PBMs and Prescription Drug Distribution:

An Economic Analysis of Criticisms Levied Against Pharmacy Benefit Managers

Compass Lexecon

July 19, 2024

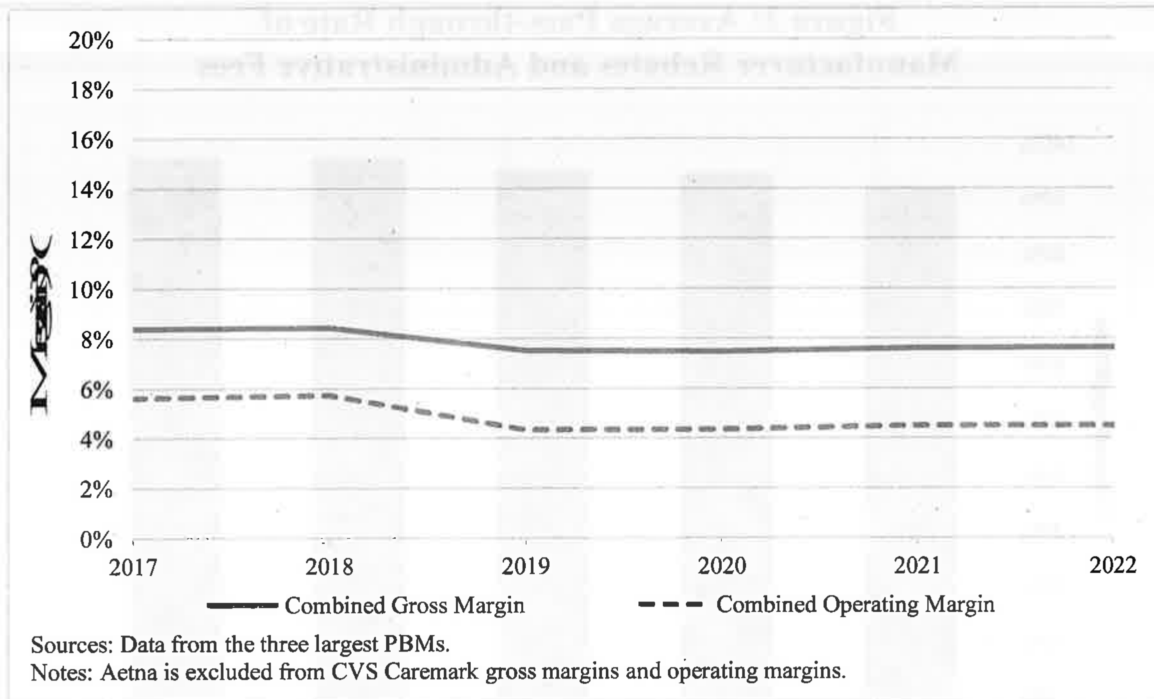
Research funded by Cigna/Express Scripts, UnitedHealth Group/Optum Rx, and CVS/Caremark.

INTRODUCTION

- **Recently there has been a lot of criticism of PBMs with the implication that PBMs are responsible for high drug costs. The FTC is studying PBM practices and has released an interim report claiming that PBMs are inflating drug costs and harming independent pharmacies.**
- **Compass Lexecon, at the direction of Professor Dennis Carlton, has been studying the PBM industry for over a year and has been analyzing industry data, including data that the three largest PBMs provided to the FTC. Compass Lexecon is finalizing a report of its findings.**
- **Compass Lexecon's findings show that the data do not support various claims of PBM critics.**
    - **Consistent with other academic and government studies, the Compass Lexecon study concludes that PBMs play an important role in enabling plan sponsors – including insurance plans, employers of all sizes, labor unions, and government programs – to reduce drug costs.**
    - **The Compass Lexecon study also concludes that the data do not support a claim that PBMs are driving independent pharmacies out of business.**
- **Some of the main empirical results of the Compass Lexecon study are summarized here, though they are still subject to final checking and updating to the extent that additional data become available. The full report will contain the detailed results, data sources, and methodologies.**

Claims that PBMs are earning excess profits that have been increasing over time and are responsible for high drug prices are not supported by the data on PBM margins.

Figure 1: Average Gross Margin and Operating Margin



Sources: Data from the three largest PBMs.
Notes: Aetna is excluded from CVS Caremark gross margins and operating margins.

