

# Income Differences Between Locations of 340B Entities and Contract Pharmacies

Neal Masia, PhD; and Farai Kuwonga, MS

The 340B Drug Pricing Program has grown exponentially in recent years. The program identifies “covered entities,” which include thousands of nonprofit hospitals meeting certain criteria and thousands more federally funded health care clinics (we refer to these clinics collectively as “grantees”). Once a covered entity gains eligibility, it is allowed to purchase medicines at a deep discount determined by a statutory formula linked to the net Medicaid price; the net Medicaid price serves as an upper bound on the 340B purchase price. Covered entities in turn can distribute these medicines to their patients either directly or through 1 or more contract pharmacies (CPs); covered entities may give the products away or provide deep discounts to patients, but they may also earn significant profits by charging patients, their insurers, or Medicare full price for the discounted drugs. Prior research has estimated that such profits exceeded \$40 billion in 2019.<sup>1</sup> It is unclear whether and to what extent covered entities pass the profits (or discounts) along to low-income and uninsured patients,<sup>2</sup> and recent research has found that at most between 20% and 25% of such profits are shared directly with patients, with significant amounts flowing to CPs or retained by covered entities.<sup>3</sup>

Regulatory changes and subregulatory guidance have fueled this growth, especially the addition and rapid expansion of CPs. CPs tend to be large chain operators<sup>4</sup> with the infrastructure and software to identify patients who qualify as 340B eligible by virtue of their association with a covered entity. Such an association is established if a patient is treated by clinicians at a covered entity or at sites formally connected to the covered entity. Once a patient is 340B eligible, the CP can fill their prescription using “virtual” 340B inventory (technically held on behalf of the covered entity). The CP then ensures that the covered entity receives the relevant refund to cover the 340B discount for the prescription from the drug’s manufacturer. Each covered entity CP agreement is negotiated separately and details are not available to researchers, but according to the Government Accountability Office, such agreements can include fees or revenue sharing in various proportions.<sup>5</sup> Prior to 2010, each covered entity was allowed to contract with a single CP or use an in-house pharmacy for their 340B activities. In 2010, the

## ABSTRACT

**OBJECTIVES:** To estimate neighborhood income differences between the locations of 340B-covered entities and their contract pharmacies (CPs) and examine whether these differences vary between hospitals and grantees.

**STUDY DESIGN:** Cross-sectional study.

**METHODS:** Using Health Resources and Services Administration 340B Office of Pharmacy Affairs Information System and zip code tabulation area (ZCTA)-level US Census Bureau databases, we created a unique data set that contains covered entities’ characteristics, CP use, and ZCTA-level median household income in 2019 for more than 90,000 pairs of covered entities and CPs. We computed income differences between each pair and for a subset of pairs in which the pharmacy is within 100 miles of the covered entity for both hospitals and federal grantees.

**RESULTS:** On average, median income in the pharmacy’s ZCTA is about 35% higher than in the covered entity’s ZCTA, with little difference between hospitals (36%) and grantees (33%). Roughly 72% of arrangements cover less than 100 miles; in that subset, income is about 27% higher for pharmacy ZCTAs, with little difference between hospitals (28%) and grantees (25%). In more than 50% of arrangements, the median income in the pharmacy’s ZCTA is more than 20% higher than in the covered entity’s ZCTA.

**CONCLUSIONS:** CPs serve at least 2 purposes: They can increase low-income patients’ access to medicines directly when a CP is closer to where a covered entity’s patients live, and they can increase profits for covered entities (some of which are potentially passed on to patients) and CPs. We find that in 2019, both hospitals and grantees used CPs to generate income but generally they do not appear to contract with pharmacies located in neighborhoods where low-income patients are likeliest to live. Prior research findings have suggested that hospitals and grantees behave differently from each other with respect to CP use, but results of our analysis suggest the opposite.

