

The Pharmaceutical Supply Chain, 2013–2023

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Executive Summary

The flow of dollars in the pharmaceutical marketplace within the US healthcare system involves a variety of stakeholders and myriad rebates, discounts, fees, and other payments. In recent years, a renewed focus on prescription medicine spending has triggered calls for greater visibility into distribution and payment processes. Against this backdrop, the market has experienced enhanced competition, resulting in higher rebates from pharmaceutical manufacturers to pharmacy benefit managers (PBMs) and payers.

The goal of this paper is to bring greater clarity to drug distribution and payment processes and estimate the share of total prescription medicine spending realized by pharmaceutical manufacturers and other stakeholders in the supply chain. We first look at total gross drug expenditures, defined as the sum of all payments for retail and nonretail brand and generic medicines made by patients and their public or private health plans at the point of sale (e.g., pharmacy, hospital outpatient department) prior to any payments pharmaceutical manufacturers provide. We then determine the share of spending received by each stakeholder in the supply chain.

The analysis makes it possible to measure prescription drug spending by consumers, health plans, government payers, employers, and the portion thereof realized by manufacturer and nonmanufacturer stakeholders. Key findings include:

- Manufacturers retain half (49.9 percent) of total spending on brand medicines.
- The share of total brand spending retained by manufacturers fell by more than 16 percentage points from 2013 to 2023.
- Rebates and fees to payers—including insurers/plan sponsors, the government, and PBMs—accounted for the largest portion (57.8 percent) of new spending on brand medicines between 2022 and 2023.
- The amount of brand spending received by pharmacies and providers participating in the 340B program increased by a factor of eighteen between 2013 and 2023, from \$3.5 to \$64.4 billion.

This report builds on previous work conducted by BRG professionals published in 2017 and 2020.^{1,2} Our latest findings show that many of the same market dynamics first observed in the previous publications have continued and even intensified in recent years.

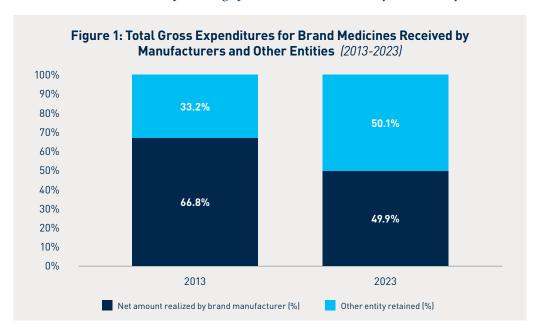
¹ Aaron Vandervelde and Eleanor Blalock, *The Pharmaceutical Supply Chain: Gross Drug Expenditures Realized by Stakeholders*, BRG white paper (January 2017) and *Addendum* (2020). https://ecommunications.thinkbrg.com/44/1664/uploads/vandervelde-phrma-january-2020.3.3-addendum-clean.pdf

² Aaron Vandervelde and Andrew Brownlee, Revisiting the Pharmaceutical Supply Chain: 2013-2018, BRG white paper (January 2020). https://ecommunications.thinkbrg.com/44/1613/uploads/vandervelde-pharmaceutical-supply-chain-2020-final-cleaned.pdf

