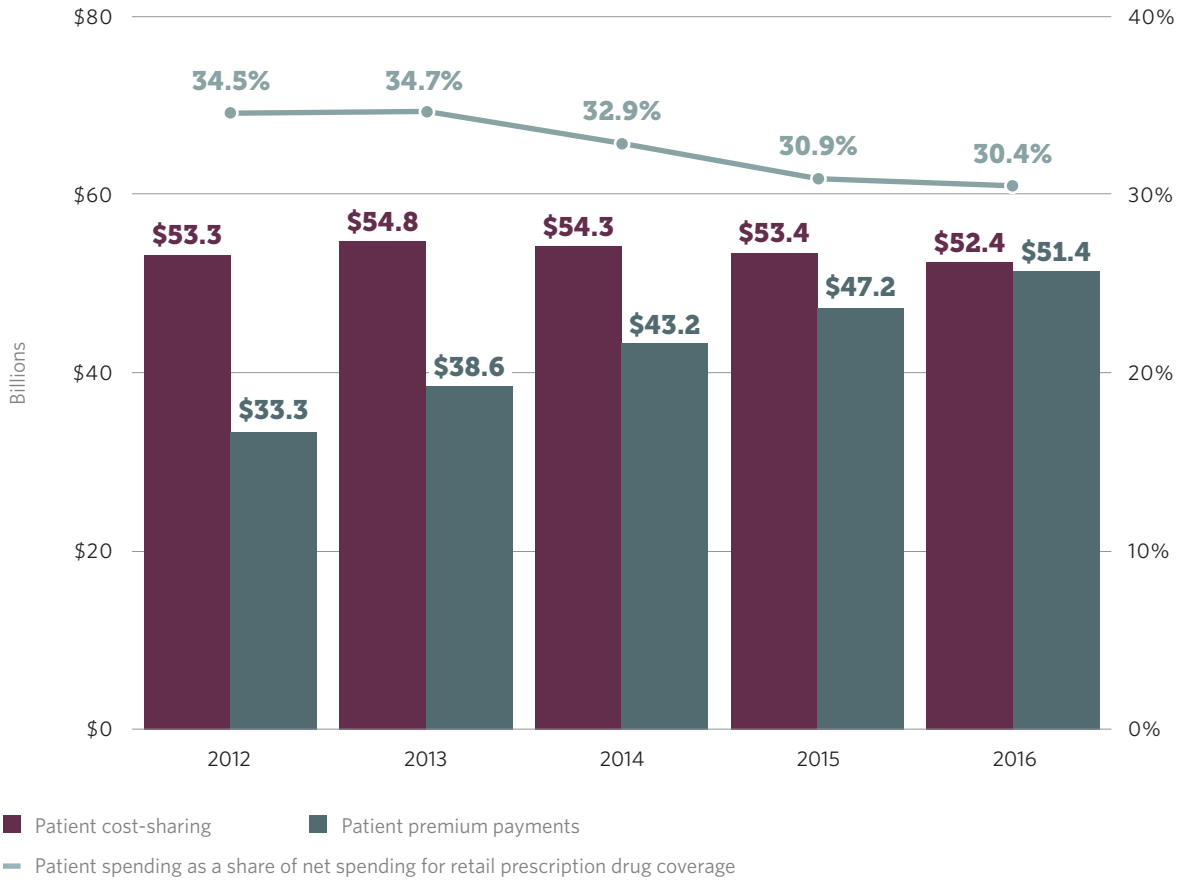
Table 2

Growth in Insured Patients by Payer Type, 2012-16

	Commercial insurance	Medicaid (FFS & MCO)	Medicare Part D	Total
2012	168,002,640	58,900,000	31,500,000	258,402,640
2013	169,236,648	59,800,000	35,300,000	264,336,648
2014	173,892,345	69,100,000	37,400,000	280,392,345
2015	178,566,360	70,000,000	39,200,000	287,766,360
2016	179,408,320	72,200,000	40,800,000	292,408,320
Net growth, 2012-16	**11,405,680**	**13,300,000**	**9,300,000**	**34,005,680**

Figure 3

Total Patient Payments for Retail Prescription Drugs, 2012-16

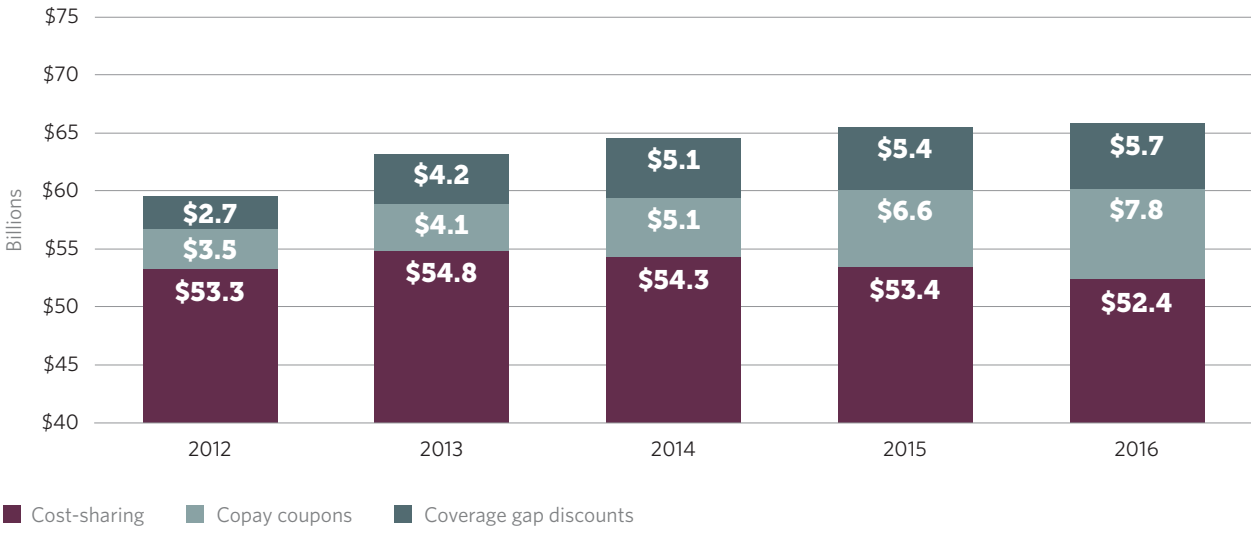


Changes in health benefit design during the study period resulted in a significant increase in average annual patient spending on deductibles and coinsurance among people with coverage provided by large employers, but a decline in average spending on copayments; deductibles are also a growing share of all patient cost-sharing, representing more than 50 percent of such payments in health plans in 2016.[2] During the study period, brand drug list prices, which are typically the basis for patient coinsurance and spending in the deductible phase of the benefit, rose sharply.[3]

Patient responsibility for retail prescription drug costs increased from $59.5 billion in 2012 to $65.8 billion in 2016, despite the offsetting effects of increases in generic utilization rates and the introduction of patient out-of-pocket maximums in the Affordable Care Act.[4] Many patients have largely been shielded from this increase, however, through the expanded use of copay coupon programs and the closing of the Medicare Part D coverage gap (Figure 4).[5] Together, copay coupons and Part D coverage gap discounts represented more than 20 percent of patient responsibility for retail prescription drug costs in 2016. With the other factors noted above, these contributed to a slight decline in actual patient cost-sharing payments from 2014 to 2016, following an increase in 2013. However, individual patient experiences with cost-sharing vary widely.

Figure 4

Patient Responsibility for Retail Prescription Drug Costs by Funding Source, 2012-16

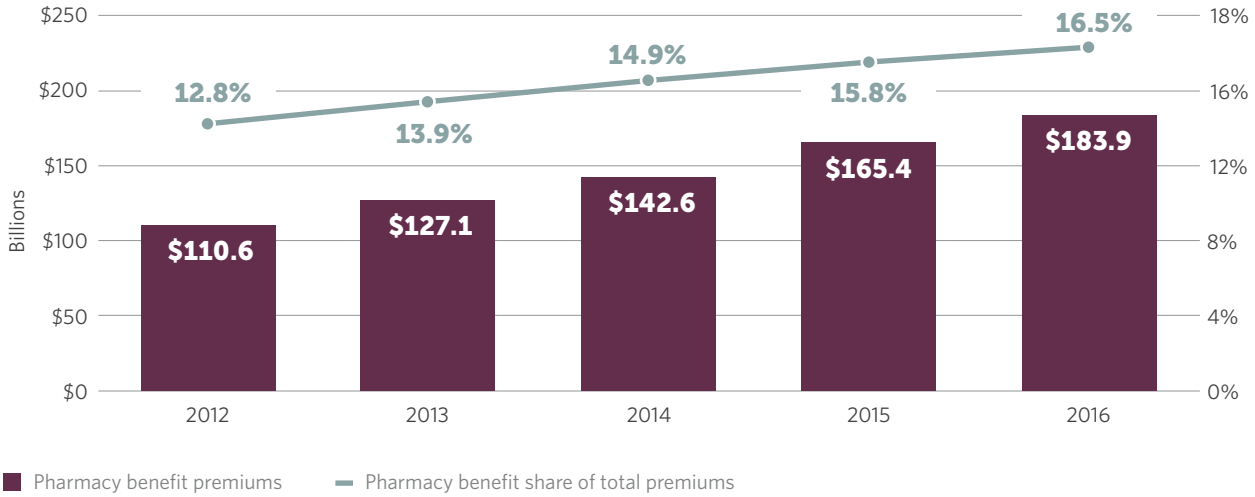


Commercial Health Insurers

During the study period, both the total value of commercial insurance premiums attributed to the pharmacy benefit and the share of insurance premiums attributed to the retail pharmacy benefit increased (Figure 5). These trends track the growth in total reimbursement for retail prescription drugs summarized in Figure 2.

