Policy Research Perspectives

Competition in PBM Markets and Vertical Integration of Insurers with PBMs: 2024 Update

By José R. Guardado, PhD[1]

Introduction

Pharmacy benefit managers (PBMs) are important participants in health and prescription drug plan (PDP) insurance markets and the supply chain for prescription drugs. PBMs manage PDP benefits for the vast majority of Americans. PBMs are receiving much scrutiny from policymakers and regulators. In the past two years, the U.S. House of Representatives and Senate have held numerous hearings on PBMs.[2] There is also considerable proposed legislation seeking to regulate PBMs at both the federal and state levels. Twenty-one bills referencing PBMs have been introduced in the 118th Congress, and 33 states and the District of Columbia enacted legislation referencing PBMs in 2023 (National Journal 2023).

PBMs are middlemen between drug manufacturers and insurers (or employers). PBM products are an input to the production of health and PDP insurance services and thus a determinant of premiums. PBM functions include negotiating rebates with drug manufacturers, assembling retail pharmacy networks, managing drug formularies, adjudicating pharmacy claims and designing drug benefits. PBMs also own specialty and mail-order pharmacies.

PBMs were created in the 1960s to help health insurers contain drug spending. For example, they conduct utilization management such as prior authorization and step therapy. PBMs can stimulate price competition among drug manufacturers by shifting demand among competing substitute drugs. In turn, manufacturers offer rebates to PBMs for their drugs to be placed favorably in a drug formulary. PBMs are then supposed to pass on those rebates to insurers and employers. Importantly, PBM markets need to be competitive for rebates to be fully passed on (Garthwaite and Scott Morton 2017). However, it is not clear whether PBMs are (fully) passing on those rebates. Indeed, consolidation in the PBM market, combined with opaque pricing due to confidentiality of rebates, may cause higher pharmaceutical prices (Garthwaite and Scott Morton 2017). In fact, an emerging view is that the use of rebates can also lessen competition. The Federal Trade

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[2] See the References section for the list of Congressional hearings.

Commission (FTC) is questioning the legality of certain rebates. In 2022, it announced that it would ramp up enforcement against the use of illegal bribes and rebate schemes that foreclose competition from cheaper drugs (Federal Trade Commission 2022). In sum, although PBMs can negotiate lower prices from drug manufacturers, they can also lessen competition and raise the prices of drugs.

Perhaps in response to the incomplete pass-through of rebates, health insurers have been vertically integrating with PBMs. As a result, the largest insurers in the U.S. and even some smaller ones already have their own PBM or share the same owner with one. The fact that the largest health insurers and PBMs at the national level are vertically integrated can make it appear that vertical integration is more widespread than it actually is. However, that may not be the case given that health insurance markets are generally local. Only a handful of insurers have a national presence. Most insurers are typically licensed in a single state (Guardado and Kane 2023). Thus, a look at the local level may portray a different picture of the extent of vertical integration than at the national level.

The objective of this paper is to shed light on PBM market competition and the products PBMs supply to insurers. It addresses two questions. First, are PBM markets competitive? Second, what is the extent of vertical integration between PBMs and insurers? Low competition in PBM markets could raise PBM prices above competitive levels. In turn, this could translate into higher insurance premiums. Moreover, given that PBMs assemble retail network pharmacy networks, there is risk that PBMs reimburse pharmacies at below competitive levels.

Using 2022 data on PDP insurance coverage lives and the PBMs insurers use to manage them from the Decision Resources Group (DRG), this paper presents a descriptive analysis of PBM markets and the supply of PBM products to insurers. This is an update to the original paper published in 2022 and its 2023 update, both of which focused on commercial PDP coverage lives. That focus was a consequence of tying the methodology to handle the PBM data to that used in *Competition in Health Insurance: A Comprehensive Study of U.S. Markets* (Guardado and Kane 2023). Specifically, it provided a simple and natural way of defining geographic markets locally—i.e., as metropolitan statistical areas (MSA) and states. This is because commercial PDP lives were tied to health insurance plans, which are generally local.

This current edition expands and enriches the analysis by adding Medicare Part D PDP lives. There are two types of Part D coverage. One is tied to a health plan and is known as Medicare Advantage PDP, which is akin to the commercial health and drug coverage lives studied previously. The other type does not include health insurance and is sold as a standalone product. This disconnection from health insurance posed a challenge in defining geographic markets for standalone PDP markets as MSAs and states. As a result, this study turned to an alternative geographic market definition that more closely resembles PDP markets. The Centers for Medicare & Medicaid Services (CMS) defines service areas known as PDP regions, where insurers make bids to provide PDP coverage. Thus, due to the addition of standalone lives, local markets are now defined as PDP regions in this study. These changes in methodology render the results in this edition not comparable to previous ones.[3]

[3] For results based on only commercial drug coverage lives and at the state and MSA levels, see last year's edition of this study (Guardado 2023).

In contrast to other work, this research provides information on five different PBM functions.[4] Using this information, PBM market shares and market concentration at the national and PDP region levels are computed. High market concentration would suggest low competition.

Two other data sources (Drug Channels 2023; Health Industries Research Companies (HIRC) 2022) also study PBM markets and report market shares of the largest PBMs. However, they report market shares based on only one type of PBM function (adjudicated drug claims), compute them only at the national level, and provide little information about the insurers that use them, particularly whether insurers self supply PBM services.