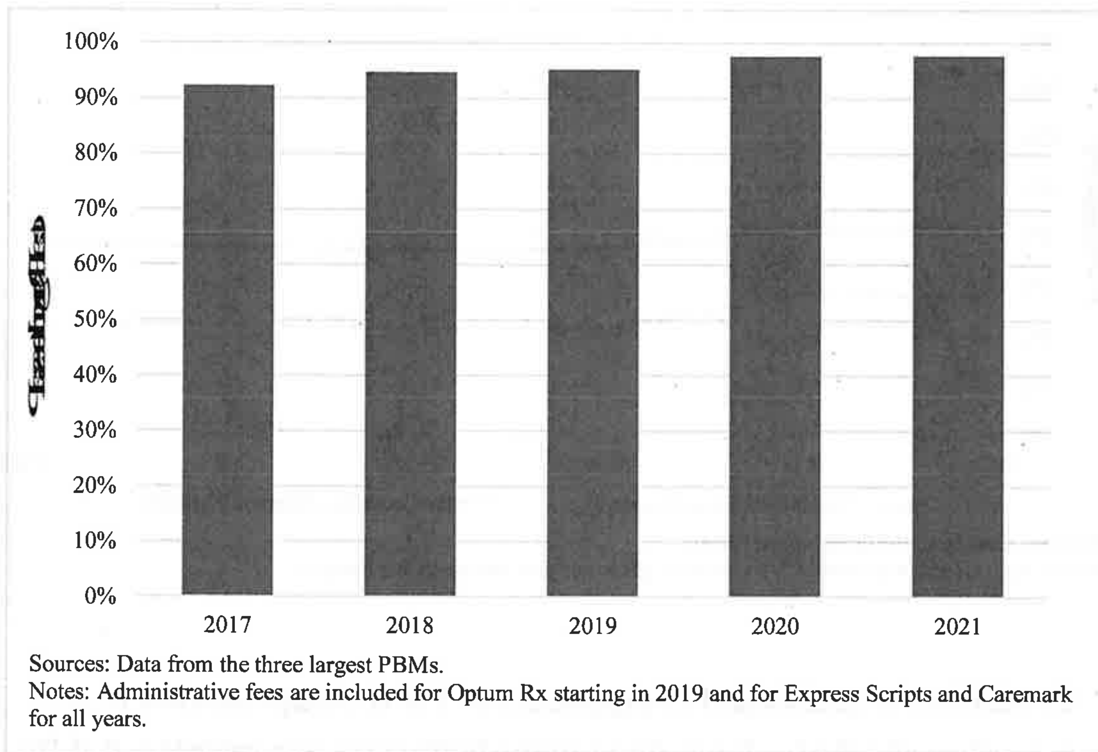
- **Criticisms of individual components of PBM compensation (*e.g.*, retention of rebates from drug manufacturers) are misplaced if the concern is that PBMs are compensated too highly. It is more informative to examine PBMs' overall margins.**

- **PBM operating margins are below 5% in recent years and were lower in 2022 than they were in 2017.**

- **Even if plan sponsors paid PBMs only enough to cover their operating costs of providing services – that is, under the extreme assumption that PBMs were willing to continue to provide all of the services that plan sponsors demand at the same level of quality and yet earn zero operating margin – drug costs (plan sponsor payments plus member co-pays) would only be reduced by less than 5%.**

Claims that PBMs do not benefit plan sponsors because PBMs do not pass through the negotiated rebates and administrative fees from drug manufacturers to the plan sponsors are not supported by the data on rebate pass-through rates.

Figure 2: Average Pass-through Rate of Manufacturer Rebates and Administrative Fees

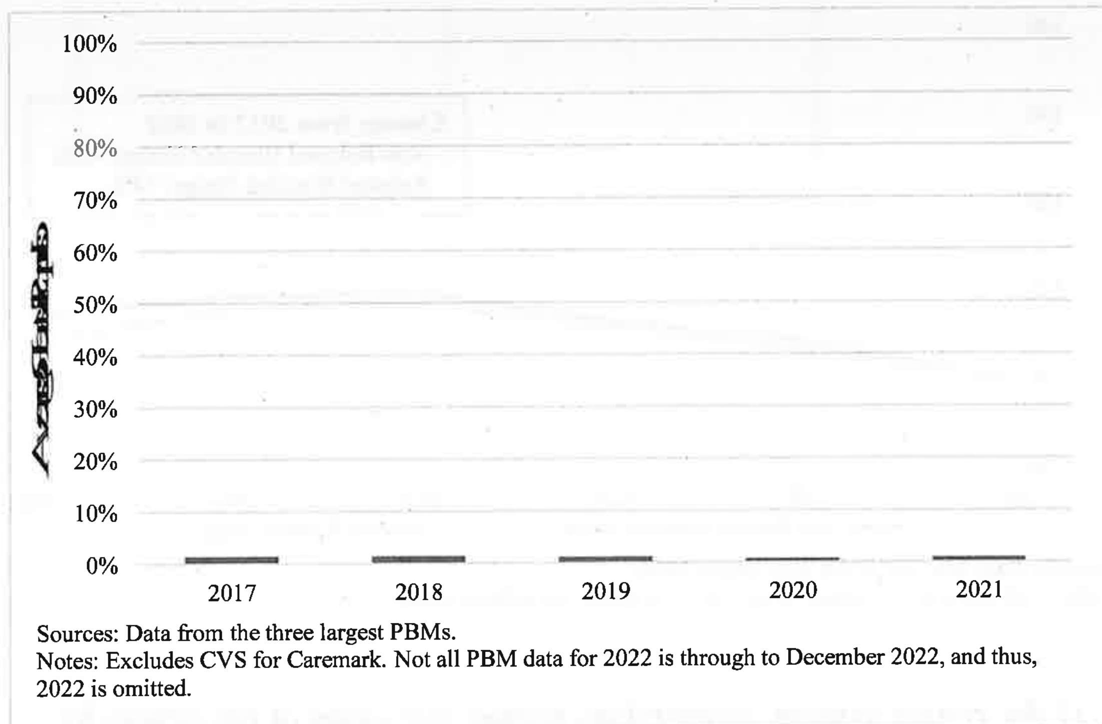


Sources: Data from the three largest PBMs.
Notes: Administrative fees are included for Optum Rx starting in 2019 and for Express Scripts and Caremark for all years.