Figure 5

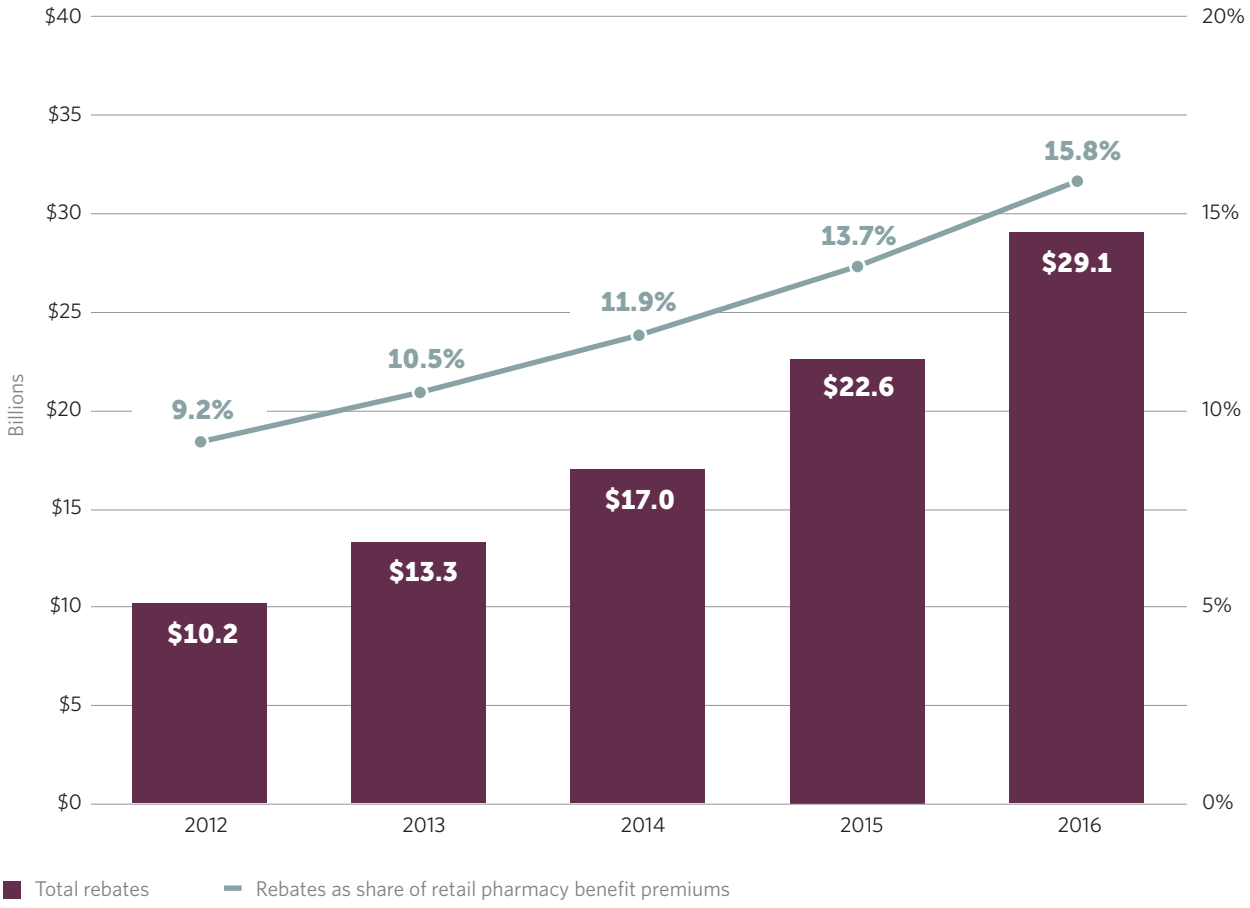
Commercial Health Plan Pharmacy Premiums, 2012-16



During the study period, the rise in brand drug list prices was partially offset by growth in pharmaceutical manufacturer rebates. Rebates accounted for 15.8 percent of retail pharmacy benefit premiums in commercial plans in 2016, up from 9.2 percent in 2012 (Figure 6). Rebate growth reflects an increasingly competitive pharmaceutical marketplace and the negotiating power that PBMs and health plans are able to exert in certain therapeutic categories (e.g., diabetes, hepatitis C, cardiology, etc.).[6] The continued growth in both list prices and rebate volume has contributed to a larger spread between the list and net prices of brand pharmaceuticals.[7] Although manufacturer rebates do not typically reduce patient out-of-pocket costs directly, survey respondents reported that higher rebate volume helps limit growth in member premiums.

Figure 6

Commercial Health Plan Rebate Trends, 2012-16

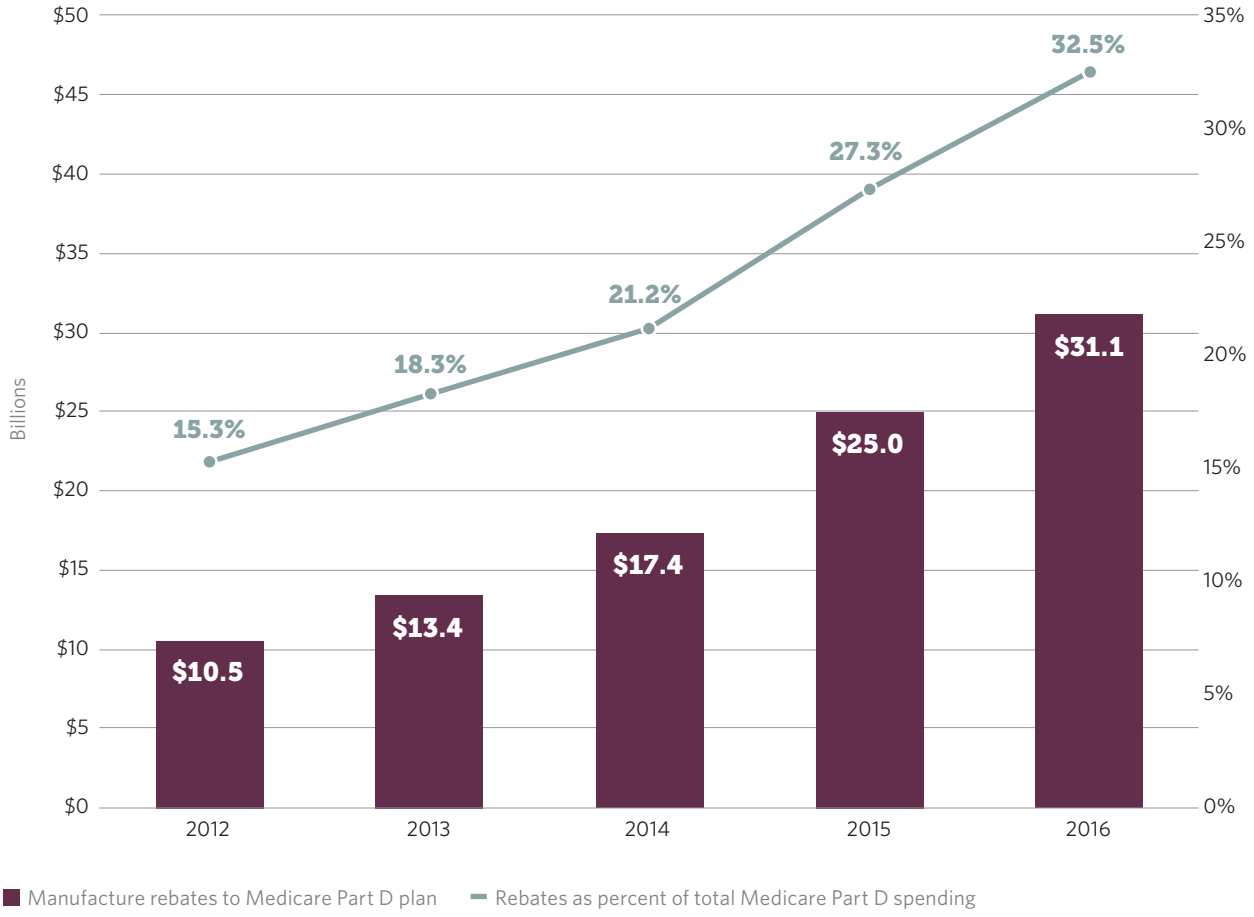


Medicare Part D Plans

Many of the trends observed in commercial health plans were also identified in Medicare Part D plans. Growth in list prices for pharmaceutical drugs has largely been offset by growth in manufacturer rebates to Medicare Part D plans, which nearly tripled from 2012 to 2016 (Figure 7). This rebate growth has helped restrain total Medicare Part D spending increases and limited Part D enrollee premium growth. Lower premiums have also contributed to slow growth in overall Medicare Part D spending per beneficiary from 2012 to 2016, which increased just 2 percent per year on average.[8]

Figure 7

Manufacturer Rebates in Medicare Part D, 2012-16



Medicaid and Other Government Payers

Medicaid and other government payers (e.g., Department of Veterans Affairs, Department of Defense), excluding Medicare, provide coverage for retail prescription drugs. These payments are subsequently offset by statutory rebates that pharmaceutical manufacturers pay to Medicaid and Tricare (the health care program for uniformed service members, retirees, and their families). Net spending on retail prescription drugs in this category has gone up, driven by a combination of Medicaid expansion (which increased Medicaid enrollment by 22.6 percent from 2012 to 2016)[9] and growth in per-beneficiary drug spend from 2014 to 2016, after declining slightly in 2013. From 2012 to 2016, the annual Medicaid per-beneficiary spend in this category, including patients covered under Medicaid managed care plans, increased from $337 to $402 (Table 3).