It is useful to consider the market shares of the insurers providing those drug benefits, since they are the same covered lives managed by the PBMs.[5] This helps explain the size of PBMs' market shares. If an insurer is big in the PDP insurance market, then the PBM that manages its lives would be big as well. To this end, the paper also presents the 10 largest PDP insurers' national-level market shares.

Insurers face a "make or buy" decision—they can supply a PBM function in house (make) or go to the market and use a PBM (buy). This decision is reflected in the DRG data. For each of the five PBM functions, either the name of the PBM that supplies that function or whether the insurer performs it "in house" is reported. Sometimes the insurer shares ownership with the PBM it uses, while other times they are not affiliated. Thus, the data can reveal whether an insurer is vertically integrated with a PBM and can be used to quantify the extent of vertical integration between insurers and PBMs. It can also be determined whether the PBM is exclusive to an insurer.

Whether or not insurers and PBMs are vertically integrated or exclusive has important antitrust implications. There is a risk of *input* or *customer* foreclosure or raising rivals' costs (Salop 2017).[6] If an insurer buys a PBM, other insurers may lose access to that PBM or face higher costs to use it. To illustrate, consider Blue Shield of California and Aetna—two insurer rivals which need PBMs. They both use the CVS Caremark PBM. The difference is that Caremark and Aetna share the same owner—CVS Health. An important question is whether Blue Shield of California faces higher PBM costs *because* Caremark is vertically integrated with Aetna. Interestingly, Blue Shield of California announced in 2023 that it would be dropping Caremark and switching to non-traditional suppliers of PBM services in an effort to save on drug costs (Constantino 2023).[7]

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[4] The DRG data include two additional "PBM functions" not studied here—the mail-order and specialty pharmacies used by insurers. Unfortunately, insurers sometimes report more than one mail-order pharmacy or more than one specialty pharmacy, and *all* of the insurers' lives are attributed to each pharmacy, which results in overcounting of lives.

[5] Covered lives is a standard term used in health and drug insurance, which means the persons covered under a policy. It is synonymous with beneficiaries or enrollees. These terms are used interchangeably throughout the paper.

[6] For example, in the Aetna-CVS merger, the input foreclosure concern was that Aetna's insurer rivals would not be able to access CVS's Caremark PBM or would face higher costs after the merger. Aetna's insurer competitors might be foreclosed. The *customer* foreclosure concern was that Caremark's PBM rivals might be foreclosed from having Aetna as a customer.

[7] Blue Shield of California announced that it would be switching to Amazon Pharmacy and Mark Cuban's Cost Plus Drug Company. However, as of the date of this analysis, and even in the January *2023* DRG data, BS of CA has still not dropped CVS Caremark.

Data

The data used in this study on PDP insurance coverage lives and the PBMs insurers use to manage them are from the same data source (DRG) used to produce *Competition in Health Insurance* (Guardado and Kane 2023). The previous two versions of this study used data for 2020 and 2021 and focused on commercial PDP covered lives. This edition adds data on Medicare Part D and is thus no longer comparable to those previous versions.[8] To collect data on PBM lives, DRG does not survey PBMs. Rather, in addition to asking insurers for their number of *medical* lives, DRG asks for their PDP covered lives, as well as for the PBMs that manage them. Thus, the PBM lives reported in the DRG data are those same drug coverage lives reported by insurers, but assigned to the PBM. DRG aggregates the insurer-level lives to the PBM level so that a given PBM's lives are the sum of all lives of the insurers that use it.

PDP insurance coverage is provided in one of two ways. It can be tied to a *health* insurance plan, which covers hospital and physician services, or it can be sold as a standalone product. Some health plans include a drug benefit, while others do not. In employer-sponsored insurance, employers may choose not to get drug coverage from the insurer, and instead *carve it out* and buy the drug benefit separately. Similarly, there are two types of Medicare Part D PDPs. One is tied to a *health* insurance plan and is called a Medicare Advantage (MA) PDP. The other is not part of an MA plan and is a standalone PDP. The latter is typically used by beneficiaries in traditional Medicare, which does not cover prescription drugs. This study includes both Medicare Advantage PDP and standalone PDP. DRG obtains the Medicare data directly from CMS.

The *commercial* drug insurance lives in the DRG data are part of a health plan that includes both a medical benefit and a drug benefit; carved-out lives are excluded. As a result, the commercial data are missing about 39 percent of commercial lives in the combined fully insured and self-insured markets.[9] However, because the DRG data used in this study do include Medicare Part D PDP lives, the share of missing lives is much lower when including both commercial and Medicare Part D lives.

One major advantage of the data is that they report the PBM used by insurers to perform each of five different functions, including *rebate negotiation, retail network management, claims adjudication, formulary management* and *benefit design*. Alternatively, if the insurer performs the function itself, "in house" is reported instead. Rebate negotiation represents the negotiation of rebates with drug manufacturers. Retail network management is the assembling of retail pharmacy networks. Claims adjudication is the administering and processing of pharmacy claims information. Formulary management represents the controlling of the drug formulary, which is a list of drugs deemed most medically appropriate and cost effective by the entity with control of it. Finally, benefit design is a means to incentivize the use of certain drugs over others, such as through tiering, copays and coinsurance.