- **The three largest PBMs pass through the vast majority of rebates and administrative fees they receive from manufacturers to plan sponsors.**
- **The average pass-through rate for the three largest PBMs has increased over time and was close to 100% by 2020 and 2021.**
- **A recent survey showed that the majority of both large and small employers received 100% of rebates.**

Claims that the amount that plan sponsors pay to PBMs for a prescription far exceeds the amount that PBMs pay to pharmacies (this difference is often referred to as the "retail spread") are not supported by the data.

Figure 3: Average Retail Spread
as a Percentage of Total Amount Billed to Plan Sponsors
All Plan Sponsors

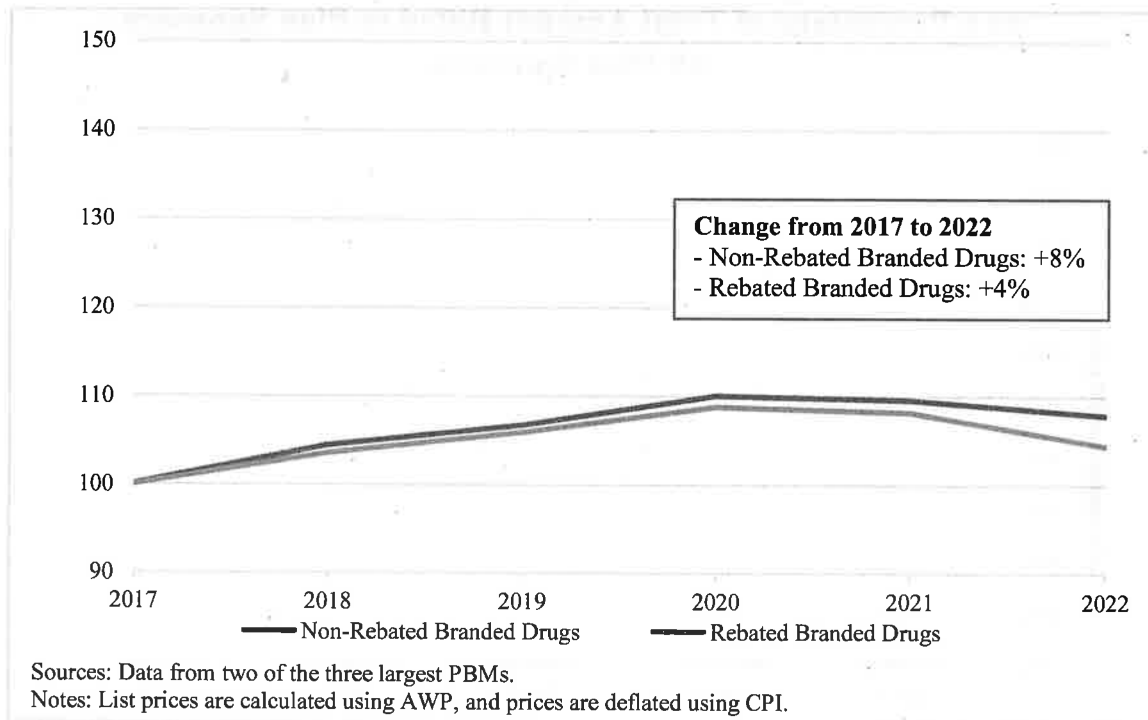


Sources: Data from the three largest PBMs.
Notes: Excludes CVS for Caremark. Not all PBM data for 2022 is through to December 2022, and thus, 2022 is omitted.

- **The average retail pharmacy spread retained by PBMs is below 2%.**
- **Plan sponsors can choose the extent to which PBMs retain pharmacy spread as part of their compensation. Plan sponsors can choose a retail spread of 0%, and surveys show that a majority of plan sponsors do so.**

Claims that PBMs' negotiation of rebates from drug manufacturers leads to a higher growth rate in list prices for rebated drugs are not supported by the data on rebates and list prices.

Figure 4: Indexed Real List Prices of Rebated Branded and Non-Rebated Branded Drugs



Sources: Data from two of the three largest PBMs.
Notes: List prices are calculated using AWP, and prices are deflated using CPI.

- **If the rebate system incentivizes higher increases in list prices by branded drug manufacturers than would otherwise occur, then, all else equal, the rate of increase in list prices over time would be higher for branded drugs that are rebated than for branded drugs that are not rebated.**
- **The data show that list prices of rebated drugs are *not* systematically increasing at a higher rate than list prices of non-rebated drugs.**
- **The average list price of rebated branded drugs has increased *less* than the average list price of non-rebated branded drugs.**

Claims that PBMs' negotiation of rebates from drug manufacturers leads to a higher growth rate in list prices for rebated drugs with higher rebates are not supported by the data on rebates and list prices for individual drugs.

Table 1: Relationship between Rebate Percentage and Rate of Growth in List Price

Dependent Variable: AWP_t/AWP_(t-1)

Rebate as % of AWP (Rebate_t/AWP_t)	-0.002 (0.006)
No. of Observations	7528

Sources: Data from two of the three largest PBMs.