Table 3

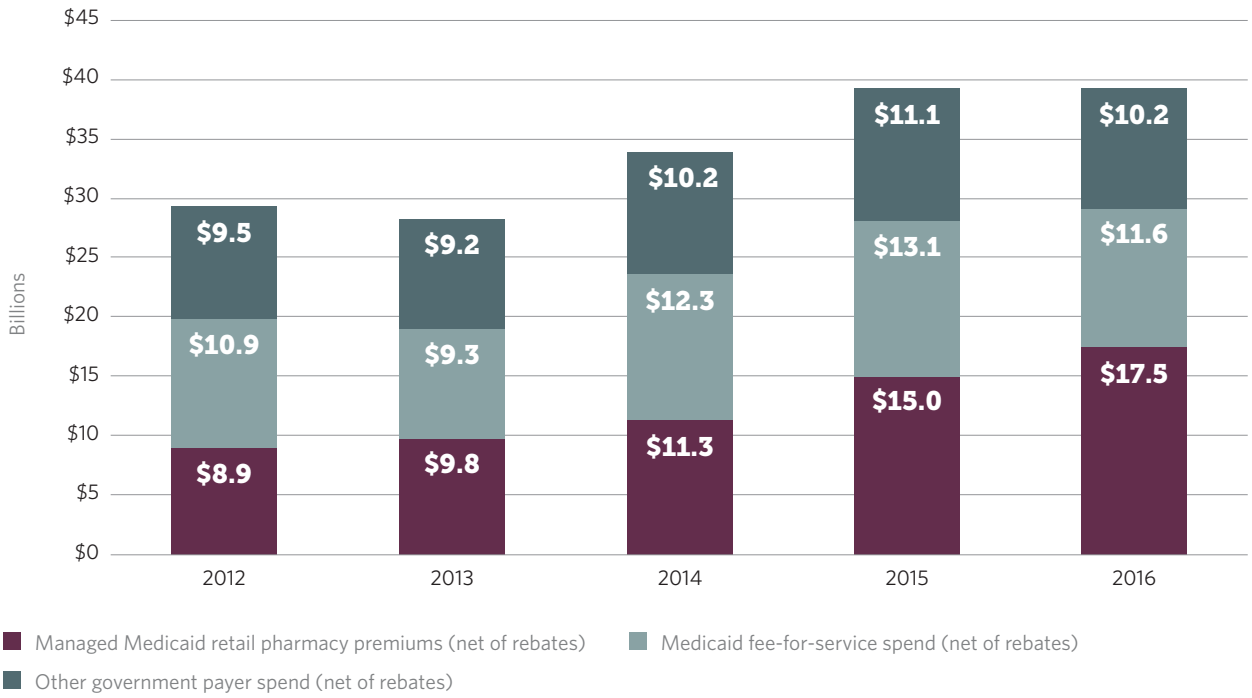
Medicaid Net Drug Spending, 2012-16

	Total beneficiaries	Net drug spending (in billions)	Spending per beneficiary
2012	58,900,000	$19.87	$337
2013	59,800,000	$19.01	$318
2014	69,100,000	$23.67	$342
2015	70,000,000	$28.10	$401
2016	72,200,000	$29.04	$402

Spending growth for Medicaid and other government payers would have been higher without offsetting factors. The Affordable Care Act increased the base Medicaid rebate for both brand and generic drugs and required that rebates be paid for drugs covered by Medicaid managed care plans. These actions, combined with the Medicaid inflation penalty (which requires additional rebates when a drug's Average Manufacturer Price increases faster than the consumer price index), contributed to a surge in the volume of Medicaid rebates for retail drugs from $13.3 billion in 2012 to $23.5 billion in 2016.[10] These factors limited the impact of list price growth and likely hastened the shift of Medicaid drug coverage to managed care plans, entities that contract with Medicaid agencies to provide health services to their beneficiaries.[11] Figure 8 shows total net spend for Medicaid and other government payers on retail prescription drugs (including managed Medicaid care plan premium payments for retail drug coverage).[12]

Figure 8

Medicaid and Other Government Payer Retail Drug Spend, 2012-16



Pharmacy Benefit Managers

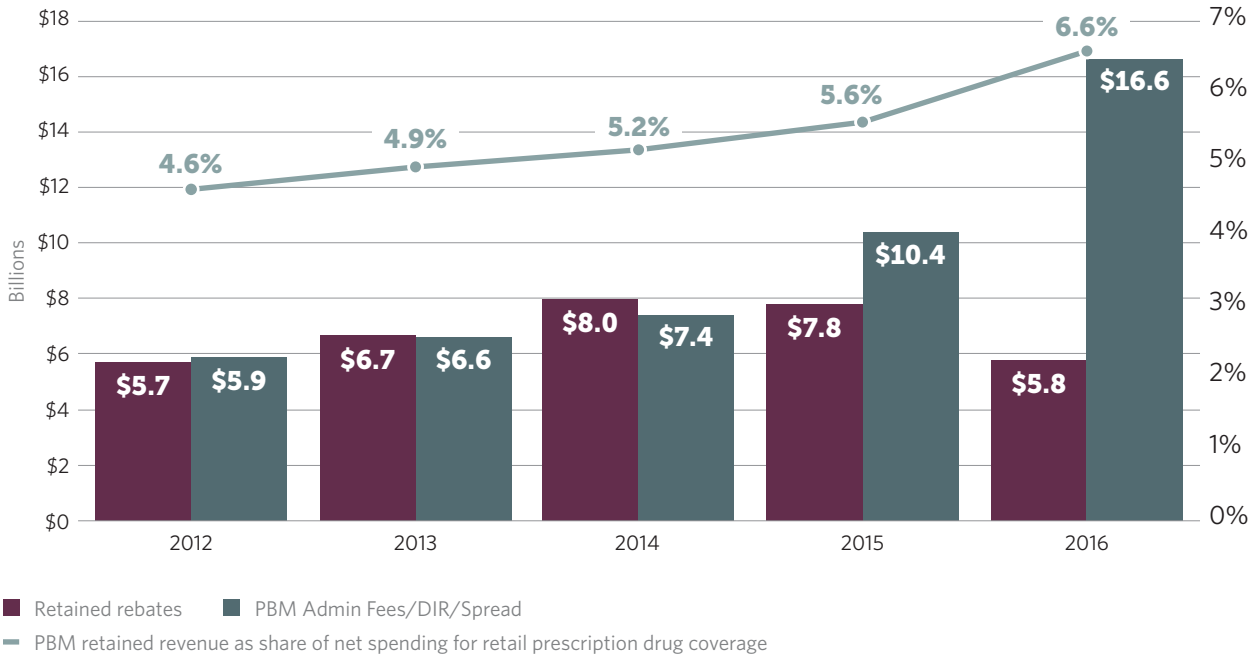
Positioned at the nexus of health plans, manufacturers, and pharmacies, PBMs play a critical role in the pharmaceutical payment chain. Limited data are available on PBM financial relationships with other supply and payment chain entities because the terms of these contracts are almost always confidential.[13] However, through a survey of PBM and health plan staff, this study sheds additional light on the volume of rebates paid by manufacturers and the extent to which they are "passed through" to their commercial and Medicare Part D plan clients.

Survey results found that PBMs passed through a higher share of manufacturer rebates in 2016 (91 percent) than in 2012 (78 percent). Figure 9 shows total retained revenue attributable to traditional PBM operations (i.e., managing the pharmacy benefit on behalf of health plans), including the share generated by rebate volume and other revenue streams, such as administrative fees, service fees, and spread pricing (a business practice in which the PBM charges a client more for a drug than it reimburses the pharmacy).

Despite the higher rates of rebate pass-through, PBMs retained roughly the same volume of rebates (in dollar terms) in 2016 as in 2012 because of overall growth in rebate volume. Growth in alternate PBM revenue streams, such as spread pricing and administrative fees, offset a $2.2 billion reduction in retained rebate volume between 2014 and 2016, and increased the overall share of retail prescription drug spending retained by PBMs.

Figure 9

PBM Retained Revenue on Retail Prescription Drugs by Source and Share of Net Spending for Retail Prescription Drug Coverage, 2012-16

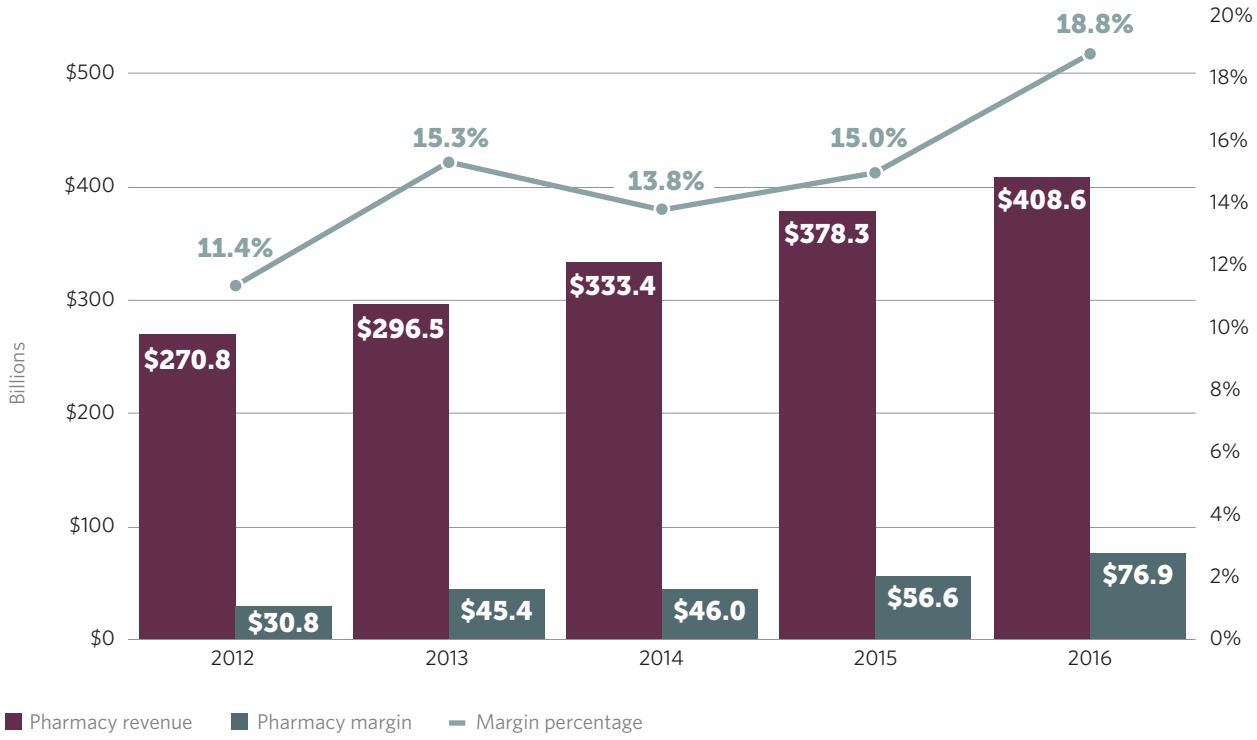


Pharmacies

Drugs reimbursed through the pharmacy benefit are primarily dispensed through retail, specialty, mail-order, long-term care and outpatient pharmacies. As more patients obtained prescription drug coverage and brand drug list prices climbed in recent years, total reimbursement to pharmacies for retail prescription drugs also increased, from $270.8 billion in 2012 to $408.6 billion in 2016 (Figure 10).[17] Similarly, total pharmacy gross margins (the difference between drug reimbursement and drug cost) also increased during this time frame. In 2012, gross margin as a percentage of drug reimbursements to pharmacies was 11 percent, and it grew to 19 percent in 2016.