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[8] Although Medicaid drug coverage lives are also reported in the DRG data, this paper excludes them and focuses on the commercial + Medicare Part D market.

[9] DRG estimates that about 10 percent of fully insured commercial drug coverage lives and 65 percent of commercial self-insured lives are carved out. Of the health insurance lives in the DRG data, 47 percent are fully insured, and 53 percent are self-insured. 39 percent is a weighted average of the carved-out shares in the self-insured and fully insured commercial markets.

Methodology

Market shares and market definition

Geographic market definition

To calculate firms' market shares, the market in which competition takes place needs to be defined. Markets are characterized by two aspects: a geographic market and a product market. This study defines the geographic PBM market at both the national and local levels. For example, of the 10 largest PBMs providing rebate negotiation services in our data (collective share of 97 percent), six do so in all 34 PDP regions (collective share of 68 percent).[10] To the extent that PBMs have a national presence, the PBM market may be national if multi-PDP region insurers or employers contract with PBMs to get PBM services for all its enrollees across PDP regions.

However, there are plausible reasons why PBM markets may also be local. As indicated above, only a handful (seven) of PBMs have a national presence.[11] Thirty-one percent of the national market gets their PDP benefits managed by a PBM without a national presence. Thus, the degree of concentration at the national level may not necessarily reflect the degree of concentration that is relevant to all consumers. Another reason why the PBM market may be local is that health and PDP insurance markets (the PBMs' consumers) are local. As mentioned, there are only a handful of health insurers with a national presence (Guardado and Kane 2023). Most insurers still operate locally and are typically licensed in a single state, such as most Blue Cross Blue Shield (BCBS) insurers. Relative bargaining power and competition may thus be determined locally.

Moreover, analogous to health insurers' assembly of hospital and physician networks, PBMs assemble networks of pharmacies. If pharmacies need to be close to consumers for them to buy drugs, then, save for mail order, it is plausible that retail pharmacy markets may also be local. A national survey released by the National Community Pharmacists Association found that 85 percent of adults surveyed prefer getting prescription drugs from a local pharmacist instead of a mail order service.[12] For these reasons, this paper calculates PBM market shares at the local (PDP region) level in addition to the national level.[13] Similar methodologies to the ones used in *Competition in Health Insurance*, which exclude some of the raw *health insurance* commercial and MAPDP data are used here as well (Guardado and Kane 2023).[14]

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[10] There are a total of 34 PDP regions in the U.S. A map of those regions can be found here https://www.cms.gov/Medicare/Prescription-Drug-Coverage/PrescriptionDrugCovGenIn/downloads/PDPRegions.pdf. Most individual large states constitute a PDP region, while a few less populous states are aggregated into regions.

[11] In fact, of 31 "PBMs" (10 of which are *insurers*) in the data that provide rebate negotiation, only seven provide it in all 34 PDP regions, four provide it in 18-26 regions, eight in 2-7, and 12 "PBMs" in only one region.

[12] https://ncpa.org/newsroom/news-releases/2021/03/04/national-consumer-survey-more-8-10-adults-prefer-their-local

[13] Previous versions of this study defined local geographic markets at the state and MSA levels because they focused on commercial drug plans tied to medical plans. This year we define local markets as PDP regions due to the addition of Part D plans, particularly standalone PDP.

[14] See *Competition in Health Insurance* for the detailed methodologies employed. Such exclusions do not apply to standalone PDP lives.

Product market definition

A product market is a product or group of products for which there are no adequate substitutes. For example, rebate negotiation services would constitute a product market. At the outset, all five PBM functions were candidates as product markets to assess competition. However, an initial analysis revealed that at the national level, formulary management for an aggregate 35 percent of drug coverage lives was conducted in house by insurers. The share for benefit design was similar at 36 percent. In contrast, the in-house shares were only one percent to two percent for the other three PBM functions.[15] This suggests formulary management and benefit design should be treated differently in the analysis. For this reason, this paper assesses competition based on the other three functions: *rebate negotiation, retail network management, and claims adjudication*. Commercial and Part D PDP lives are summed by PBM for each function to compute PBM market shares for each of these three product markets.

Vertical integration

Another major advantage of the DRG data is that they can be used to quantify the extent of vertical integration between insurers and PBMs. The PBM that an insurer uses to manage its lives and conversely what insurers' lives are managed by the PBM are both reported. Thus, it can also be determined whether the PBM is exclusive to an insurer or whether the PBM manages other non-affiliated insurers' lives as well. The PBM may be owned by the insurer (or its owner), or it may be independent.

This paper considers an insurer as vertically integrated if it meets at least one of two criteria for a given PBM function. One is that the PBM reported for the function is "in house," which is by definition vertically integrated. The other criterion is that the reported PBM is owned by the insurer or shares its same owner.