Notes:

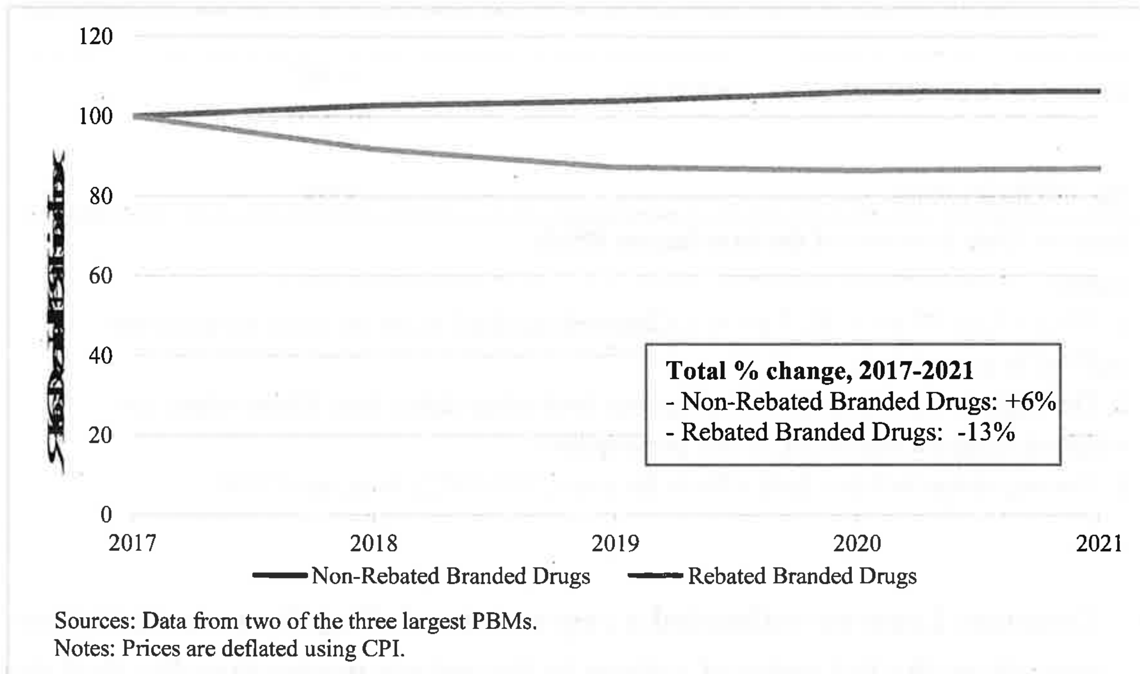
1. *** p < 0.01, ** p < 0.05, * p < 0.1; Clustered standard errors on drugs are used and reported in parentheses.
2. The analysis is performed at the drug/year level using claims data; Observations are weighted using the number of 30-day prescriptions.
3. The regression includes fixed effects for year (2017-2022), drug, and PBM.

- **Compass Lexecon estimated a regression relating the year-over-year growth in the list price of a drug to the rebate percentage for that drug. The regression controls for other factors influencing list prices and estimates whether there is a relationship between growth in list prices and rebate percentages.**
- **The analysis shows that there is no statistical evidence that rebate percentages are positively correlated with the rate of growth in list prices.**
- **The analysis shows that there is no economically meaningful relationship between rebate percentages and the rate of growth in list prices.**

COMPASS LEXECON

Claims that PBMs' negotiation of rebates from drug manufacturers leads to a higher growth rate in overall net drug prices paid by plan sponsors and members are not supported by the data on rebates and overall net prices.

Figure 5: Indexed Real Overall Net Prices Paid by Plan Sponsors and Members for Rebated Branded and Non-Rebated Branded Drugs



Sources: Data from two of the three largest PBMs.
Notes: Prices are deflated using CPI.

- **If critics are claiming that PBMs' negotiation of rebates has contributed to higher growth rates in the overall net prices paid by plan sponsors and members than would otherwise be the case, then the rate of increase in overall net prices over time would be higher for branded drugs that are rebated than for branded drugs that are not rebated.**
- **The overall real net price paid by plan sponsors and members for rebated, branded drugs *decreased* over time while the overall real net price paid by plan sponsors and members for non-rebated, branded drugs *increased* over time. This finding is consistent with PBMs being able to achieve cost savings through negotiations with drug manufacturers, benefitting plan sponsors and members.**

Claims that the largest PBMs face no competition are not supported by the data on shares.

Table 2: Share of Covered Lives: Express Scripts, Optum Rx, and Caremark Combined, by Function, 2018-2023

Year	Claims Adjudication	Rebate Negotiation	Retail Network Management	Benefit Design Consulting	Formulary Management
2018	58.2%	59.1%	58.2%	28.0%	31.4%
2019	53.5%	51.5%	53.8%	29.3%	32.7%
2020	55.1%	52.8%	55.2%	28.2%	31.6%
2021	55.0%	51.9%	55.1%	26.7%	30.5%
2022	55.3%	52.7%	55.4%	26.8%	31.8%
2023	50.6%	38.7%	50.7%	27.0%	32.0%

Source: Clarivate Managed Market Surveyor Data.