Figure 10

Retail Pharmacy Revenue and Margin Trends, 2012-16



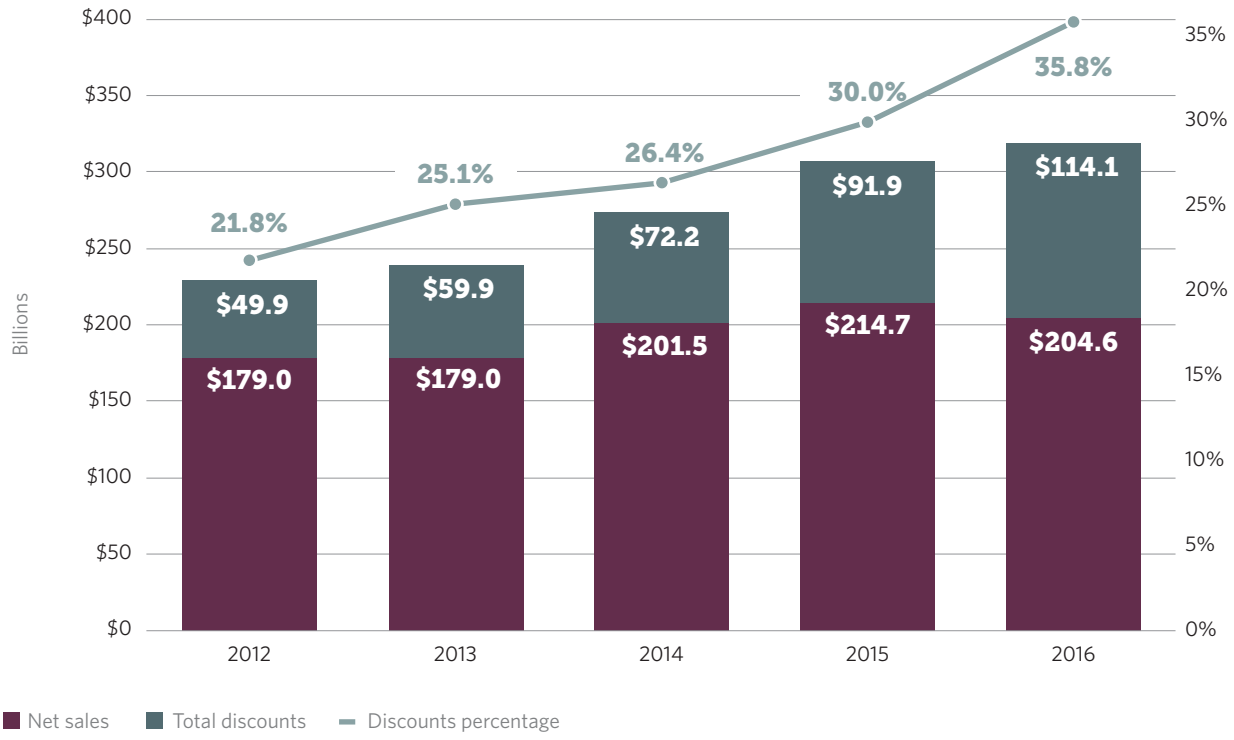
As noted in the methodology section, total drug reimbursement was estimated separately from drug costs. As a result, the margin in Figure 10 is derived from drug reimbursement and cost. Margin percentages in this report might be slightly lower than those appearing in other sources. The difference might reflect lower revenue or higher costs calculated in this study than what is realized by pharmacies. For example, the IQVIA invoice spend data relied upon in this study does not include off-invoice discounts from pharmaceutical companies to pharmacies on drug purchases. The volume of these off-invoice discounts is unknown, but their exclusion might overstate total pharmacy costs and therefore understate total pharmacy margins.

Pharmaceutical Manufacturers

The widening gap between a drug's list and net price has been receiving increased attention from media and policymakers.[14] This trend has implications for patients taking prescription drugs because patient cost-sharing (coinsurance and patient payments in the deductible phase of the benefit) is typically a function of a drug's list price.[15] From 2012 to 2016, rebates and discounts, including copay coupons and the Part D coverage gap discount, made up a growing share of gross sales, increasing from 21.8 percent to 35.8 percent (Figure 11). After accounting for all types of price concessions, including negotiated rebates, discounts mandated by law, and patient assistance, pharmaceutical manufacturers' net revenue on retail prescription drugs grew an average of 3.6 percent annually during the study period, but decreased from $214.7 billion in 2015 to $204.6 billion in 2016, due in part to the discounting of hepatitis C drugs.[16]

Figure 11

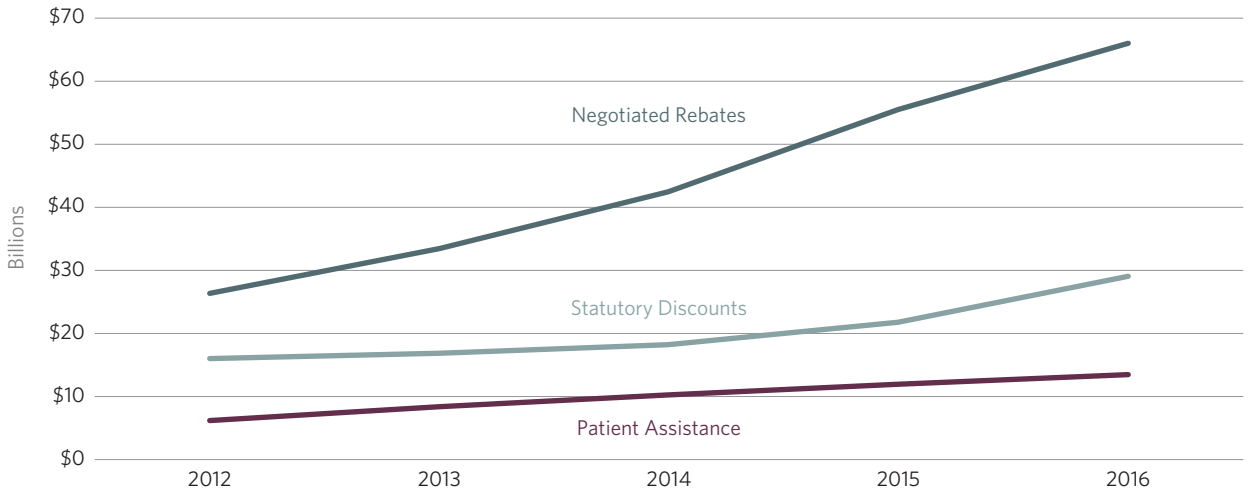
Pharmaceutical Manufacturers' Gross Sales and Net Revenue, 2012-16



Growth in manufacturer price concessions has been observed in both statutory discounts for government programs and voluntary rebates (Figure 12). Both Medicaid expansion and the trend of higher list prices, which can trigger the Medicaid inflation penalty,[18] have contributed to growth in statutory discounts.[19] The shift toward requiring patients to pay coinsurance on high-cost specialty drugs in insurance plans has made it more difficult for some patients to afford these therapies. This shift has caused manufacturers to offer additional patient assistance, such as copay coupons, to offset the increase in patient responsibility for drug costs.[20] In addition, consolidation of PBMs and, in some cases, mergers with health insurers have increased the negotiating power of large PBMs, which may have contributed to growth in commercial and Medicare Part D rebates. Increased competition from new product entrants in key therapeutic categories, such as diabetes, hepatitis C, and immunology, has also contributed to a higher commercial rebate volume.[21]

Figure 12

Trends in Retail Prescription Drug Discounts and Offsets, 2012-16



Conclusion

Net spending on retail prescription drug coverage increased each year of the study period, growing from $250.7 billion in 2012 to $341.0 billion in 2016. During the same time frame, the share of commercial insurance premiums for retail prescription drug coverage rose from 12.8 percent to 16.5 percent. While the total cost of this coverage has increased, patient out-of-pocket spending has remained stable in recent years, due in part to increased insurance coverage and manufacturer assistance, such as the Part D coverage gap discount and copay coupons. Rebates and other discounts have played an increasingly important role in partially offsetting the continued growth of list prices for brand name drugs. Although PBMs have passed along a growing share of manufacturer rebates to plan sponsors, these entities have slightly increased their share of the total spend through other types of revenue.

Appendix A: Methodology Detail

This appendix includes detail on the methodology used to determine the portion of retail prescription drug expenditures retained or contributed by each stakeholder in the pharmaceutical supply and payment chain. Stakeholders are divided into two categories: payers, some of which do not retain any portion of prescription drug expenditures (e.g., patients), and supply and payment chain entities, ranging from pharmaceutical manufacturers to pharmacies, which retain a portion of spending for retail prescription drug coverage. Specific stakeholders are as follows:

1. Payers
    a. Commercial health insurers
    b. Medicare Part D plans
    c. Medicaid fee-for-service and other direct government payers
    d. Patients
2. Supply and payment chain entities
    a. Retail, mail, outpatient, and long-term care pharmacies
    b. Wholesalers
    c. Pharmacy benefit managers
    d. Pharmaceutical manufacturers

The relationships among entities in the drug supply and payment chain result in many shared methodological components across stakeholders. For example, rebates are paid by pharmaceutical manufacturers, collected by PBMs and subsequently passed through, in part, to health plans. Consistent terminology is used across stakeholders, and components are cross-referenced across stakeholders as applicable.

1. Payers

a. Commercial Health Insurers

As a stakeholder group, commercial health insurers include all commercial, health exchange and managed Medicaid plans. The portion of prescription drug expenditures retained by commercial health insurers is defined as premium payments attributable to the pharmacy benefit less prescription drug claims expense plus rebates paid by manufacturers and passed through by PBMs.