Initially, the presence of five PBM functions seemed to present a challenge in determining whether an insurer is vertically integrated because of the possibility of being vertically integrated for some functions but not for others. In general, however, there is consistency in whether the insurer is vertically integrated across the functions. This simplified the classification. For example, the PBM reported across all five functions for Cigna is always its PBM—Express Scripts. There are other less common cases where (1) the insurer is vertically integrated for some functions but uses an unaffiliated PBM for others, or (2) an insurer is vertically integrated for its commercial lives but not for its Part D lives. For example, Blue Cross and Blue Shield of Nebraska and Blue Cross and Blue Shield of Wyoming are vertically integrated (use Prime Therapeutics) for their commercial lives but are not for their Part D lives (they use CVS/Caremark). Centene's subsidiaries' vertical integration status varies by geographic region or whether the lives are commercial or Part D. In this paper, if the insurer uses an affiliated PBM for at least four of the five functions *within* commercial or Part D lives, then those lives are considered vertically integrated. Although an insurer can be vertically integrated for some functions but not for others, the consistency across functions suggests that a single measure of vertical integration is valid.

[15] 2 percent for rebate negotiation and claims adjudication, and 1 percent for retail network management.

Results

Market shares

Drug insurer market shares

To shed light on the PBM market results, it is useful to consider the market shares of the insurers providing those drug benefits. Those are the same lives that the PBMs are managing. Table 1 reports national-level market shares of the 10 largest PDP insurers in 2022. Column (1) pertains to the commercial market, column (3) is for Medicare Advantage PDP and column (5) is for the standalone PDP market. With a couple of exceptions, the insurers in columns (1) and (3) are the same largest commercial and MA *health* insurers in the U.S., respectively (Guardado and Kane 2023), where the PDP is tied to the health plan.[16]

Table 1 shows that UnitedHealth Group (UHG) is the largest commercial PDP and Medicare Advantage PDP insurer, as well as the third largest in standalone PDP with 13.0 percent, 28.2 percent and 17.6 percent shares, respectively. Closely behind in the commercial market is Kaiser with an 11.4 percent share; however, Kaiser is fourth with a 6.9 percent share in the Medicare Advantage PDP market and nonexistent in standalone PDP. CVS Health is the biggest insurer in the standalone PDP market with 25.6 percent share, where Centene follows it with a 17.8 percent share.

These results suggest specialization in either commercial or Medicare markets as found in *Competition in Health Insurance* (Guardado and Kane 2023). For example, Humana is the second largest Medicare Advantage PDP insurer with a 19.0 percent share and fourth largest in standalone with a 14.9 percent share, but its share in the commercial market has shrunk over time to only 0.7 percent. Cigna is third and fifth largest in the commercial and standalone markets with 10.1 percent and 12.5 percent shares, respectively, but it's seventh in Medicare Advantage PDP (2.2 percent share). Closely behind as the fourth largest in the commercial market with a 10.0 percent share is Elevance Health, which is fifth in Medicare Advantage PDP with a 6.0 percent share. Notably, some insurers only sell standalone plans but not health insurance, such as Rite Aid and Delaware Life, which are the sixth and eighth largest such insurers with 3.0 percent and 1.3 percent shares, respectively.

PBM market shares for rebate negotiation, retail network management and claims adjudication

Table 2 reports national-level market shares for rebate negotiation, retail network management and claims adjudication of the 10 largest PBMs in 2022.[17] The beneficiaries underlying Table 2 are the same ones underlying the insurer shares in Table 1, though the PBM shares combine commercial and Part D lives. In general, the results show little difference in the shares and PBM rankings across the three PBM functions. Thus, unless otherwise indicated, the following discussion focuses mainly

[16] The ranking and market shares differ slightly given that insurers' numbers of *drug* and *medical* covered lives can differ. Part of the difference is due to the carve out of drug benefits described above, and another is due to some employers not providing a drug benefit.

[17] Certain PBMs' shares reported may include lives of more than one PBM subsidiary, which this study combined. CVS Health includes the Caremark and Aetna Pharmacy Management PBMs, OptumRx includes the FutureScripts PBM, and Centene includes the Envolve, Magellan and RxAdvance PBMs.

on rebate negotiation. To start to get a glimpse into insurer-PBM vertical integration, the PBM's owner is reported in parenthesis if it is not already clear.

CVS Health is the largest PBM in the U.S. with a 21.3 percent national market share.[18] CVS Health's large size is partly due to its big size in the PDP insurance market, but also because it is used by many insurers. Closely behind as the second largest PBM is OptumRx, with a 20.8 percent share, although it is the largest PBM in the claims adjudication market with a 21.1 percent share. OptumRx's large PBM share is due to UHG's big presence in the insurer market and because it manages several other insurers' drug benefits as well.

Express Scripts is the third largest PBM with a 17.1 percent share. Express Scripts is used by its owner—Cigna—which partly gives it its large size, but it is also used by many other insurers. These PBMs are followed by Prime Therapeutics, whose share is 10.3 percent. Health Care Service Corporation (HCSC) and several other Blue Cross and Blue Shield insurers, including Blue Cross and Blue Shield of Florida, jointly own and almost exclusively use Prime Therapeutics. Prime is exclusively used by Blue Cross and Blue Shield insurers, including some that do not own it.