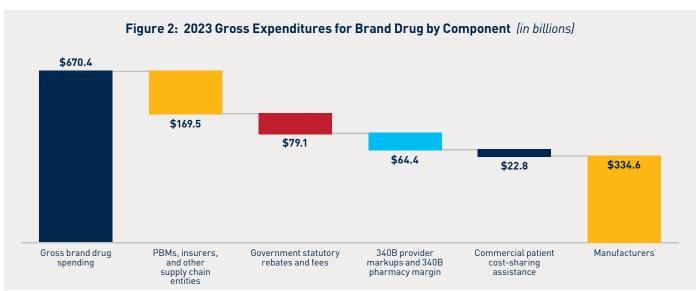
Key Findings

Total Gross Expenditures for Brand Medicines

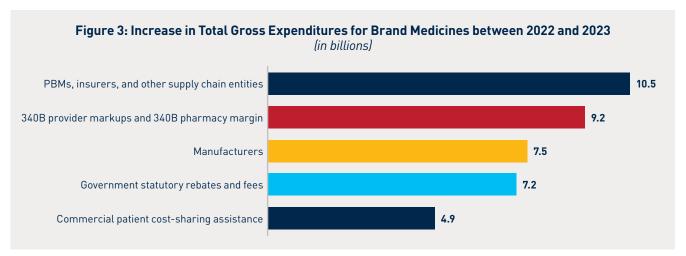
Since 2013, the share of total gross expenditures for brand medicines retained by pharmaceutical manufacturers has declined steadily as others in the pharmaceutical supply chain—including pharmacy benefit managers (PBMs), hospitals, the government, pharmacies, insurers, and other payers—have received an increasing share of total spending. In 2023, pharmaceutical manufacturers retained 49.9 percent of total expenditure on brand medicines, a decrease of 16 percentage points from 2013, the first year the analysis was conducted.



Of the amount realized by other stakeholders in 2023, the largest share (\$169.5 billion) went to PBMs, insurers, and other supply chain entities, including wholesalers and provider group purchasing organizations (GPOs). Government statutory rebates and fees, including Medicaid rebates and Part D coverage gap discounts, accounted for the second largest share and exceeded \$79 billion in 2023, followed by 340B provider markups and 340B pharmacy margin (\$64.4 billion). The remaining \$22.8 billion goes toward commercial cost-sharing assistance, which manufacturers provide to patients with commercial insurance to help defray high out-of-pocket costs.



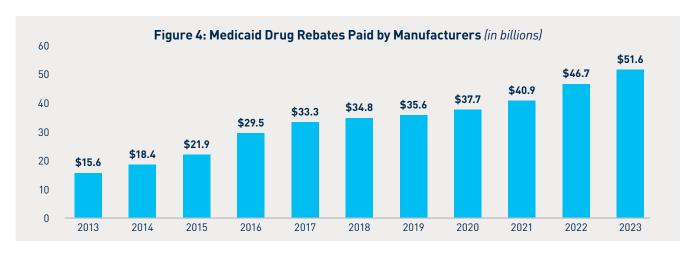
Total gross expenditures—before accounting for spending received by supply chain entities and rebates, discounts, and payments—for brand medicines more than doubled from \$269 billion in 2013 to \$670 billion in 2023. Of this total increase (\$401 billion), brand manufacturers received 39 percent, while nonmanufacturer stakeholders received 61 percent.



From 2022 to 2023, total gross expenditures on brand medicines increased by 6.2 percent (\$39 billion). Growth was driven primarily by a \$10.5 billion increase in rebates, fees, and other payments received by PBMs, insurers, and other supply chain entities.

PBMs, insurers, and other supply chain entities have received an increasing share of brand medicine spending growth in recent years and account for the largest portion (26.7 percent or \$10.5 billion) of the increase in brand medicine spending between 2022 and 2023. The second largest share is retained by 340B hospitals, grantees, and pharmacies (23.4 percent or \$9.2 billion), followed by the amount received by the government (18.4 percent or \$7.2 billion). Manufacturers accounted for 19.1 percent (or \$7.5 billion) of the growth in gross spending on brand medicines. The remaining 12.3 percent (or \$4.9 billion) went toward commercial cost-sharing assistance. However, it should be noted that due to the proliferation of copay accumulator and maximizer programs within the commercial market, approximately one-fifth of the total value of cost-sharing assistance is retained by payers rather than counting toward patient cost-sharing requirements.³

Statutorily required discounts have also increased over this period. Medicaid rebate payments, for example, more than tripled between 2013 and 2023, reducing Medicaid spending by 45 to 60 percent each year.⁴



³ IQVIA, The Use of Medicines in the U.S. 2024: Usage and Spending Trends and Outlook to 2028 (May 7, 2024). https://www.iqvia.com/-/media/iqvia/pdfs/institute-reports/the-use-of-medicines-in-the-us-2024/the-use-of-medicines-in-the-us-2024-usage-and-spending-trends-and-outlook-to-2028.pdf

⁴ MACStats Annual Reporting: Medicaid and CHIP Data Book, Exhibits 26 and 28. https://www.macpac.gov/publication/macstats-archive/

Growing Impact of the 340B Program

Congress created the 340B Drug Pricing Program in 1992 to provide vulnerable patients with continued access to outpatient medicines at eligible safety-net hospitals and clinics.⁵ The program requires manufacturers to offer lower prices on outpatient drugs to qualifying hospitals and clinics that average about 57 percent off list price and, in some cases, bring the price of a medicine down to just a penny.⁶ Since the program's inception, sales have grown exponentially; the 340B program is now the second-largest federal prescription drug program, surpassing the Medicaid Drug Rebate Program (MDRP) and behind only Medicare Part D.⁷ With large profit margins possible due to steep manufacturer price reductions, the 340B program has evolved to financially favor large health systems, for-profit pharmacies, and their affiliated PBMs.