Commercial Insurance Pharmacy Benefit Premiums		
Component	**Description**	**Sources**
Total Commercial Health Insurance Premiums (Group and Nongroup)	Commercial health insurance premiums paid by employer groups and individuals to cover both medical and pharmacy benefits. Derived from Kaiser Family Foundation reports and average nongroup premium amounts per Healthcare.gov and the Congressional Budget Office by multiplying the commercially insured population (group and nongroup) by the average premium amount for group and nongroup plans.	A. Average premium amounts for employer coverage: Kaiser Family Foundation, annual "Employer Health Benefits Survey" (2012-16) B. Average premium amounts for nongroup coverage: Congressional Budget Office, "Private Health Insurance Premiums and Federal Policy," 2016 (2012); Healthcare.gov (2014-16); Berkeley Research Group extrapolation (2013) C. Total individuals enrolled in employer coverage: Kaiser Family Foundation, "Health Insurance Coverage of the Total Population" (2013-16); Census.gov (2012-16); Berkeley Research Group extrapolation (2012) D.Total individuals enrolled in nongroup coverage: Kaiser Family Foundation, "Health Insurance Coverage of the Total Population" (2013-16); Census.gov (2012-16); Berkeley Research Group extrapolation (2012) [A*C] + [B*D]
Total Managed Medicaid Insurance Premiums	Managed Medicaid insurance premiums paid to commercial insurers by state Medicaid programs. Derived from Medicaid and CHIP Payment and Access Commission (MACPAC) reports on gross prescription drug spending in the managed Medicaid space, allocated to retail drugs using IQVIA estimates of retail drugs as a percentage of total drug spend. Assumes a medical loss ratio consistent with Medicare Part D health plans.	A. Managed Medicaid gross drug spending: MACPAC, "Medicaid Spending for Outpatient Prescription Drugs" (2012-14); MACPAC, "Exhibit 27, Medicaid Gross Spending and Rebates for Drugs by Delivery System, FY 2015" (2015); MACPAC, "Exhibit 28, Medicaid Gross Spending and Rebates for Drugs by Delivery System, FY 2016" (2016) B. Share of drug spending attributable to retail drugs: IQVIA, "Medicine Use and Spending in the U.S.: A Review of 2017 and Outlook to 2022" (2013-16); IQVIA, "Medicines Use and Spending in the U.S.: A Review of 2016 and Outlook to 2021" (2012) C. Part D medical loss ratio: See Medicare Part D Plans section (A*B)/C

Continued on next page

Commercial Insurance Pharmacy Benefit Premiums		
Component	**Description**	**Sources**
Percentage of Health Insurance Premium Attributable to Pharmacy Benefit	Collected through primary research with health plans and multiplied by total group and nongroup premiums to estimate total commercial insurance premiums attributable to the pharmacy benefit. See Survey Results section.	Berkeley Research Group survey
Total Pharmacy Benefit Premiums	Total health insurance premium amount attributable to the pharmacy benefit is derived by multiplying the percentage of commercial health insurance premiums attributable to the pharmacy benefit by total commercial premiums, then aggregating the result with total managed Medicaid pharmacy premiums.	

Prescription Drugs Claims Expense		
Component	**Description**	**Sources**
Prescription Drugs Claims Expense	Reimbursement for retail prescription drugs paid directly to pharmacies or via a pharmacy benefit manager (PBM). Prescription drugs claims expense is paid out of a pool of revenue that includes health insurance premiums and manufacturer rebates. Because commercial health plans do not report margins or claims expense independently for the pharmacy benefit, we assume a medical loss ratio consistent with Medicare Part D health plans.	A. Premium amounts: See Commercial Insurance Pharmacy Benefit Premiums section B. Manufacturer rebates: See Manufacturer Rebate Payments section C. Part D medical loss ratio: See Medicare Part D Plans section (C*A) + B

Manufacturer Rebate Payments		
Component	**Description**	**Sources**
Manufacturer Rebates as Percentage of Prescription Drugs Claims Expense	Collected through primary research with health plans. See Survey Results section.	Berkeley Research Group survey
Total Manufacturer Rebates	Rebate payments made by manufacturers to PBMs, most of which are subsequently passed through to health plans. Calculated by multiplying rebates as a percentage of prescription drugs claims expense by prescription drugs claims expense. Assumes health plans retain 100 percent of rebates collected from PBMs.	

PBM Fees		
Component	**Description**	**Sources**
Fees to PBMs	PBM section describes the process for estimating total PBM gross margin attributable to administrative fees, direct and indirect remuneration (DIR), and spread pricing (A). Pharmacy section describes the process for estimating the spread pricing component (B). The remainder (A minus B) is assumed to be evenly split between health plan fees and manufacturer administrative fees. The portion allocated to health plan fees is apportioned between commercial and Part D plans based on the claims expense calculated for each.	See PBM section

Methodology Limitations

Although information is available on overall health insurance premium payments, limited information exists on how health insurance premiums are apportioned between medical and retail pharmacy benefits or the amount of prescription drug claims expenses incurred by health plans. Similarly, limited information is available on the volume of commercial rebate payments that PBMs pass through to health plans. Berkeley Research Group conducted primary research with staff at health plans and PBMs to collect data to fill these gaps in publicly available information. As with any survey, there are inherent limitations in how applicable the results are to the overall population. Where possible, results from the Berkeley Research Group survey were benchmarked against publicly reported data on the Medicare Part D program, and additional discussion on these results is included in the Survey Results section. Some state Medicaid programs "carved out" a portion of the retail pharmacy benefit from Medicaid managed care plans—meaning drug coverage was provided through a fee-for-service model—at different points in time during the study period. Limited information is available on which drug classes are carved out; this study methodology assumed no carve-out for these states.

b. Medicare Part D Plans

This stakeholder group comprises Medicare Part D plans (both standalone Part D plans and Medicare Advantage plans offering Part D benefits). The portion of prescription drug expenditures retained by Medicare Part D and Medicare Advantage plans is defined as beneficiary premium and all government payments attributable to the pharmacy benefit, less prescription drug claims expense, plus rebates paid by manufacturers to PBMs, and subsequently passed through to the Medicare Part D plan.

Medicare Part D Premiums and Subsidies		
Component	**Description**	**Sources**
Medicare Part D Plan Premiums and Subsidies	Payments by the Centers for Medicare & Medicaid Services (CMS) and individuals to Medicare Part D plans. In addition to enrollee premiums and direct subsidies from CMS, the methodology includes reinsurance payments, low-income subsidies, risk sharing and retiree drug subsidies.	A. Payments to plans for Medicare Part D: Medicare Payment Advisory Commission (MedPAC), "Report to the Congress: Medicare Payment Policy March 2017" (2012-15); "2017 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds" (2016)

Prescription Drugs Claims Expense		
Component	**Description**	**Sources**
Prescription Drugs Claims Expense	The amount that Medicare Part D plans reimbursed pharmacies for drugs. Derived from Part D plan margins as reported by CMS.	A. Payments to plans for Medicare Part D: MedPAC, "Report to the Congress: Medicare Payment Policy March 2017" (2012-15); "2017 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds" (2016) B. Part D Plan Administrative Expenses and Profits as a Share of Plan Payments: "2018 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds" (2012-16) C. PBM fees (see PBM section) D. Manufacturer rebates (see Manufacturer Rebate Payments section) A - (A*B) + D - C

Manufacturer Rebate Payments		
Component	**Description**	**Sources**
Manufacturer Rebates as Percentage of Prescription Drug Claims Expense	Portion of manufacturer rebate payments to PBMs that are passed through to Medicare Part D plans.	A. Manufacturer rebates paid to Part D plans: "2017 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds" (2012-16)
Manufacturer Rebates	Rebate payments made by manufacturers to PBMs and subsequently passed through to Medicare Part D plans. Derived from the Medicare Trustees Reports by multiplying the average Part D rebate percentage by total Part D claims expense.	

PBM Fees		
Component	**Description**	**Sources**
Fees to PBMs	The PBM section describes methodology for estimating total PBM gross margin attributable to administrative fees, DIR and spread pricing (A). The pharmacy section describes the methodology for estimating the spread pricing component (B). The remainder (A minus B) is assumed to be evenly split between health plan fees and manufacturer administrative fees. The portion allocated to health plan fees is apportioned between commercial and Part D plans based on the claims expense calculated for each.	See PBM and pharmacy sections.

c. Medicaid Fee-for-Service and Other Direct Government Payers

This stakeholder group comprises state Medicaid programs and other government payers that reimburse pharmacies for dispensing prescription drugs to beneficiaries. Direct payments to the pharmacy do not reflect subsequent rebates or discounts paid by pharmaceutical manufacturers, including Medicaid rebates, supplemental Medicaid rebates and Tricare rebates. Manufacturer rebates are netted against total direct pharmacy payments when determining the net amount paid by Medicaid FFS and other government payers.