*Am J Manag Care.* 2023;29(6):e184-e188. doi:10.37765/ajmc.2023.89377

Health Resources and Services Administration (HRSA) issued subregulatory guidance allowing covered entities to use multiple CPs in order to expand the reach of their 340B programs.<sup>6</sup> The change dramatically increased the number of CP arrangements per entity.<sup>7</sup>

With more than 100,000 CP-covered entity relationships now blanketing the country, controversy over how 340B gains are used has emerged among the pharmaceutical companies that underwrite the 340B program, the covered entities that have come to rely on 340B profits, and the CPs themselves. It is of great interest to policy makers to understand where CPs—for-profit entities, largely—fit into the 340B ecosystem, particularly because they retain an unknown but likely very significant portion of the 340B profits. One important clue as to how the pharmacies are operating is to look at *where* they are operating, especially relative to the covered entities they are contracting with. Are the CPs in poor communities, expanding access for low-income patients to critical medications, or are they in wealthier communities, earning profits from well-insured patients? If the latter, policy makers may seek changes to the program to ensure that 340B profits find their way to patients directly—for example, by limiting the profit participation of the pharmacies themselves.

A recent study published in *The American Journal of Managed Care* by Nikpay et al suggests that safety-net providers (a common type of 340B grantee) and 340B hospitals are using CPs differently.<sup>8</sup> That study used the county as the unit of analysis and estimated the likelihood that a hospital-based or grantee-based CP was added in a county in the prior year. The authors noted no relationship between the odds of a county gaining a hospital-based CP and the county-level poverty rate in the previous year. They found that hospital CPs are less likely to be added in counties with higher uninsured rates, but that grantees are more likely to add CPs in areas with higher poverty rates; the authors claim that the implication is that grantees and hospitals should be treated differently in any effort to reform 340B CP regulations.

Relying on the probability of adding at least 1 CP in a county to draw conclusions has several shortcomings. First, a county can be a very large unit; Los Angeles County, with more than 10 million people, has some of the richest and poorest zip code tabulation areas (ZCTAs) in the country. Second, this approach does not account for the intensity of CP activity within a county, instead focusing on how likely it was to add at least 1 such pharmacy per year. A county that adds 100 pharmacies would have the same value as a county that adds just 1. Third, the authors note that as of 2009, only 3.2% of counties had a hospital-based CP, but more than 20% of counties had a grantee-based CP. By 2019, 76.3% of counties had a hospital-based CP and 64.8% had a grantee-based CP. The change in HRSA's guidance clearly increased CP use in both groups, but given the different starting conditions across counties, estimating

## TAKEAWAY POINTS

We find that 340B-covered hospitals and grantees are contracting mainly with pharmacies in significantly more affluent neighborhoods than their own.

- ▶ In 2019, 340B-covered entities contracted with pharmacies in zip code tabulation areas (ZCTAs) where incomes are 25% to 30% higher on average than in the covered entity's home ZCTA, with no meaningful distinction between hospitals and federal grantees.
- ▶ In more than half of cases, pharmacy location incomes were at least 20% higher than covered entity location incomes.
- ▶ It is unknown whether the profits from such behavior lead to commensurate increases in services or charitable care for patients in need.

the probability of adding a CP in a county would appear to be very different for grantee-based and hospital-based CPs.

Our study addresses these shortcomings by using instead the CP-covered entity relationship as the unit of analysis, which enables us to use ZCTA-level data on income. We use ZCTAs rather than zip codes in order to use US Census Bureau estimates of neighborhood incomes. The largest ZCTAs in the country have only about 100,000 people, making for a much more refined analysis, and simply counting each CP-covered entity relationship sheds useful light on how the average covered entity is using CPs. To our knowledge, this is the first study to examine the income differences between the ZCTA median household income of covered entities and that of CPs. Although many factors may affect the difference between income levels in the locations of covered entities and their CPs, we would posit that all things being equal, CPs in lower-income areas (compared with the covered entity) would be more likely to be aligned with the mission of directly increasing access for low-income patients, whereas CPs in much higher-income areas would be more likely to be aligned with serving better-insured patients and using the proceeds to fund other initiatives. For policy makers, understanding what the covered entities are using the CPs for—and whether hospitals and grantees are using CPs differently—can provide important context for potential adjustments to ensure that the 340B program remains aligned with its mission of stretching scarce resources to help patients in need.