Pharmacies and 340B providers—including eligible clinics and hospitals (and often hospitals' off-campus outpatient departments)—are increasingly leveraging the 340B program to raise profits on the sale and administration of brand medicines. These entities obtain 340B profits by receiving reimbursement from payers at an amount higher than the discounted 340B price the entity pays to acquire the medicine. Our analysis found that 340B margins account for 77 percent of all revenue from the sale of brand medicines received by US pharmacies and providers (both 340B and non-340B entities)—up from just 14 percent in 2013. In fact, 340B providers and their contract pharmacies have seen margins on brand medicines increase by a factor of eighteen since 2013.

Two separate program trends have contributed to this rapid growth. First, 340B hospitals have expanded 340B sales through new enrollments and increased off-campus outpatient facility ("child site") registrations. Between 2013 and 2023, over 39,400 locations registered with the Health Resources and Services Administration's (HRSA) Office of Pharmacy Affairs Information System (OPAIS) database, with 68 percent of the growth due to child-site registrations.§

Second, HRSA issued guidance in 2010 allowing all 340B providers, even those with their own pharmacies on site, to contract with an unlimited number of third-party pharmacies ("contract pharmacies"). This change dramatically increased the role of for-profit pharmacies and other third parties in the 340B program. Following HRSA's expansion of the contract pharmacy program in March 2010, contract pharmacy relationships grew a staggering 12,000 percent between April 2010 and April 2023.9

Between 2013 and 2023, over 174,000 contract pharmacy relationships were established, contributing to the growth in 340B pharmacy and provider margins on brand medicines. The 2010 guidance created an opportunity for for-profit pharmacy chains to realize larger margins through the 340B program. For example, previous research determined that 340B contract pharmacies enjoy a 72 percent profit margin on commonly dispensed brand 340B medicines. Outside of 340B, pharmacy margins on brand drugs are typically in the single digits. Using vertically integrated supply chains consisting of pharmacies, PBMs, and health plans, for-profit corporations have sought to leverage their market power to drive growth in the 340B program and capture greater profits related to 340B sales.

^{5 42} U.S.C. § 256b, see also H.R. Rep. No. 102-384[II], at 12 (1992), stating that the 340B statute is intended to apply "to specified Federally-funded clinics and public hospitals that provide direct clinical care to large numbers of uninsured Americans."

⁶ BRG, 340B Program at a Glance [2024]. https://media.thinkbrg.com/wp-content/uploads/2024/01/12123932/340B-Program-at-a-Glance_2024-FINAL-CLEAN.pdf

⁷ Eleanor Blalock, Measuring the Relative Size of the 340B Program: 2020 Update, BRG white paper (June 2022). https://media.thinkbrg.com/wp-content/uploads/2022/06/30124832/BRG-340B-Measuring-Relative-Size-2022.pdf

⁸ BRG analysis of Office of Pharmacy Affairs 340B covered entity database.

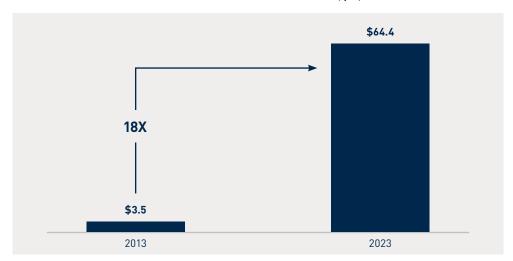
⁹ Ibid.

¹⁰ Ibid.