Direct Pharmacy Reimbursement		
Component	**Description**	**Sources**
Medicaid Gross Pharmacy Reimbursement	Total Medicaid FFS reimbursement to pharmacies for retail prescription drugs. Calculated using State Drug Utilization Data from CMS and validated against National Health Expenditure data.	A. Medicaid FFS reimbursement: Medicaid "State Drug Utilization Data" (limited to FFS utilization and retail drugs) (2012-16)
Other Government Health Insurance Programs	Total direct pharmacy reimbursement for other federal programs that directly reimburse pharmacies (Children's Health Insurance Program, Department of Veterans Affairs, Department of Defense) as reported in the National Health Expenditure report.	A. Direct reimbursement for other federal programs: CMS, "National Health Expenditures, Retail Prescription Drugs, Other Health Insurance Programs" (2012-16)

Pharmaceutical Manufacturer Rebate Payments		
Component	**Description**	**Sources**
Medicaid Rebates	Rebate payments (including supplemental rebates) made by pharmaceutical manufacturers to state Medicaid programs for Medicaid FFS and managed Medicaid utilization. Calculated by multiplying the total Medicaid rebates reported by MACPAC by the percentage of total drug purchases in the retail/mail or long-term care channel as reported by IQVIA.	A. Total Medicaid rebates: MACPAC, "Medicaid Spending for Outpatient Prescription Drugs" (2012-14); MACPAC, "Exhibit 27, Medicaid Gross Spending and Rebates for Drugs by Delivery System, FY 2015" (2015); MACPAC, "Exhibit 28, Medicaid Gross Spending and Rebates for Drugs by Delivery System, FY 2016" (2016) B. Share of drug spending attributable to retail drugs: IQVIA, "Medicine Use and Spending in the U.S.: A Review of 2017 and Outlook to 2022" (2013-16); IQVIA, "Medicines Use and Spending in the U.S.: A Review of 2016 and Outlook to 2021" (2012) A * B
Tricare Rebates	Rebate payments made by pharmaceutical manufacturers to Tricare as reported in the "Evaluation of the TRICARE Program" report to Congress. 2016 data was not available and is assumed to be equal to 2015 rebates.	A. Tricare retail drug rebates: "Evaluation of the TRICARE Program: Access, Cost and Quality, Fiscal Year 2016 Report to Congress" (2012-15)

d. Patients

This stakeholder group comprises all patients who purchase prescription drugs either through a pharmacy benefit or as a cash payer. Payments can take the form of copays, coinsurance, deductibles, premium payments or cash payments for the entire cost of a prescription drug. Patients do not retain a portion of prescription drug expenditures but are a significant source of funding for prescription drugs. Patient spending for health insurance premiums is net of subsidies received on health exchange plans attributable to the pharmacy benefit.

Pharmacy Premium Payments		
Component	**Description**	**Sources**
Commercial Premium Payments	Patient share of total commercial premiums for prescription drugs. For employer-sponsored plans, calculated as total premiums (see Commercial Health Insurers) multiplied by the percentage of premiums paid by the patient as reported by the Kaiser Family Foundation. For nongroup plans, calculated as the full premium amount less the percentage of exchange subsidies attributable to the pharmacy benefit.	A. Patient share of commercial premiums: Kaiser Family Foundation, annual "Employer Health Benefits Survey" (2012-16) B. Nongroup premiums: See Commercial Insurance Pharmacy Benefit Premiums section. C. Exchange subsidies: CMS, "Effectuated Enrollment Snapshot" (2016); CMS, "Total Effectuated Enrollment and Financial Assistance by State" (2014-16); CMS, "Average Advanced Premium Tax (APTC) Credit by State" (2014-16) A + B - C
Medicare Part D premium payments	Patient share of total Medicare Part D premiums as reported by MedPAC and the Boards of Trustees for Medicare.	A. Medicare Part D patient premiums: MedPAC, "Report to the Congress: Medicare Payment Policy March 2017" (2012-15); "2017 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds" (2016)

Patient Payments to Pharmacies		
Component	**Description**	**Sources**
Cost-Sharing Payments for All Insured Patients	Payments include all copays, deductibles, coinsurance and other forms of cost-sharing paid by beneficiaries. This number is derived from IQVIA reports on patient out-of-pocket costs.	A. Total cost-sharing payments for the insured: IQVIA, "Medicines Use and Spending in the U.S.: A Review of 2016 and Outlook to 2021" (2012-16, average cost-sharing per prescription multiplied by total dispensed prescriptions, excluding cash prescriptions)
Cost-Sharing Payments for Part D Patients	Payments include all copays, deductibles, coinsurance and other forms of cost-sharing paid by Part D beneficiaries.	A. Medicare Part D patient cost-sharing: CMS, "Part D Drug Utilization and Cost Summary, Calendar Years 2011-2015" (2012-15); Berkeley Research Group extrapolation (2016)
Cost-Sharing Payments for Medicaid Patients	Payments include all copays paid by Medicaid beneficiaries. This number is derived from Kaiser Family Foundation reports on state-by-state cost-sharing amounts per prescription multiplied by total Medicaid prescriptions per IQVIA.	A. Average Medicaid copay per prescription: Kaiser Family Foundation, "Premium and Cost-Sharing Requirements for Selected Services for Medicaid Adults"; Kaiser Family Foundation, "Distribution of Medicare Beneficiaries by Federal Poverty Level"; Kaiser Family Foundation, "Medicaid Enrollees by Enrollment Group" (2012-16) B. Total prescriptions dispensed to Medicaid patients: IQVIA, "Medicine Use and Spending in the U.S.: A Review of 2017 and Outlook to 2022" (2013-16) A*B
Cash Payments to Pharmacies	Cash payments account for all prescription drug purchases made without prescription drug coverage. This number is derived from IQVIA reports on prescription drug sales.	A. Total cash payments for prescriptions: IQVIA, "Medicine Use and Spending in the U.S.: A Review of 2017 and Outlook to 2022" (2013-16); IQVIA, "Medicines Use and Spending in the U.S.: A Review of 2016 and Outlook to 2021" (2012); CMS & Myers and Stauffer LC, "Draft Three-Month Rolling Average Federal Upper Limits" (2012-16). Utilized IQVIA data to estimate total spend at invoice price for cash prescriptions. Converted to amount paid to pharmacy using CMS/ Myers and Stauffer-published figures on average pharmacy margin percentages. All cash prescriptions assumed to be nonbranded generics.
Cost-Sharing Payments for Commercial Patients	Payments include all copays, deductibles, coinsurance and other forms of cost-sharing paid by commercial plan beneficiaries. This number is calculated by subtracting total cost-sharing payments for Part D and Medicaid beneficiaries from total cost-sharing amounts for all insured patients per IQVIA.	See above.

2. Supply and Payment Chain Entities

a. Retail, Mail, Outpatient, and Long-Term Care Pharmacies

As a stakeholder group, pharmacies include the primary pharmacy types that dispense prescription drugs covered through the pharmacy benefit. The portion of prescription drug expenditures retained by pharmacies is defined as total pharmacy revenue for prescription drugs less the pharmacy acquisition cost for them. This study relied on IQVIA's categorization of retail, mail, and long-term care pharmacies, and includes all prescription drugs dispensed by these pharmacies.

Pharmacy Revenue		
Component	**Description**	**Sources**
Commercial Plan Payments	See Commercial Health Insurers section.	See Commercial Health Insurers section.
Part D Plan Payments	See Medicare Part D Plan section.	See Medicare Part D Plan section.
PBM Supply Chain Margin	Assumes that PBMs retain 4.5 percent of plan claims expense for generic drugs, and 0.5 percent of plan claims expense for brands.	
Federal Direct Payer Payments	See Medicaid FFS and Other Government Payers section.	See Medicaid FFS and Other Government Payers section.
Patient and Cash Payments	See Patient section.	See Patient section.
Manufacturer Payments	Includes manufacturer payments under the Part D Coverage Gap Discount Program and voluntary copay coupon programs funded by pharmaceutical manufacturers (see Pharmaceutical Manufacturers section). Due to a lack of available information, this study does not include payments made by charitable organizations funded by pharmaceutical manufacturers or other third parties.	A. Part D coverage gap payments: CMS, "Coverage Gap Discount Data" (2012-16) B. Copay coupon payments: IQVIA, "Medicines Use and Spending in the U.S.: A Review of 2016 and Outlook to 2021" (2012-16); USA Today, "Drug makers use co-pay coupons to help mask their rising drug prices" (2012-16). Multiplied IQVIA estimates of dispensed commercial prescription by average coupon buydown. Multiplied results by IQVIA estimate of prescriptions utilizing a coupon over time as quoted in USA Today. A + B

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Pharmacy Revenue		
Component	**Description**	**Sources**
340B Margin	Additional margin realized by pharmacies attributable to highly discounted 340B prices. Calculated as the difference between pharmacy reimbursement and the average net Medicaid price. Assumes 20 to 25 percent (varies by year) of total 340B purchased drugs are reimbursed through the pharmacy benefit.	A. Total 340B purchased drugs: Drug Channels Institute, "EXCLUSIVE: The 340B Program Hits $16.2 Billion in 2016; Now 5% of U.S. Drug Market" (2012-16) B. Average Medicaid discount: MACPAC, "Medicaid Spending for Outpatient Prescription Drugs" (2012-14); MACPAC, "Exhibit 27, Medicaid Gross Spending and Rebates for Drugs by Delivery System, FY 2015" (2015); MACPAC, "Exhibit 28, Medicaid Gross Spending and Rebates for Drugs by Delivery System, FY 2016" (2016) C. Percent of 340B sales that are self-administered: Berkeley Research Group estimates (A / (1-B) * C) – (A * C)

Pharmacy Cost of Goods Sold		
Component	**Description**	**Sources**
Pharmacy Drug Purchases	Purchases for brand and generic prescription drugs made directly with a pharmaceutical manufacturer or through a drug wholesaler. This study assumes all drug purchases reported by IQVIA are reimbursed through the pharmacy benefit, but certain inhaled, injected or infused drugs may be reflected in the IQVIA purchase data but not reimbursed through the pharmacy benefit.	A. Pharmacy purchases: IQVIA, "Medicine Use and Spending in the U.S.: A Review of 2017 and Outlook to 2022" (2013-16); IQVIA, "Medicines Use and Spending in the U.S.: A Review of 2016 and Outlook to 2021" (2012)

Methodology Limitations and Insights

Similar to other studies of the pharmaceutical supply and payment chain, this study relies on IQVIA data to establish the amount paid by pharmacies for prescription drugs. To the extent that the IQVIA data do not reflect price concessions, such as off-invoice discounts and rebates paid by pharmaceutical manufacturers to pharmacies, this study overstates the cost of prescription drugs to pharmacies and understates pharmacy margins. Similarly, this study relies on pharmacy benefit premiums, government reports on direct reimbursement, and third-party reports on patient payments to derive pharmacy drug reimbursement. To the extent that pharmacies receive other forms of reimbursement, the study understates pharmacy revenue and margins. Benchmarking pharmacy margins calculated in this report against third-party reports on pharmacy margins reveals that the findings in this study are generally consistent with other methodologies.

b. Wholesalers

This stakeholder group comprises all companies that purchase drugs directly from manufacturers and resell them to retail, mail, and outpatient pharmacies. The portion of prescription drug expenditures retained by wholesalers is defined as total drug purchases multiplied by average gross margin weighted for brand and generic drug margins.