Kaiser Pharmacy (8.6 percent share) is the fifth largest PBM and is used exclusively by Kaiser. The sixth biggest PBM is IngenioRx with an 8.0 percent share. Although initially used exclusively (and still largely used) by its owner (Anthem—now Elevance Health), IngenioRx is now also used by a few other Blue Cross Blue Shield insurers. Finally, Humana Pharmacy Solutions, whose share of 6.8 percent makes it the seventh largest PBM, is used exclusively by Humana. The remaining three PBMs have smaller market shares, ranging from 0.7 percent to 1.8 percent.

Notably, the seven biggest PBMs supplying the rebate negotiation product have a collective market share of 93.0 percent, while the 10 biggest PBMs' share is 96.7 percent. Of those 10, nine PBMs share ownership with *health* insurers. In fact, in the rebate negotiation market, MedImpact is the only PBM not affiliated with a *health* insurer; however, it does sell a standalone PDP product so technically all 10 are vertically integrated. The only other PBM in Table 2 that is not affiliated with an insurer is SS and C Health. Finally, the two PBMs that are exclusive to their insurer counterparts (Kaiser and Humana) have a collective share of 15.4 percent.

The results in Tables 1 and 2 suggest a significant degree of vertical integration between insurers and PBMs. The eight largest insurers in the commercial market, which have a collective national market share of 61 percent, are affiliated with the seven of the eight biggest PBMs. The seven largest insurers in Medicare Advantage PDP (collective share of 77 percent), are affiliated with seven of the eight biggest PBMs, while seven of the nine largest standalone PDP insurers (collective share of 91 percent) are affiliated with five of the eight biggest PBMs. Such insurer-PBM vertical integration and exclusivity have competitive implications. Although it may appear that insurers have a considerable number of PBMs to choose from, this may be overstated if non-affiliated ones can't access those PBMs, or face higher PBM costs than affiliated insurers.

[18] There are a few differences in the national-level PBM market shares presented in Table 2 compared to those from Drug Channels and HIRC, the latter two of which are themselves similar. The Appendix explores potential explanations for the differences.

PBM market shares for formulary management and benefit design

Table 3 reports the 10 largest national market shares of firms providing formulary management and benefit design—the functions that much more commonly get performed by insurers in house. A few interesting findings emerge from comparing Table 2 to Table 3. First, three *insurers* now appear in Table 3 (Elevance Health, Blue Shield of California and Blue Cross Blue Shield of Michigan).[19] This is not surprising given at the national level, formulary management for an aggregate 35 percent of drug coverage lives was conducted by insurers in house, while the share for benefit design was 36 percent.[20] In fact, Elevance Health has 7.8 percent shares and has replaced its PBM (IngenioRx) as the sixth fifth largest "PBM." While Elevance Health uses IngenioRx for rebate negotiation, retail network management and claims adjudication (Table 2), it conducts formulary management and benefit design in house (Table 3). Second, CVS Health's market share decreases from 21.3 percent to 11.7 percent. Some insurers that use CVS Health for the functions in Table 2 conduct formulary management and benefit design in house. Most notable among these are Blue Shield of California and Centene. Consequently, OptumRx becomes the biggest PBM. Third, Express Scripts' market share decreases from 17.1 percent to 10.2 percent, as some insurers that use it for the functions in Table 2 conduct formulary management and benefit design in house. Notable among these are Blue Cross Blue Shield of Michigan, other Blue Cross Blue Shield insurers and SCAN.

PBM market concentration

Table 4 presents estimates of PBM market concentration at the national and PDP region levels for the rebate negotiation, retail network management and claims adjudication markets. Nationally, the four-firm concentration ratio (CR4) is 70 percent. This indicates that the four largest PBMs collectively have a 70 percent share of the national PBM market.

Turning to the local level, the average PBM market is highly concentrated. In 2022, the average PDP region HHIs across PBM functions were all over 2400 (2410 in rebate negotiation, 2451 in retail network management and 2414 in claims adjudication).[21] Finally, the majority of those markets are highly concentrated as well. Eighty-two percent of rebate negotiation markets are highly concentrated, as are 85 percent of the markets for retail network management and claims adjudication.[22]

[19] Centene is not mentioned in this discussion because, although it owns insurers, its share in Table 3 is due to a combination of its PBMs' lives as well as its insurers' in-house lives.

[20] These proportions of 35 percent and 36 percent are the aggregate market shares of *all* insurers that are supplying formulary management and benefit design in house.

[21] These concentration levels are lower than in previous versions of this study, which were limited to PDPs tied to commercial health insurance. The main driver of these differences is specialization by payer-type (commercial, MA PDP, standalone PDP), along with lower local standalone PDP insurance market concentration than in commercial markets. A smaller driver is that local markets are PDP regions, whereas previously they were states (and MSAs).

[22] Despite lower levels of local concentration, these fractions are more similar to those found in previous versions of the study due to the change in HHI threshold for being highly concentrated from HHI>2500 to HHI>1800.

Extent of vertical integration of insurers and PBMs

The national-level results of the largest PBMs and insurers presented above suggest a large extent of vertical integration between insurers and PBMs. As Guardado and Kane (2023) find, however, the largest health insurers nationally are not necessarily big at the local level. In fact, only a handful of health insurers have a national presence and most operate locally. Some insurers are not vertically integrated with PBMs.