¹¹ Aaron Vandervelde, Kevin Erb, and Lauren Hurley, For-Profit Pharmacy Participation in the 340B Program, BRG white paper (October 2020). https://www.thinkbrg.com/insights/publications/for-profit-pharmacy-participation-340b/

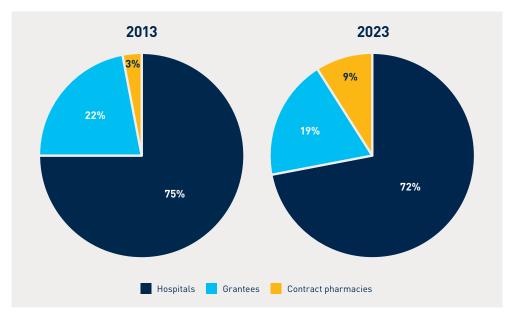
¹² Neeraj Sood, Tiffany Shih, Karen Van Nuys, and Dana Goldman, *The Flow of Money Through the Pharmaceutical Distribution System*, USC Schaeffer (June 2017). https://healthpolicy.usc.edu/wp-content/uploads/2017/06/The-Flow-of-Money-Through-the-Pharmaceutical-Distribution-System_Final_Spreadsheet.pdf

Figure 5: Total 340B Provider Markup and 340B Pharmacy Margin from Sales of Brand Medicines (\$B)



As contract pharmacy has become a more significant part of the 340B program and large for-profit corporations with considerable negotiating power have become more involved, the share of 340B margin retained by different stakeholders has evolved. Between 2013 and 2023, the share of 340B margin retained by contract pharmacies has tripled, with the remaining margin retained by 340B hospitals (72 percent) and grantee clinics (19 percent).¹³

Figure 6: Breakdown of 340B Margin by Stakeholder Type



¹³ BRG analysis based on disclosures from HRSA OPA and the Congressional Budget Office (CBO) on total 340B sales at the 340B price by covered entity and pharmacy type; BRG estimates of the 340B discount over time derived from analysis of list price changes and typical payer discount rates over time; and Nephron estimates of contract pharmacy-enhanced dispensing fees.

Discussion

In recent years, gross drug expenditures have grown along with manufacturer rebates and discounts, limiting the growth in net spending for health plans and PBMs that receive these payments. Manufacturer rebates, discounts, and other payments have offset the observed list price growth on protected brand medicines and kept net price growth in line with or below the rate of inflation over the past seven years. However, the steep discounts that result in lower net prices often do not directly benefit patients with deductibles and coinsurance, who typically pay cost sharing based on the undiscounted list prices of medicines rather than the lower net costs paid by their PBM or health plan.

Another key component of the gap between gross spending on medicines and net manufacturer revenue involves the statutory rebates, discounts, and fees that biopharmaceutical companies are required to provide to government programs, including Medicaid rebates and Medicare Part D coverage gap discounts. These statutory rebates, discounts, and fees limit the growth in net spending for the government. In 2019, the Medicare Part D standard benefit design was changed to shift more of the cost of medicines for non-low-income beneficiaries in the coverage gap onto pharmaceutical manufacturers. As a result of this policy change, coupled with a growing Part D population, Medicare coverage gap discounts have nearly tripled since 2018 (see Appendix Table A2).

The Inflation Reduction Act of 2022 makes significant changes to the Part D benefit, including replacing coverage gap discounts with a new Manufacturer Discount Program (MDP) beginning in 2025. Manufacturers will cover 10 percent of brand prescription drug costs in the initial coverage phase of the Part D benefit and 20 percent of brand costs in the catastrophic coverage phase, for both non-low-income and low-income beneficiaries. Because of the expansion of discounts to low-income beneficiaries and the unbounded liability in the catastrophic coverage phase, MDP discount amounts are expected to be significantly larger than coverage gap discounts. ¹⁶ This policy change will further reduce the share of brand spending retained by manufacturers in coming years.

Topline growth in gross expenditures at the pharmacy counter masks the growing share of spending flowing to supply chain entities. Brand manufacturers retain a shrinking share of medicine expenditures each year, and half of the total spending on brand medicines now flows to nonmanufacturer supply chain stakeholders including PBMs, insurers, providers, and the government. These trends are expected to continue in the foreseeable future in the absence of broad changes to the pharmaceutical marketplace in the US.

¹⁴ IQVIA (2024), Exhibit 45; IQVIA, Use of Medicines in the U.S.: Spending and Usage Trends and Outlook to 2025 (May 2021), Exhibit 29. https://www.iqvia.com/insights/the-iqvia-institute/reports-and-publications/reports/the-use-of-medicines-in-the-us

¹⁵ The Bipartisan Budget Act of 2018 increased the manufacturer discount from 50 to 70 percent for non-low-income beneficiaries receiving brand drugs in the coverage gap.