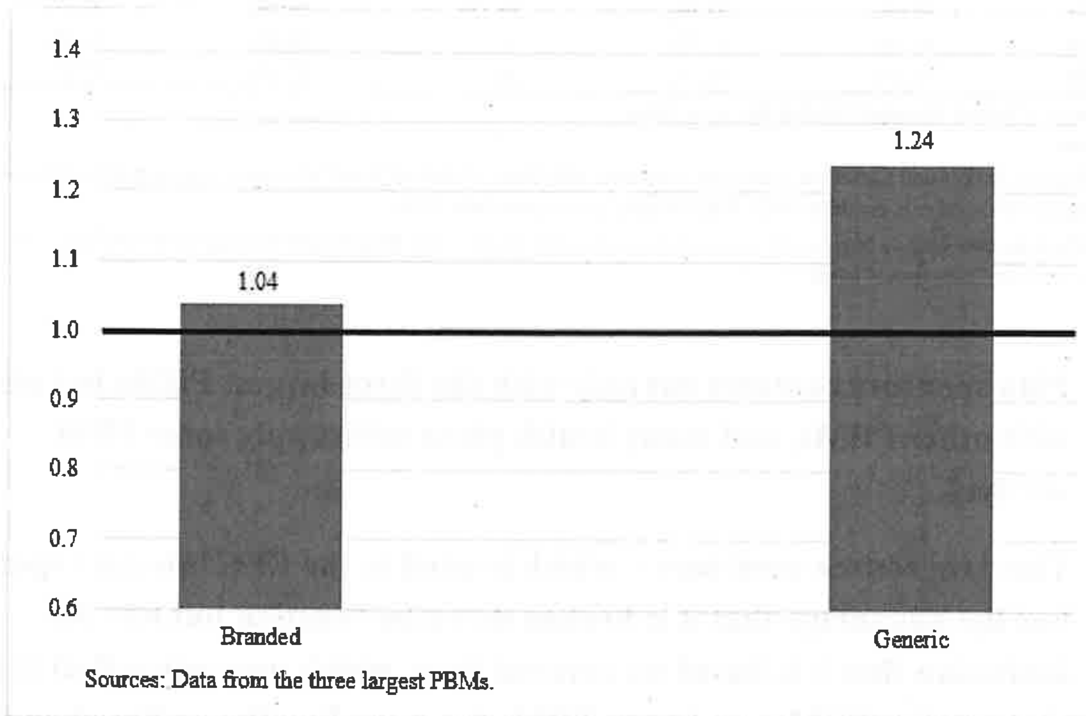
Notes:

1. Express Scripts and Caremark shares are combined with those of their affiliated pharmacy management companies.
2. Optum Rx's share is combined with FutureScripts (as in Guardado 2023).
3. Clarivate data include only health insurance lives who also receive their drug benefit through the insurer (*i.e.* the data exclude "carved-out" lives).

- **Plan sponsors contract not only with the three largest PBMs but also with other PBMs, and many health plans self-supply some PBM services.**
- **The data source used here – which is cited in the FTC interim report – has the advantage that it is broken down by function but has the limitation that it is based on covered lives, which may not reflect the fact that smaller PBMs use larger PBMs for some functions. Based on these data, the importance of smaller PBMs and self-supply has not diminished overall in recent years, and they remain a significant competitive constraint.**
- **Based on these data, the three largest PBMs' share in each function shown here has been steady or has fallen over a six-year period.**
- **The often cited combined share for the three largest PBMs of 80% is based on claims processed. This figure masks the fact that many smaller PBMs perform many functions themselves but subcontract claims processing to one of the three largest PBMs.**

Claims that independent pharmacies are disadvantaged relative to non-affiliated chain pharmacies – because independent pharmacies receive lower reimbursement rates than non-affiliated chain pharmacies for the same drugs – are not supported by the data on reimbursement rates.

Figure 6: Ratio of Reimbursement Rates of Independent Pharmacies to Non-Affiliated Chain Pharmacies* – Non-Specialty Branded Drugs and Non-Specialty Generic Drugs



Notes:

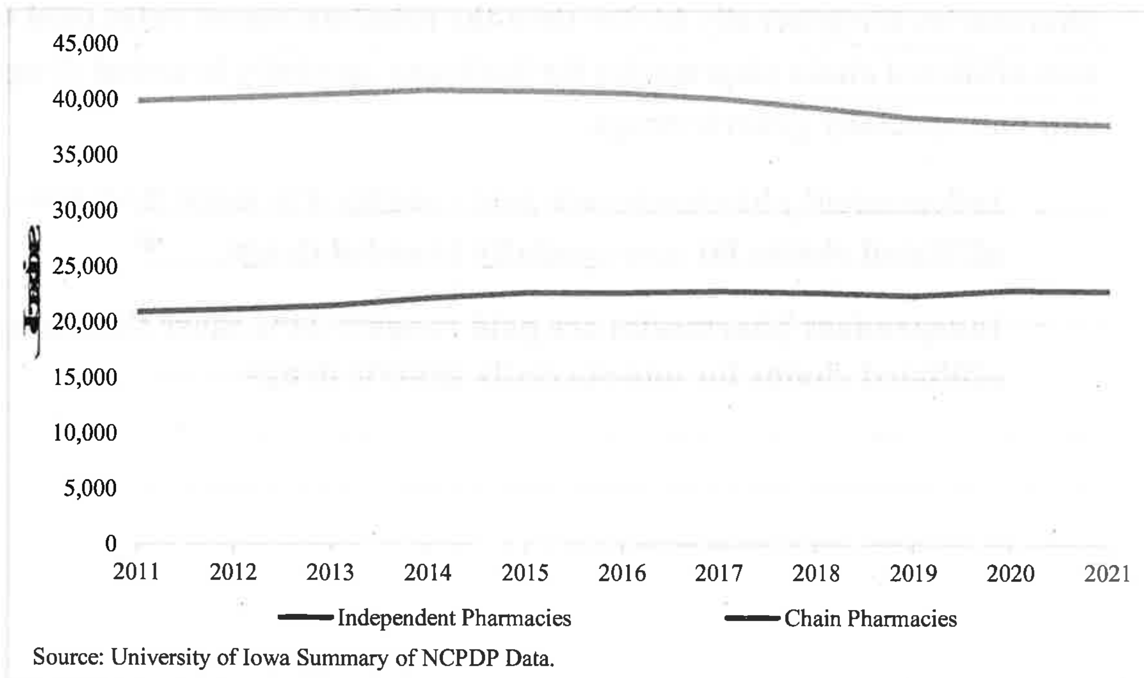
1. Includes non-specialty drugs with at least 100 30-day prescriptions for each PBM, at each type of pharmacy, in each year.
2. The regression includes year fixed effects (2017-2022), payor fixed effects (Commercial, Medicare, Medicaid), drug fixed effects, and PBM fixed effects.

*Ratios above 1.00 indicate that Independent Pharmacies are being reimbursed at a higher rate than Non-Affiliated Chain Pharmacies.

- **Compass Lexecon estimated a regression relating the reimbursement rate paid to a pharmacy for a drug to the type of pharmacy (non-affiliated chain or independent). The regression controls for other factors influencing reimbursement rates and allows a comparison of rates paid to independent pharmacies and non-affiliated chains.**
- **The analysis shows that the reimbursement rates paid to independent pharmacies are generally *higher* than the reimbursement rates paid to non-affiliated chain pharmacies for both non-specialty branded drugs and non-specialty generic drugs.**
  - **Independent pharmacies are paid roughly 4% more than non-affiliated chains for non-specialty branded drugs.**
  - **Independent pharmacies are paid roughly 24% more than non-affiliated chains for non-specialty generic drugs.**

Claims that independent pharmacies are being driven out of business by PBMs are not supported by the data on retail pharmacy locations.

Figure 7: Number of Retail Pharmacy Locations – Independent Pharmacies and Chain Pharmacies, NCPDP Data



Source: University of Iowa Summary of NCPDP Data.

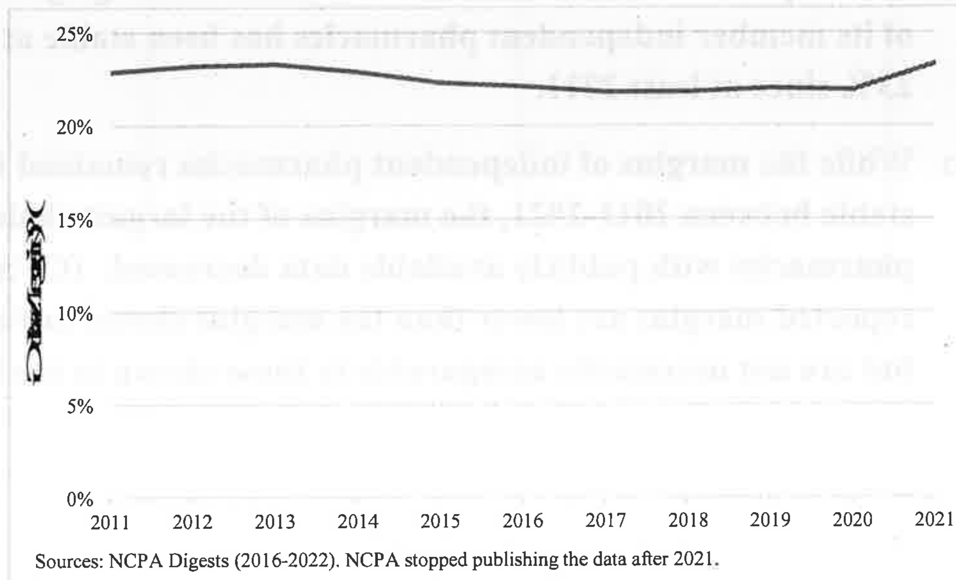
- **As service providers to plan sponsors, PBMs do not have an incentive to reduce the viability of efficient independent pharmacies or cause a reduction in pharmacy competition.**

- **According to industry data, the number of independent pharmacy locations *increased* by roughly 9% between 2011 and 2021.**

- **By contrast, the number of chain pharmacy locations *decreased* by more than 5% during this same period.**