Wholesaler Drug Margins		
Component	**Description**	**Sources**
Wholesaler Drug Purchases	Drug purchases made by wholesalers from pharmaceutical manufacturers. Calculated as total pharmacy invoice sales multiplied by the percentage of pharmacy sales through a wholesaler.	A. Percent of drug purchases through a wholesaler: Healthcare Distribution Management Association/Healthcare Distribution Alliance, "HDA Factbook" (2012-16)
Average Wholesaler Margins	Average margin realized on wholesaler purchases of brand and generic drugs. Average margin is weighted by total brand and generic pharmacy purchases as reported by IQVIA to account for the different average margins on brand and generic drugs.	A. Average wholesaler margins: Neeraj Sood et al., "Flow of Money Through the Pharmaceutical Distribution System" (2012-16)

c. Pharmaceutical Benefit Managers

This stakeholder group comprises PBMs, which negotiate reimbursement rates with pharmacies, and rebate payments and service/administrative fees with manufacturers, on behalf of commercial and Medicare Part D plans. The portion of prescription drug expenditures retained by PBMs is defined as administrative fees, service fees, spread pricing, manufacturer rebate payments retained by PBMs and other sources of PBM revenue.

Retained Rebate Payments		
Component	**Description**	**Sources**
Medicare Part D Rebate Payments	See Medicare Part D Plans section.	See Medicare Part D Plans section.
Medicare Part D Pass-Through Percentage	Collected through primary research with PBMs and divided by rebate payments to Medicare Part D plans to determine the total Part D rebates retained by PBMs. See Survey Results section.	Berkeley Research Group survey
Commercial Health Insurer Rebate Payments	See Commercial Health Insurers section.	See Commercial Health Insurers section.
Commercial Health Insurer Pass-Through Percentage	Collected through primary research with PBMs and divided by rebate payments to commercial health insurers to determine the total commercial rebates retained by PBMs. See Survey Results section.	Berkeley Research Group survey

Retained Administrative Fees, Direct and Indirect Remuneration, and Spread Pricing		
Component	**Description**	**Sources**
Administrative Fees, DIR, and Spread Pricing as Percent of Claims Expense	Various fees, discounts, price concessions and drug margins that PBMs realize based on contractual terms with manufacturers, pharmacies, and health plans as a percentage of total claims expense, as reported by the Pharmaceutical Care Management Association (PCMA) and in U.S. Securities and Exchange Commission reporting, multiplied by the total commercial and Medicare Part D claims expense (see Medicare Part D Plans and Commercial Health Insurers sections) to estimate total fee amount.	A. PBM margin: Visante/Pharmaceutical Care Management Association, "The Return on Investment (ROI) on PBM Services" (2016); Sood et al., "Flow of Money Through the Pharmaceutical Distribution System" (2012-15)

Methodology Limitations

Little information is publicly available on PBM pricing and the discounts, rebates, and fees that PBMs collect from the stakeholders they contract with. This study relied on two third-party reports on the average gross percentage margin that PBMs realize through their contracts. Because these reports were available only for 2015 and 2016, the study methodology assumed that the percentage reported in 2015 also applied in prior years. Separately, we surveyed PBMs to understand the percentage of rebates collected from manufacturers that are passed through to commercial and Medicare Part D plans. Total rebate volume is derived using this percentage in combination with

the commercial rebate volume identified through a health plan survey and Part D rebate volume included in the Medicare Trustees Report. Remaining PBM margin not attributable to rebate volume was assumed to be earned through fees, DIR, and spread pricing. As with any survey, there are inherent limitations in how applicable the results are to the overall population. Additional discussion of these results is included in the Survey Results section.

By using gross margin percentages reported in PBM annual reports to derive gross margin from PBM operations, we assume that gross margins on other lines of business (e.g., PBM-owned pharmacies) are similar. To the extent that gross margin percentages for other lines of business are greater or less than PBM operations, the figures in this report might be inaccurate. However, by utilizing a gross margin percentage and applying that to total pharmacy reimbursement, we seek to ensure that margins attributable to other lines of business, such as PBM-owned pharmacies, are not counted twice.

d. Pharmaceutical Manufacturers

This stakeholder group comprises all companies that manufacture prescription drugs (branded and generic) covered through the pharmacy benefit. The portion of prescription drug expenditures retained by pharmaceutical manufacturers is defined as drug purchases less rebate payments, statutory discounts, and copay coupon payments.

Drug Purchases		
Component	**Description**	**Sources**
Wholesaler Drug Purchases	Drug purchases made by wholesalers plus average margins realized by wholesalers on the sale of drugs to retail, mail, and long-term care pharmacies as classified by IQVIA. See Wholesalers section.	See Wholesalers section.
Pharmacy Drug Purchases	Drug purchases made directly from the manufacturer by retail, mail, and long-term care pharmacies as classified by IQVIA. See Pharmacies section.	See Pharmacies section.

Rebate Payments and Fees to PBMs		
Component	**Description**	**Sources**
Medicare Part D Rebate Payments	Rebate payments to PBMs for all contracted drugs dispensed to Medicare Part D beneficiaries. Derived by dividing total rebates received by Medicare Part D plans by the percentage of Medicare Part D rebates passed through to health plans by PBMs (see PBMs section).	See PBMs section.
Commercial Rebate Payments	Rebate payments to PBMs for all contracted drugs dispensed to commercial plan beneficiaries. Derived by dividing total rebates received by commercial plans by the percentage of commercial rebates passed through to health plans by PBMs (see PBMs section).	See PBMs section.
Fees to PBMs	PBM section describes the process for estimating total PBM gross margin attributable to administrative fees, DIR and spread pricing (A). Pharmacy section describes the process for estimating the spread pricing component (B). The remainder (A minus B) is assumed to be evenly split between health plan fees and manufacturer administrative fees.	

Statutory Discounts		
Component	**Description**	**Sources**
Medicaid Rebates	See Medicaid FFS and Other Government Payers section.	See Medicaid FFS and Other Government Payers section.
340B Discounts	Discounts paid by manufacturers for drugs purchased through the 340B program. Calculated as the difference between pharmacy reimbursement and the average net Medicaid price. Assumes 20 to 25 percent (varies by year) of total 340B purchased drugs are reimbursed through the pharmacy benefit. See Pharmacies section.	See Pharmacies section.
Tricare Rebates	See Medicaid FFS and Other Government Payers section.	See Medicaid FFS and Other Government Payers section.
Part D Coverage Gap Discounts	Discounts paid by manufacturers for Medicare Part D beneficiaries who are in the coverage gap phase of the standard benefit design in Medicare Part D. Figures sourced directly from CMS reports. See Pharmacies section.	See Pharmacies section.

Copay Coupon Payments to Pharmacies		
Component	**Description**	**Sources**
Copay Coupon Payment Amount	Copay coupon payments made by manufacturers directly to pharmacies to offset the cost of patient copay or coinsurance payments. Calculated as total commercial prescriptions times percentage of commercial prescriptions with a copay coupon times the average copay coupon amount.	See Pharmacies section.

Methodology Limitations

Little information exists on the volume of rebate payments that manufacturers make to PBMs for commercial and Medicare Part D prescriptions. This study relied on two third-party reports on the average percentage volume of fees, DIR, and spread pricing that PBMs realize through their contracts. Berkeley Research Group surveyed PBMs to understand the percentage of rebates collected from manufacturers that are passed through to commercial and Medicare Part D plans. Total rebate volume is derived using this percentage in combination with the commercial rebate volume identified through a health plan survey and Part D rebate volume included in the Medicare Trustees Report. As with any survey, there are inherent limitations in how applicable the results are to the overall population. Additional discussion of these results is included in the Survey Results section.

Appendix B: Study Results

This appendix contains additional detail on the study findings and is presented by stakeholder. All numbers included in the body of the report are derived from the results included in this appendix. Note that numbers in parentheses indicate negative amounts.

Patient Results					
	2012 Overall	2013 Overall	2014 Overall	2015 Overall	2016 Overall
	(in millions)				
Patient Share of Pharmacy Premiums	$33,313.8	$38,595.3	$46,107.6	$51,341.9	$56,263.8
Patient Payment to Pharmacies	$53,275.4	$54,826.2	$54,275.7	$53,429.7	$52,366.4
Exchange Subsidies	N/A	N/A	$(2,922.1)	$(4,136.3)	$(4,822.5)
Net Spending on Drugs	$86,589.1	$93,421.5	$97,461.2	$100,635.3	$103,807.6

Commercial Health Plan Results					
	2012 Overall	2013 Overall	2014 Overall	2015 Overall	2016 Overall
	(in millions)				
Total Premium Payments	$863,927.0	$914,631.3	$956,915.2	$1,047,077.0	$1,114,624.5
% of Premiums to Pharmacy Benefit	12.8%	13.9%	14.9%	15.8%	16.5%
Pharmacy Premiums	$110,582.7	$127,133.8	$142,580.4	$165,438.2	$183,913.0
Payment to PBMs for Claims Reimbursement	$(109,595.6)	$(128,135.9)	$(147,223.8)	$(174,221.5)	$(196,447.9)
Manufacturer Rebates to Insurers from PBMs	$10,188.8	$13,304.1	$16,992.8	$22,584.5	$29,079.0
Net Revenue on Drugs	$11,175.9	$12,302.0	$12,349.3	$13,801.2	$16,544.2
PBM Fees	$(740.8)	$(829.3)	$(910.7)	$(1,620.3)	$(3,465.7)
Net Revenue on Drugs after PBM Fees	$10,435.1	$11,472.6	$11,438.7	$12,180.9	$13,078.4

Medicaid and Other Government Payer Results					
	2012 Overall	2013 Overall	2014 Overall	2015 Overall	2016 Overall
	(in millions)				
Direct Payer Reimbursement to Pharmacies	$33,040.6	$29,853.6	$33,879.5	$34,451.3	$33,641.1
Managed Medicaid Premiums	$11,064.9	$13,618.1	$16,376.3	$24,085.1	$30,197.1
Statutory Rebates and Fees	$(14,736.4)	$(15,257.7)	$(16,390.7)	$(19,343.4)	$(24,593.4)
Medicaid Rebates	$(13,287.4)	$(13,872.7)	$(15,199.7)	$(18,276.4)	$(23,526.4)
Tricare Rebates	$(1,449.0)	$(1,385.0)	$(1,191.0)	$(1,067.0)	$(1,067.0)
Net Spending on Drugs	$29,369.0	$28,214.1	$33,865.0	$39,193.0	$39,244.8