¹⁶ Corey Berger, Tyler Engel, and Todd Wanta, Part D redesign under the Inflation Reduction Act, Milliman white paper (August 30, 2023). https://www.milliman.com/en/insight/part-d-redesign-under-ira-potential-financial-ramifications

Appendix

Table A1: Total Gross Drug Expenditures by Component (in billions)

Component	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Brand manufacturers	179.5	201.3	221.4	208.8	218.9	235.1	251.1	260.8	292.8	327.0	334.6
Generic manufacturers	93.5	105.3	107.6	100.3	88.9	89.7	85.2	83.8	72.5	71.8	70.4
Supply chain entities and retrospective rebates and discounts to payers/patients	161.7	193.9	244.7	286.8	284.6	304.9	316.8	322.0	327.1	368.8	398.7

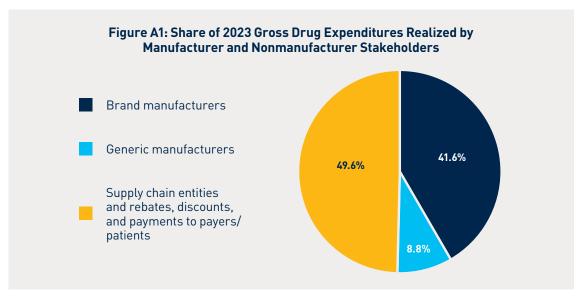
Table A2: Gross Expenditures for Brand Drugs by Component (in billions)

Component Type	Component	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Government Statutory Rebates and Fees	Medicaid Drug Rebate Program	15.6	18.4	21.9	29.5	33.3	34.8	35.6	37.7	40.9	46.7	51.6
	Part D Coverage Gap discounts	4.3	5.1	5.8	5.7	5.8	6.8	10.0	12.5	14.6	16.3	18.2
	Tricare rebates and Federal Supply Schedule discounts	3.5	4.6	4.7	4.4	4.6	4.9	5.0	4.9	5.5	6.1	6.5
	ACA excise fee	2.8	3.0	3.0	2.6	4.0	4.1	2.8	2.8	2.8	2.8	2.8
PBMs, Insurers, and Other Supply Chain Entities	Negotiated health plan and PBM rebates and fees	31.2	42.1	54.9	58.7	67.2	80.2	90.8	99.2	107.4	127.8	143.3
	Non-340B pharmacy and provider margin	21.2	22.7	25.2	22.1	23.8	23.5	21.1	18.1	26.1	25.0	19.6
	Wholesaler Margin	2.3	2.7	3.1	3.2	3.4	3.7	4.0	4.2	4.7	5.3	5.7
	GPO administrative fees	0.6	0.6	0.7	0.6	0.6	0.6	0.7	0.7	0.8	0.9	0.9
340B Provider Markup and 340B Pharmacy Margin		3.5	4.5	6.5	12.9	21.9	30.7	35.1	42.5	45.1	55.2	64.4
Patient Cost-Sharing Assistance		4.2	5.4	6.9	8.7	10.6	12.9	12.9	13.9	15.6	17.9	22.8

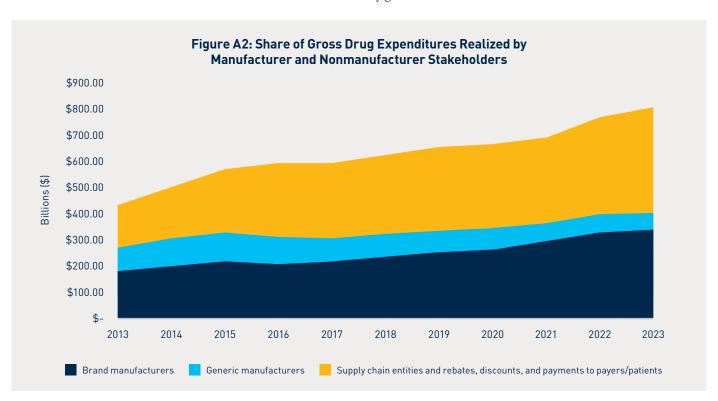
Component Type	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Net amount realized by brand manufacturer (\$)	179.5	201.3	221.4	208.8	218.9	235.1	251.1	260.8	292.8	327.0	334.6
Net amount realized by brand manufacturer (%)	66.8%	64.9%	62.5%	58.5%	55.5%	53.8%	53.5%	52.5%	52.6%	51.8%	49.9%
Total spending on brand medicines	268.7	310.2	354.2	370.5	394.1	437.2	468.9	497.1	556.2	631.1	670.4

Appendix 1: Total Gross Drug Expenditures

Total spending on retail and nonretail brand and generic prescription medicines reached \$803.6 billion in 2023. Of this total, brand manufacturers received 41.6 percent, generic manufacturers 8.8 percent, and supply chain and other entities the remaining 49.6 percent.