Table 5 presents 2022 shares of drug lives that are covered by an insurer that is vertically integrated. Three sets of statistics are presented. One set combines the commercial and Medicare Part D markets (hereafter combined market) and the other two present them separately. Nationally, 72 percent of combined market drug lives are vertically integrated. Although the largest U.S. insurers and PBMs at the national level are vertically integrated, 28 percent of the national market is not.

On average, 70 percent of PDP region level drug lives are vertically integrated. However, there is wide variation across PDP regions, with some PDP regions having little vertical integration, while others are almost entirely so. For example, the PDP region with the smallest vertical integration share (Michigan) has only 28 percent of its lives vertically integrated, whereas the highest share of 92 percent is in Colorado. There is also variation by whether the insurance plans are commercial or Part D.[23] Nationally, 69 percent of commercial PDP lives are vertically integrated, compared to 77 percent in Part D.

Several insurers that don't have a national presence but are large locally are not vertically integrated. Notable examples are several Blue Cross Blue Shield insurers. For example, Blue Shield of California and Blue Cross Blue Shield of Michigan are not vertically integrated and use external PBMs. The same is true for many other Blue Cross Blue Shield as well as non-Blue Cross Blue Shield insurers.

Conclusion

This paper presents a descriptive analysis of pharmacy benefit manager (PBM) markets and the supply of PBM products to prescription drug plan (PDP) insurers. Using data from 2022 and in contrast to other studies, the paper provides information on five different PBM functions as well as in local PBM markets. This is an update to two previous versions of the study and expands and enriches the analysis by adding the Medicare Part D (Medicare Advantage PDP and standalone PDP) market. As a result, it switches to PDP regions as the local geographic markets.

For each PBM function, insurers face a make or buy decision when they demand such PBM products. They can either conduct a function in house (make) or go to the market and use a PBM (buy). The analysis finds that for three of the functions (rebate negotiation, retail network management and claims adjudication), insurers largely use a PBM. In contrast, for benefit design and formulary management, there is no "middleman" for a significant part of the market as 36

[23] In this analysis, Medicare Part D includes both Medicare Advantage PDP and standalone PDP. Part D could not be separated into Medicare Advantage PDP and standalone PDP because the DRG PBM-level data are not reported as such.

percent and 35 percent of those national markets, respectively, are conducted by insurers in house. This may have implications for recent FTC scrutiny of PBMs since it is insurers themselves that are supplying PBM services.

The study also presents national-level market shares of the 10 largest PDP insurers in the U.S. It is useful to consider these shares since those are the same lives that the PBMs are managing. If an insurer is big in the drug insurance market, then the PBM it uses to manage its lives would be big as well.

UnitedHealth is the largest PDP insurer nationally in the commercial (13.0 percent share) and Medicare Advantage PDP market (28.2 percent share) as well as third largest in the standalone PDP market with a 17.6 percent share. CVS Health is the largest insurer in standalone PDP with a 25.6 percent share. Insurers tend to specialize in one of those three markets. For example, Humana is the second largest insurer in the Medicare Advantage PDP market with a 19.0 percent share and the fourth largest in standalone PDP with a 14.9 share. In contrast, its share in the commercial market has shrunk to only 0.7 percent.

Kaiser is the second largest insurer in the commercial market with an 11.4 percent share. It is fourth largest in Medicare Advantage PDP (6.9 percent share), but it does not supply standalone PDP. Cigna is third largest with a 10.1 percent share in the commercial market and fifth with a 12.5 percent share in standalone PDP. Elevance Health—a Blue Cross and Blue Shield insurer in 14 states—is the fourth largest insurer with a 10.0 percent share in the commercial market.

Focusing on rebate negotiation in the PBM market, CVS Health is the largest PBM in the U.S. with a 21.3 percent national market share. CVS's large size is partly due to its big size in drug insurance markets, but also because it supplies PBM services to many other insurers. Closely behind is UHG's OptumRx with a 20.8 percent share. In claims adjudication, however, OptumRx is the largest PBM (21.1 percent share)—slightly ahead of CVS, whose share is 19.9 percent. UHG's large size in the drug insurance market helps explain its PBM's large size, but it also provides PBM services to other insurers. The third largest PBM is Express Scripts, which has a 17.1 percent share. Cigna's large size in insurance markets and its supply of PBM services to several other insurers also explains its large PBM size.

Prime Therapeutics ranks fourth in size with a 10.3 percent share. Prime is owned and used by several Blue Cross and Blue Shield insurers across the country, including Health Care Service Corporation (HCSC)—an insurer in five states—and Blue Cross Blue Shield of Florida. Kaiser Pharmacy (8.6 percent share) is the fifth largest PBM and is used exclusively by Kaiser. IngenioRx, which is owned and largely used by another Blue Cross Blue Shield insurer—Elevance Health—is the sixth largest PBM. Finally, Humana Pharmacy Solutions is the seventh largest PBM with a 6.8 percent share.

Turning to PBM market concentration, the collective national market share of the four largest PBMs is 70 percent. Indeed, the seven biggest PBMs have a collective national market share of 93.0 percent. In contrast to other work, this is the first research to compute PBM market shares and market concentration at the local (PDP region) level. On average, local PBM markets are highly concentrated (HHI>1800). The PDP region-level average HHI is above 2400 in the rebate

negotiation, retail network management and claims adjudication markets. Across those PBM products, at least 82 percent of markets are highly concentrated.