Medicare Part D Health Plan Results					
	2012 Overall	2013 Overall	2014 Overall	2015 Overall	2016 Overall
	(in millions)				
Total Premium Payments	$68,500.0	$73,000.0	$82,000.0	$91,600.0	$95,700.0
Claims Expense	$(72,072.0)	$(79,300.6)	$(92,272.2)	$(108,965.3)	$(118,199.8)
Manufacturer Rebates to Insurers from PBMs	$10,494.9	$13,364.4	$17,374.5	$25,006.8	$31,108.6
PBM Fees	$(487.2)	$(513.3)	$(570.8)	$(1,013.4)	$(2,085.3)
Net Revenue	$6,435.7	$6,550.5	$6,531.5	$6,628.1	$6,523.6

PBM Results					
	2012 Overall	2013 Overall	2014 Overall	2015 Overall	2016 Overall
	(in millions)				
Payment to PBMs for Claims Reimbursement	$184,395.6	$211,685.9	$244,623.8	$288,621.5	$320,297.9
PBM Claims Paid to Pharmacies	$(184,395.6)	$(211,685.9)	$(244,623.8)	$(288,621.5)	$(320,297.9)
Manufacturer Rebates to PBMs	$26,415.5	$33,369.0	$42,357.0	$55,386.7	$65,976.1
Manufacturer Rebates to Insurers from PBMs	$(20,683.7)	$(26,668.5)	$(34,367.3)	$(47,591.3)	$(60,187.6)
PBM Administrative Fees/ DIR/Spread	$5,885.1	$6,635.7	$7,421.5	$10,387.8	$16,632.3
Net Revenue on Drugs	$11,616.9	$13,336.2	$15,411.3	$18,183.2	$22,420.9

Wholesaler Results					
	2012 Overall	2013 Overall	2014 Overall	2015 Overall	2016 Overall
	(in millions)				
Drug Purchases by Pharmacies from Wholesalers	$217,170.0	$228,440.8	$264,328.8	$304,372.0	$322,752.0
PBM Claims Paid to Pharmacies	$(184,395.6)	$(211,685.9)	$(244,623.8)	$(288,621.5)	$(320,297.9)
Drug Purchases by Wholesalers	$(204,774.7)	$(214,683.0)	$(248,872.2)	$(287,159.8)	$(305,178.2)
Net Revenue on Drugs	$12,395.3	$13,757.8	$15,456.6	$17,212.2	$17,573.8

Pharmacy Results					
	2012 Overall	2013 Overall	2014 Overall	2015 Overall	2016 Overall
	(in millions)				
Plan Payments to PBMs	$184,395.6	$211,685.9	$244,623.8	$288,621.5	$320,297.9
PBM Supply Chain Margin	$(3,429.2)	$(3,950.6)	$(4,458.7)	$(5,120.3)	$(5,530.4)
Patient Payment to Pharmacies	$53,275.4	$54,826.2	$54,275.7	$53,429.7	$52,366.4
Direct Payer Reimbursement to Pharmacies	$3,040.6	$29,853.6	$33,879.5	$34,451.3	$33,641.1
Copay Coupons	$3,517.7	$4,073.8	$5,054.0	$6,584.4	$7,793.5
Drug Purchases by Pharmacies	$(241,300.0)	$(252,700.0)	$(289,200.0)	$(323,800.0)	$(336,200.0)
340B Margin	$1,322.0	$1,633.6	$1,811.9	$2,471.0	$4,490.8
Net Revenue on Drugs	$30,822.1	$45,422.5	$45,986.3	$56,637.6	$76,859.3

Manufacturer Results					
	2012 Overall	2013 Overall	2014 Overall	2015 Overall	2016 Overall
	(in millions)				
Drug Purchases by Wholesalers	$204,774.7	$214,683.0	$248,872.2	$287,159.8	$305,178.2
Direct Drug Purchases by Pharmacies	$24,130.0	$24,259.2	$24,871.2	$19,428.0	$13,448.0
Manufacturer Rebates to PBMs	$(26,415.5)	$(33,369.0)	$(42,357.0)	$(55,386.7)	$(65,976.1)
Statutory Rebates and Fees	$(18,786.4)	$(21,140.7)	$(23,330.4)	$(27,249.1)	$(34,734.3)
Medicaid Rebates	$(13,287.4)	$(13,872.7)	$(15,199.7)	$(18,276.4)	$(23,526.4)
340B Discounts	$(1,322.0)	$(1,633.6)	$(1,811.9)	$(2,471.0)	$(4,490.8)
Tricare Rebates	$(1,449.0)	$(1,385.0)	$(1,191.0)	$(1,067.0)	$(1,067.0)
Coverage Gap	$(2,728.0)	$(4,249.4)	$(5,127.8)	$(5,434.7)	$(5,650.2)
Copay Coupons	$(3,517.7)	$(4,073.8)	$(5,054.0)	$(6,584.4)	$(7,793.5)
PBM Fees	$(1,228.0)	$(1,342.6)	$(1,481.4)	$(2,633.7)	$(5,551.0)
Net Revenue on Drugs	$178,957.1	$179,016.1	$201,520.5	$214,733.8	$204,571.2

Appendix C: Survey Findings

This appendix includes findings from a Berkeley Research Group (BRG) survey of health plans and PBMs. BRG maintains a survey panel of more than 10,000 clinicians, health plan and PBM personnel, hospital administrators, and pharmacists through a subscription model to its managed care journal. From this panel, BRG sent survey and interview requests to 346 health plans and PBM personnel involved in pharmacy benefit design and received responses from 271 individuals. One hundred and forty-eight of those responses were screened out because the individual was no longer employed by a health plan or PBM, or had insufficient knowledge of the survey topics. The 123 responses in the final results represent 114 individuals from commercial, managed Medicaid and Medicare Part D health plans and nine from PBMs. The survey results should not be considered representative of the entire U.S. health plan and PBM personnel population.

BRG conducted telephone interviews with each of the nine PBM personnel and sent electronic surveys to the 114 health plan personnel. All interviews and survey responses were received between March 26, 2018, and April 13, 2018. High-level summaries of the 123 responses appear below:

Breakdown of Survey Respondents by Total Covered Lives in Health Plan or PBM		
	Count	% of Total
Fewer than 200,000	31	25%
200,000-500,000	28	23%
500,000-1 million	20	16%
1 million-2 million	15	12%
2 million plus	20	16%
Did not respond	9	7%

Breakdown of Survey Respondents by Organization Type		
	Count	% of Total
Local Plan (e.g., members in one state)	47	38%
Blue Cross Blue Shield Company/Licensee	34	28%
National (e.g., United, Humana, Aetna, Anthem, Cigna, Centene, Molina)	25	20%
Regional Non-Blue (e.g., plan/members in multiple states)	8	7%
Benefit Manager (pharmacy and medical)	9	7%

Breakdown of Survey Respondents by Function/Role		
	Count	% of Total
Pharmacy	66	54%
Medical	21	17%
Networks	15	12%
Contracting	8	7%
Strategy	4	3%
Did not respond	9	7%

Health insurance companies typically operate as national, regional or local health plans. In many cases, parent health plans will offer distinct health products in the commercial, Medicare Advantage, and managed Medicaid markets. The 114 health insurer respondents represented 55 different organizations.

The PBM industry is highly concentrated, with the three largest PBMs accounting for 80 percent of the total lives covered.[22] The nine interview participants represent four PBMs, including the three largest.

Survey findings were incorporated into the study methodology, and Appendix A provides additional detail on their use.

Percent of Commercial Health Insurance Premiums Attributable to the Pharmacy Benefit

Data is publicly available on total commercial health insurance premiums, but these data do not apportion premiums across the medical benefit (which covers physician, hospital outpatient, hospital inpatient and other provider costs) and the pharmacy benefit (which covers retail prescription drugs). BRG surveyed commercial health insurers to better understand how premiums are apportioned and whether this apportionment has changed over time.

Percent of Total Health Insurance Premiums Attributable to the Pharmacy Benefit					
	2012	2013	2014	2015	2016
Commercial Plans: Survey Findings	12.8%	13.9%	14.9%	15.8%	16.5%
Medicare Advantage Prescription Drug (MAPD) Plans: Analysis of MAPD Premiums	10.6%	10.7%	10.6%	12.4%	-

Pharmaceutical Manufacturer Rebates as a Percentage of Drug Reimbursement

Brand pharmaceutical manufacturers contract with PBMs and health plans to pay rebates on drug reimbursement in exchange for formulary access. Individual contract terms are confidential, but BRG surveyed PBMs and health plans to broadly understand the percentage of retail drug reimbursement that is paid in rebates and how this percentage has changed over time.

Manufacturer Rebates Paid to PBMs as a Percent of Branded Drug Claims Expense					
	2012	2013	2014	2015	2016
Commercial Plans: Survey Findings	14.4%	16.6%	18.8%	20.9%	23.1%
Part D Plans: Survey Findings	18.2%	20.6%	23.1%	25.5%	27.9%
Part D Plans: Medicare Trustees Report*	19.6%	21.2%	23.1%	27.8%	31.6%

* Figures from the Medicare Trustees Report are adjusted to account for rebate amounts withheld by PBMs.

Percentage of Manufacturer Rebates Passed Through to Health Plans

PBM contracts with health plans are complex and include many different components. One is the percentage of manufacturer rebates collected by the PBM that are passed through to the health plan. BRG surveyed PBMs to better understand the percentage of rebates that are passed through on commercial and Medicare Part D plans.

Percent of Manufacturer Rebates Paid to PBMs That Are Passed Through to Health Plans					
	2012	2013	2014	2015	2016
Commercial Plans: Survey Findings	78.2%	79.8%	80.9%	85.6%	90.8%
Part D Plans: Survey Findings	78.4%	80.1%	81.4%	86.2%	91.6%

Endnotes

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