The share of total gross drug expenditures realized by brand manufacturers has remained stable over time, while the share realized by nonmanufacturer stakeholders has increased and the share retained by generic manufacturers has decreased.



Appendix 2: Methodology and Data Sources Considered

In preparing this study update, we relied on the methodology used in the 2020 study (see below) and new methodological approaches. In certain instances, we elected to update our methodology to reflect new information gathered or address deficiencies in data available previously. We provide additional information on these methodological updates below.

New Data Sources/Methodological Updates

- A methodological adjustment was made to the calculation of pharmacy reimbursement for the years from 2016 to 2020, resulting in a reduction in calculated pharmacy margin for those years compared to previous publications.
- Medicare Part D coverage gap discounts were recalculated for the years from 2016 to 2020 using Prescription Drug Event data within the CMS Chronic Condition Data Warehouse (CCW).

Methodology

The analysis presented in this paper encompasses all prescription drug sales in the US in addition to a variety of rebates and fees, many of which are proprietary to the parties involved. As a result, there is no single source to rely on for this analysis. Our analysis uses Wholesale Acquisition Cost (WAC) sales and invoice sales data from IQVIA's National Sales Perspectives (NSP) as a baseline for the estimation of gross drug expenditures. The analysis relies on secondary research to estimate the portion of gross drug expenditures realized by manufacturers and supply chain stakeholders, as well as amounts paid by manufacturers through retrospective rebates, discounts, and fees.

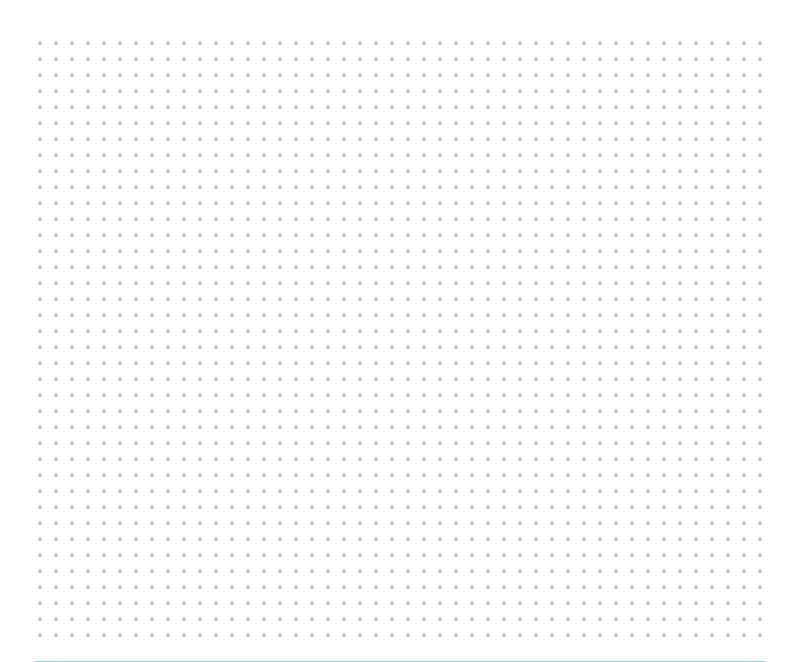
To calculate gross drug expenditures, we rely on third-party data sources to convert WAC sales into an estimate of initial gross drug expenditures paid by patients and their health plans to pharmacies and other providers. We calculate gross drug expenditures separately for brand and generic drugs within the retail and nonretail channels to account for differences in payer reimbursement schemes within these four categories. For the retail channel, reimbursement is often determined based on WAC or Average Wholesale Price (AWP). Contracts between health plans and PBMs that are based on WAC or AWP incorporate negotiated adjustments that differ dramatically for brands versus generics. For the nonretail channel, reimbursement is more often determined based on Average Sales Price (ASP), hospital submitted charges, or bundled payment arrangements. When reimbursement is based on ASP, as is the case under Medicare Part B, a percentage is added to ASP. The purchase discounts provided to nonretail providers by brand and generic manufacturers are reflected within ASP.