## METHODS

### Data

We extracted data on all 340B-covered entities and CP arrangements from the HRSA Office of Pharmacy Affairs Information System (OPAIS) database.<sup>9</sup> The data include covered entity and CP information: provider number, 340B identifier, entity and pharmacy zip codes (which we converted to ZCTAs using the Uniform Data System data mapper),<sup>10</sup> entity classification, covered entity start and termination dates, and CP start and termination dates. We selected only the arrangements that were operational in 2019. By making use of both covered entity and CP ZCTAs, we were able to calculate the distance between them using the ZCTAs' corresponding latitude and longitude coordinates.<sup>11</sup> For each ZCTA, we found the median

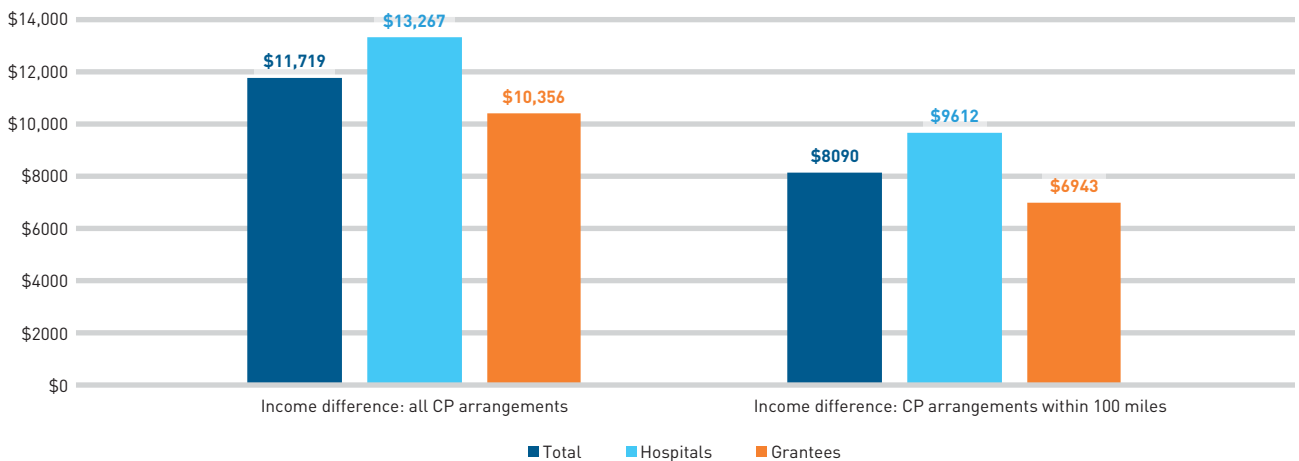
**TABLE 1.** Analysis of CP Arrangements by Entity Type

CE type	Total CP arrangements	CP arrangements where CP and CE are in different ZCTAs	CP arrangements with ZCTA income information	Share of arrangements out of ZCTA	Arrangements with income in CP ZCTA < income in CE ZCTA	Share of arrangements with income in CP ZCTA < income in CE ZCTA	Mean income difference between CP's ZCTA and CE's ZCTA
All	92,913	83,701	81,106	90%	29,234	36%	\$11,719
Hospital	44,779	40,015	37,970	89%	13,784	36%	\$13,267
Grantee	48,134	43,686	43,136	91%	15,450	36%	\$10,356

CE, covered entity; CP, contract pharmacy; ZCTA, zip code tabulation area.

Source: Health Resources and Services Administration 340B Office of Pharmacy Affairs Information System database merged with US Census Bureau median household income estimates based on 2019 American Community Survey.

**FIGURE 1.** Median Income Difference Between Covered Entity and CP ZCTAs, 2019



CP, contract pharmacy; ZCTA, zip code tabulation area.