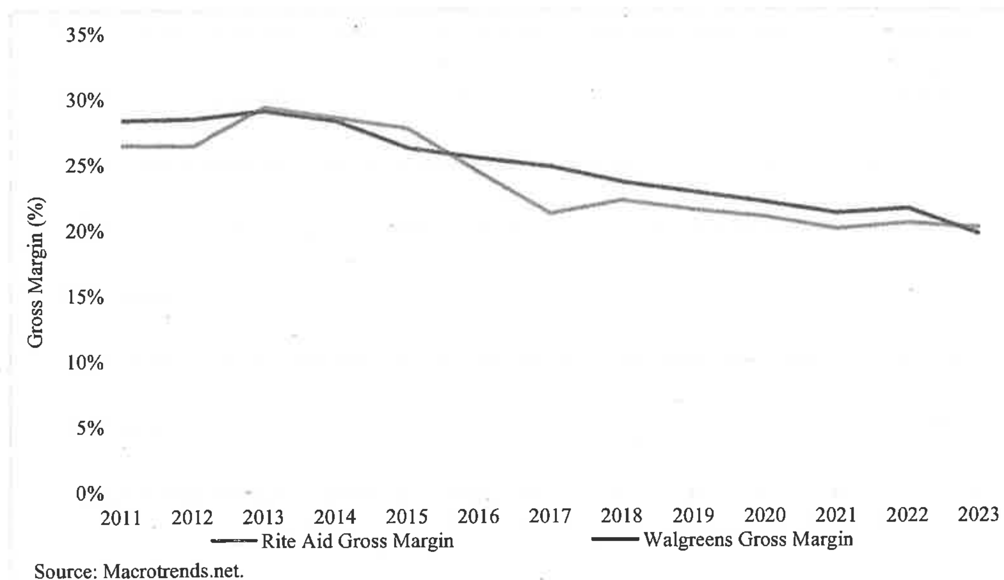
Claims that PBM practices are disadvantaging independent pharmacies relative to chain pharmacies are not supported by the data on independent pharmacy and selected chain pharmacy gross margins.

Figure 8: Average Gross Margins for Independent Pharmacies, NCPA Data, 2011-2021



Sources: NCPA Digests (2016-2022). NCPA stopped publishing the data after 2021.

Figure 9: Gross Margins for Selected Retail Chain Pharmacies, 2011 – 2023



Source: Macrotrends.net.

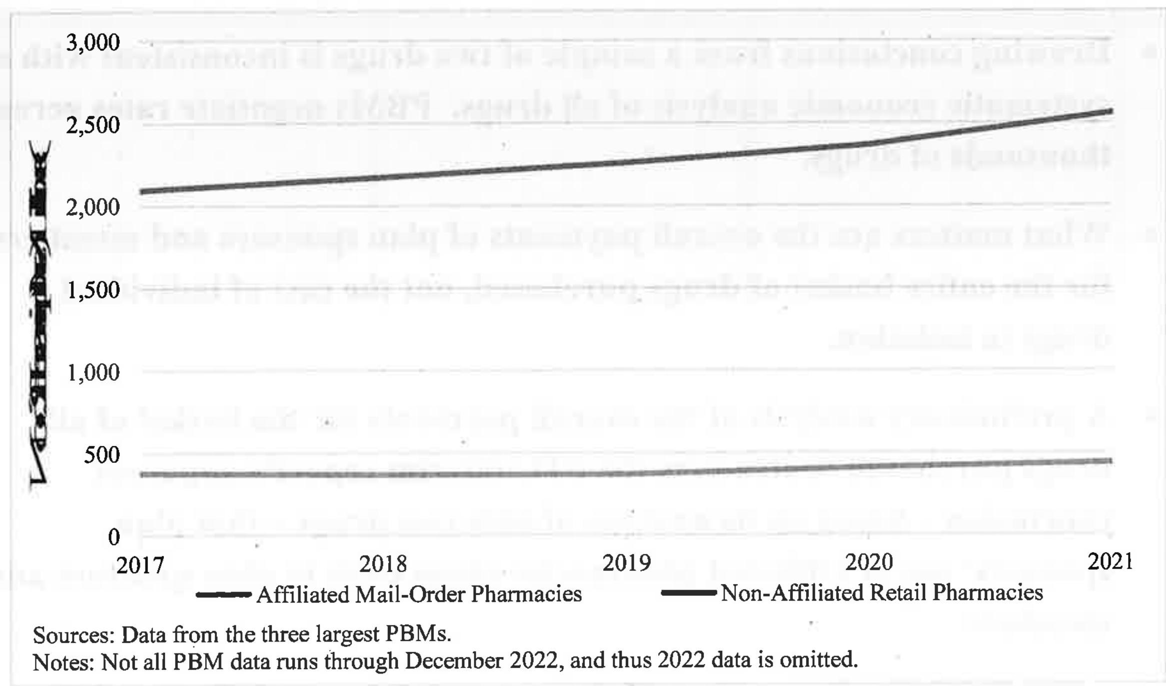
COMPASS LEXECON

- **If PBMs have harmed independent pharmacy viability relative to chain pharmacies, independent pharmacy profits should have declined relative to chain pharmacy profits.**
- **Data on gross margins, a commonly used measure of profitability, refutes that claim.**
  - **Industry data from NCPA indicates that the average gross margin of its member independent pharmacies has been stable at around 23% since at least 2011.**
  - **While the margins of independent pharmacies remained fairly stable between 2011-2021, the margins of the largest chain pharmacies with publicly available data decreased. (CVS' reported margins are lower than the margins shown in Figure 9 but are not necessarily comparable to those shown in the figure.)**

COMPASS LEXECON

Claims that PBMs' mail-order pharmacies are growing at the expense of non-affiliated retail pharmacies are not supported by the data on prescriptions filled.