The level of local market concentration in PBM markets and its competitive implications should be interpreted in the larger context of other market aspects, including concentration in PDP *insurance* markets as well as PBM-insurer vertical integration and exclusivity. On the one hand, before insurers and PBMs contract, there may be more PBM choices for insurers to choose from than the large PBM market shares computed here would suggest. Despite the number of PBMs available to choose from, once an insurer with a large share chooses a PBM to manage *all* its lives, that PBM will end up with a large share as well. In this case, local concentration may understate competition. On the other hand, if a PBM owned by an insurer charges higher prices to non-affiliated insurers or cannot be accessed by them, it may not be a competitive option for the non-affiliated. There would be less competition than the concentration results would suggest.

Finally, this paper quantifies the extent of vertical integration between insurers and PBMs. At the national level, 72 percent of PDP lives are covered by an insurer that is vertically integrated. There is variation in the extent of vertical integration by payer type. Sixty-nine percent of the commercial PDP market is vertically integrated, compared to 77 percent in Part D. On average, 70 percent of PDP region-level lives are vertically integrated. However, there is also wide variation across PDP regions, with some regions having little vertical integration, while others are almost entirely vertically integrated.

PBMs have attracted much attention and scrutiny from regulators and policymakers. In response to a House Education and Labor Committee's request, the U.S. Government Accountability Office (GAO) published a report on the role of PBMs in the pharmaceutical supply chain (GAO 2024). The FTC is currently examining the PBM industry and also recently released an Interim Staff Report on PBMs (Federal Trade Commission 2024). The findings in this paper may be helpful in shedding light on some of those inquiries.

These findings also lead to the question of whether proposed or consummated mergers among PBMs and between insurers and PBMs should raise or should have raised antitrust concerns. The high levels of concentration found here suggest low competition in PBM markets. Conceptually, low competition may have the potential to lead to higher PBM prices, higher insurance premiums, and PBMs not fully passing on rebates to consumers than if markets were competitive. Moreover, given extensive vertical integration of insurers and PBMs, there is a question of whether non-affiliated insurers may be losing access to those PBMs or facing higher costs to use them. More research is needed to examine whether these conceptual possibilities are being borne out in practice, as they are out of the scope of this paper. A retrospective analysis of both the vertical and horizontal effects of the Aetna-CVS merger may yield fruitful and interesting results.

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Table 1. Largest prescription drug plan insurers' market shares at the U.S. national level, 2022

Insurer	Market Share (%)	Insurer	Market Share (%)	Insurer	Market Share (%)
Commercial		*Medicare Advantage PDP*		*Standalone PDP*	
UnitedHealth Group	13.0	UnitedHealth Group	28.2	CVS Health	25.6
Kaiser	11.4	Humana	19.0	Centene	17.8
Cigna	10.1	CVS Health	8.9	UnitedHealth Group	17.6
Elevance Health	10.0	Kaiser	6.9	Humana	14.9
HCSC	5.4	Elevance Health	6.0	Cigna	12.5
CVS Health	5.3	Centene	5.6	Rite Aid	3.0
Centene	2.8	Cigna	2.2	Elevance Health	1.6
BCBS FL	2.6	Highmark	1.3	Delaware Life	1.3
BS of CA	2.4	SCAN	1.0	HCSC	1.0
BCBS MI	2.2	Healthfirst (NY)	0.9	Mutual of Omaha	0.5

Notes:

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2. Insurers' market shares are based on prescription drug plan (PDP) coverage lives.

Table 2. Largest pharmacy benefit managers' market shares at the U.S. national level, 2022
Rebate negotiation, retail network management and claims adjudication

PBM	Rebate Negotiation Share (%)	PBM	Retail Network Management Share (%)	PBM	Claims Adjudication Share (%)
CVS Health	21.3	CVS Health	21.4	OptumRx (UHG)	21.1
OptumRx (UHG)	20.8	OptumRx (UHG)	21.3	CVS Health	19.9
Express Scripts (Cigna)	17.1	Express Scripts (Cigna)	17.1	Express Scripts (Cigna)	17.1
Prime Therapeutics (BCBS)	10.3	Prime Therapeutics (BCBS)	10.3	Prime Therapeutics (BCBS)	9.5
Kaiser Pharmacy	8.6	Kaiser Pharmacy	8.6	Kaiser Pharmacy	8.6
IngenioRx (Elevance)	8.0	IngenioRx (Elevance)	8.0	IngenioRx (Elevance)	8.0
Humana Pharm Sol	6.8	Humana Pharm Sol	6.8	Humana Pharm Sol	6.8
Centene	1.8	Centene	1.8	SS and C Health	1.7
MedImpact	1.2	MedImpact	1.7	MedImpact	1.7
Navitus (SSM/Dean)	0.7	Navitus (SSM/Dean)	0.7	Centene	1.4

Notes:

1. Source: Author's analysis of Managed Market Surveyor Suite | Pharmacy Benefit Evaluator | Program | January 1, 2022 | Enterprise License © 2022 DR/Decision Resources, LLC. All rights reserved.
2. PBM market shares are based on commercial and Medicare Part D (Medicare Advantage and standalone) prescription drug plan (PDP) coverage lives.
3. To illustrate insurer-PBM integration, the PBM's owner is in parenthesis where not clear. If a parent owns different PBMs, the parent is listed. CVS Health—owner of insurer Aetna—owns the Caremark and Aetna Pharmacy Management PBMs, and Centene owns the Envolve, Magellan and RxAdvance PBMs. Navitus is majority owned by Dean Health Plan's owner—SSM Health (and minority owned by Costco). Finally, OptumRx includes FutureScripts.