In addition to calculating on-invoice discounts, we calculate prompt-pay discounts, stocking fees, and other margin realized by wholesalers, as well as the many off-invoice discounts, rebates, and fees paid by manufacturers to health plans, PBMs, patients, and the government. We estimate these payments based on secondary research where exact numbers are not publicly available. This analysis is developed separately for the retail and nonretail channels, as well as for brand and generic drugs, in order to identify key differences in the supply chain for each. We exclude additional fees and costs in the pharmaceutical supply chain, such as dispensing fees paid to pharmacies, manufacturer payments to specialty pharmacies, and claims administration fees paid to PBMs by health plans and employer groups. These are fees for a service and not adjustments to initial gross drug expenditures (i.e., the fee is not calculated as a percentage of the gross drug expenditure but rather is usually a flat dollar amount for the service performed). This analysis also does not take into account operating expenses (e.g., sales, marketing, and general administrative expenses) of manufacturers or supply chain stakeholders that further reduce margins and realized net revenue.

To calculate gross drug expenditures and amounts retained by each component, we rely on secondary research from a variety of sources (see Table A3). The data sources we use in this analysis have inherent limitations—particularly those that attempt to estimate metrics based on proprietary information. For instance, the Drug Channels Institute offers useful insights on typical discounts off AWP negotiated by employers. Though this data does not necessarily reflect the entire universe of commercial health plans, we assume that average discounts reported serve as a reasonable estimate of average discounts across the market. We make a similar assumption on wholesaler margin, referencing financial data from the largest three wholesalers (McKesson, Cardinal, and Cencora (previously AmerisourceBergen)) to estimate margins retained by the wholesaler industry at large. Though a precise calculation is not possible with such a high-level analysis, our methodology results in a reasonable estimate of value retained by stakeholders in the pharmaceutical supply chain.

Table A3: Sources Considered

Category	Component	Sources							
Gross Drug Expenditures	Gross Drug Expenditures	 IQVIA, "The Use of Medicines in the U.S." annual reporting and data (WAC sales, National Prescription Audit, National Sales Perspective) KFF State Health Facts, Total Medicaid MCO Spending Pharmacy Benefit Management Institute, "Prescription Drug Benefit Cost and Plan Design" annual reporting Drug Channels Institute, "Economic Report on U.S. Pharmacies and Pharmacy Benefit Managers" annual reporting CMS ASP Drug Pricing Files Annual financial reports from long-term care pharmacies Omnicare and Pharmerica Medicaid Covered Outpatient Prescription Drug Reimbursement Information by State 							
	Medicaid Drug Rebate Program	- MACStats: Medicaid and CHIP Data Book, Exhibits 26 and 28							
Government	Part D Coverage Gap Discounts	- CMS Coverage Gap Discount Data Spreadsheets, Prescription Drug Event data							
Statutory Rebates and Fees	TRICARE Rebates and Federal Supply Schedule Discounts	 Annual Evaluation of the TRICARE Program reporting IQVIA, National Sales Perspective, and WAC data 							
	Excise Fee	- IRS, "Annual Fee on Branded Prescription Drug Manufacturers and Importers"							
	Negotiated Health Plan and PBM Rebates	- Annual reporting from the Board of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds							
	Non-340B Pharmacy and Provider Margin	- IQVIA, "The Use of Medicines in the U.S." annual reporting and data (National Sales Perspective)							
PBMs, Insurers, and Other Supply Chain Entities	Wholesaler Margin	 McKesson annual reports Cardinal annual reports AmerisourceBergen annual reports Commonwealth Fund, "The Impact of Pharmaceutical Wholesalers on U.S. Drug Spending" 							
	GPO Administrative Fees	 Healthcare Supply Chain Association, "Frequently Asked Questions" Recent Trends in Hospital Drug Spending and Manufacturer Shortages (2019) 							
340B Provider Markup and 340B Pharmacy Margin	340B Provider Markup and 340B Pharmacy Margin	- 340B Prime Vendor Apexus/HRSA disclosures on sales at 340B price							
Patient Cost- Sharing Assistance	Patient Cost- Sharing Assistance	- IQVIA, "The Use of Medicines in the U.S." annual reporting							





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