Figure 10: Number of 30-Day Prescriptions for Non-Specialty Drugs – Non-Affiliated Retail Pharmacies and Affiliated Mail-Order Pharmacies



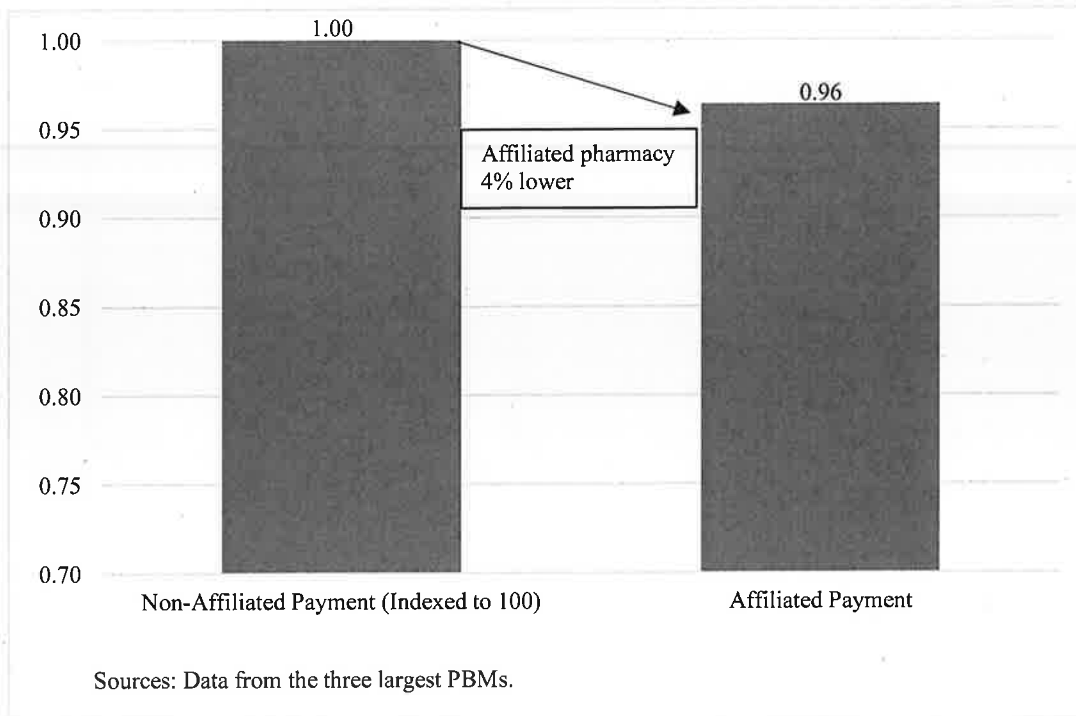
Sources: Data from the three largest PBMs.
Notes: Not all PBM data runs through December 2022, and thus 2022 data is omitted.

- **The number of prescriptions for non-specialty drugs dispensed through both non-affiliated retail pharmacies and PBM-affiliated mail-order pharmacies has increased.**
- **The non-affiliated retail pharmacy share of prescriptions for non-specialty drugs is substantial, around 85%, and has remained steady over time.**

Claims that PBMs have inflated drug costs by the use of their affiliated pharmacies are not supported by the data on the overall payments of plan sponsors and members for all drugs.

- **The FTC interim report uses data on two drugs to claim that PBMs inflate drug costs at their affiliated pharmacies.**
- **Drawing conclusions from a sample of two drugs is inconsistent with a systematic economic analysis of all drugs. PBMs negotiate rates across thousands of drugs.**
- **What matters are the overall payments of plan sponsors and members for the entire basket of drugs purchased, not the cost of individual drugs in isolation.**
- **A preliminary analysis of the overall payments for the basket of all drugs purchased contradicts the FTC interim report's apparent conclusion – based on its analysis of only two drugs – that plan sponsors' use of affiliated pharmacies raises costs to plan sponsors and members.**

Figure 11: Comparison of Total Payments by Plan Sponsors and Members on All Drugs for Affiliated v. Non-Affiliated Pharmacies



Sources: Data from the three largest PBMs.

Notes:

1. Includes drugs with at least 100 30-day prescriptions for each PBM, at each type of pharmacy, in each year.
2. The regression includes year fixed effects (2017-2022), payor fixed effects (Commercial, Medicare, Medicaid), drug fixed effects, and PBM fixed effects.
3. Difference between non-affiliated and affiliated payments is based on an expenditure-weighted average of regression analyses on specialty and non-specialty drugs.

- **Compass Lexecon estimated regressions to compare the overall payments (the sum of payments from plan sponsors and members) to affiliated and non-affiliated pharmacies for specialty and non-specialty drugs. A regression framework allows a comparison of payments for a basket of drugs purchased across pharmacy types, on an apples-to-apples basis.**
- **The preliminary analysis shows that overall payments for all drugs at affiliated pharmacies are roughly 4% lower than overall payments for the same drugs at non-affiliated pharmacies.**