Table 3. Largest pharmacy benefit managers' market shares at the national level, 2022
Formulary management and benefit design

PBM	Formulary Management Share (%)	PBM	Benefit Design Share (%)
OptumRx (UHG)	17.2	OptumRx (UHG)	17.0
CVS Health	11.7	CVS Health	11.4
Express Scripts (Cigna)	10.2	Express Scripts (Cigna)	9.8
Kaiser Pharmacy	8.6	Kaiser Pharmacy	8.6
Prime Therapeutics (BCBS)	8.0	Prime Therapeutics (BCBS)	7.9
Elevance Health	7.8	Elevance Health	7.8
Humana Pharm Sol	6.7	Humana Pharm Sol	6.7
Centene	6.0	Centene	5.9
BS of CA	1.7	BS of CA	1.7
BCBS MI	1.6	BCBS MI	1.6

Notes:

1. Source: Author's analysis of Managed Market Surveyor Suite | Pharmacy Benefit Evaluator | Program | January 1, 2022 | Enterprise License
2. PBM market shares are based on commercial and Medicare Part D (Medicare Advantage and standalone) prescription drug plan (PDP) coverage lives.
3. In cases of insurer self supply, we change the PBM's name from "in house" to the name of the insurer performing the function—i.e., the insurer *is* the PBM.
4. Formulary management for an aggregate 35 percent of PDP coverage lives was conducted by insurers in house. The share for benefit design was 36 percent. These shares are the sums of *all* insurers supplying these functions in house, including the insurers listed in this table (e.g., BS of CA).

Table 4. PBM Market concentration, 2022

Market Concentration Measure	Rebate Negotiation	Retail Network Management	Claims Adjudication
National Level			
Four-Firm Concentration Ratio (CR4)	70%	70%	68%
PDP Region Level			
Mean HHI	2410	2451	2414
Median HHI	2292	2423	2316
% Highly Concentrated (HHI>1800)	82%	85%	85%

Notes:

1. Source: Author's analysis of Managed Market Surveyor Suite | Pharmacy Benefit Evaluator | Program | January 1, 2022 | Enterprise License
2. The four-firm concentration ratio (CR4) is the sum of the market shares of the four largest firms in a market. For example, the four largest PBMs at the national level in the U.S. have a 70% share of the rebate negotiation market (second column in Table 2).
3. The market concentration measures are based on commercial and Medicare Part D (Medicare Advantage and standalone) prescription drug plan (PDP) coverage lives.
4. There are 34 PDP regions in the United States.

Table 5. The extent of vertical integration between insurers and PBMs, 2022

Geographic Market	Vertical Integration Share (%)		
	Combined	**Commercial**	**Medicare Part D**
National Level	72	69	77
PDP Region Level			
Mean	70	65	78
Minimum	28	11	58
Maximum	92	94	89

Notes:

1. The numbers reported represent percentages of prescription drug plan (PDP) lives covered by an insurer that is vertically integrated with a PBM. The combined market is for the combined commercial and Medicare Part D (Medicare Advantage PDP and standalone) lives.
2. The national level share is for the U.S. as a whole. The PDP region level statistics are for the 34 PDP regions in the U.S.

Appendix

There are a few differences in the national-level PBM market shares presented in Table 2 compared to those from Drug Channels and HIRC, the latter two of which are themselves similar. Drug Channels reports the six largest PBMs. The most notable difference is that Drug Channels reports that CVS—the largest PBM in the U.S.—had a 33 percent national market share in 2022. In contrast, this study computes a market share of 21 percent in rebate negotiation and retail network management and 20 percent in claims adjudication.

There are a couple of plausible reasons that might explain such differences. One is that the DRG data exclude drug benefits that are based on direct relationships between self-insured employers and PBMs. If CVS is overrepresented in that carved-out segment, its share would be smaller in the DRG data than in the Drug Channels and HIRC data. Second, the shares presented by Drug Channels and HIRC are based on the *number of prescription claims* managed, whereas the DRG data are based on the number of drug coverage enrollees. If there are more claims per covered life among CVS's consumers, that would also make CVS bigger in the Drug Channels than in the DRG data. There is some evidence for this. This study finds that CVS's insurers are much larger in the Medicare standalone PDP market than in the commercial market. Thus, it may have an older and sicker population of enrollees in the PBM market.

Other notable differences in market shares are for Prime Therapeutics, Kaiser and IngenioRx. This paper finds that Prime Therapeutics, Kaiser and IngenioRx are bigger than in the Drug Channels data. However, Kaiser and IngenioRx, which are the fifth and sixth largest PBMs in this study don't even appear among the six largest PBMs in Drug Channels. Interestingly, Kaiser and IngeniorRx's owner—Elevance Health—are among the largest PDP insurers in the U.S.