Source: Health Resources and Services Administration 340B Office of Pharmacy Affairs Information System database merged with US Census Bureau median household income estimates based on 2019 American Community Survey.

household income by linking the OPAIS data set to the US Census Bureau’s median household income in the past 12 months (in 2019 inflation-adjusted US\$) table.<sup>12</sup>

**Outcomes**

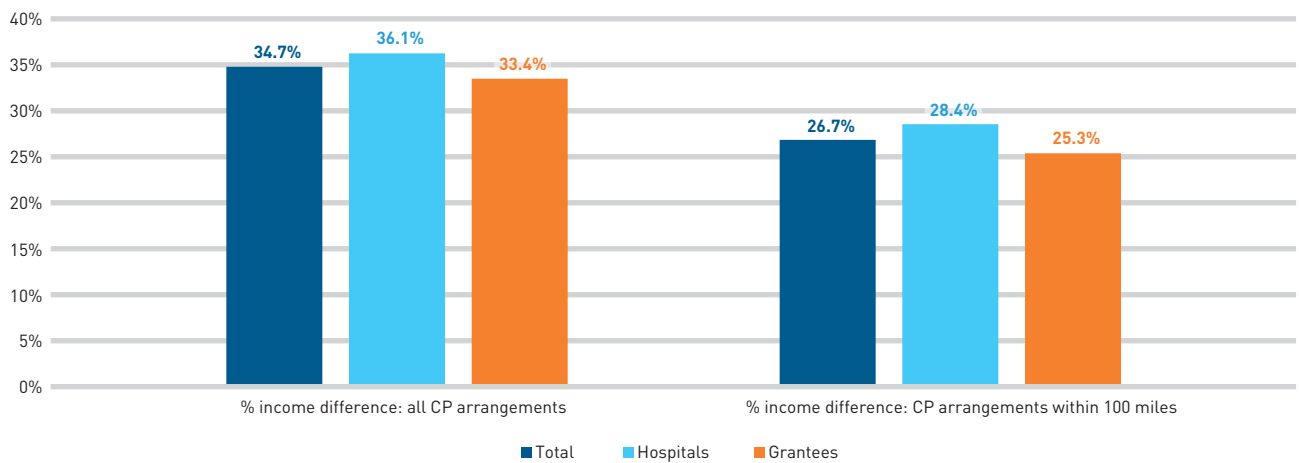
We identified 92,913 individual CP–covered entity arrangements as of 2019, categorized into hospital (44,779) and grantee (48,134) arrangements; we identify the ZCTA of both the covered entity and the CP in each arrangement. Of the 92,913 CP arrangements, 83,701 are for pharmacies located outside the covered entities’ ZCTAs. To calculate the income differences (income for CP ZCTA minus income for covered entity ZCTA), we used arrangements in which we could obtain income data for both the covered entity ZCTA and CP ZCTA (n = 81,106).

**RESULTS**

As illustrated in **Table 1**, more than 90% of CP arrangements are with a pharmacy in a ZCTA different from that of the covered entity

(89% for hospitals, 91% for grantees). We gathered ZCTA-level income data for both nodes of the CP–covered entity relationship for 97% of all arrangements. The CP ZCTA-level median income is higher than the covered entity ZCTA-level median income in 64% of arrangements overall, with no meaningful difference between hospital and grantee relationships. We also note that 28% of CP arrangements are with pharmacies more than 100 miles away; some are mail order or specialty pharmacies, where ZCTA incomes may be irrelevant. We thus analyze the income differences for both the full set of data and a subset consisting only of arrangements in which the pharmacy is within 100 miles of the covered entity (to minimize the potential impact of mail order and specialty pharmacies, where location is irrelevant to the patient).

As shown in **Figure 1**, the mean difference in income between CPs and their covered entities is \$11,719 (all CP arrangements); for hospitals, the difference is more than \$13,000, and for grantees (who are generally located in lower-income areas compared with hospitals), the difference is greater than \$10,000. Restricting the analysis to “within 100 miles” CP arrangements, the mean income

**FIGURE 2.** Mean Difference Between Covered Entity ZCTA Income and CP ZCTA Income, 2019

CP, contract pharmacy; ZCTA, zip code tabulation area.

Source: Health Resources and Services Administration 340B Office of Pharmacy Affairs Information System database merged with US Census Bureau median household income estimates based on 2019 American Community Survey.

**TABLE 2.** Mean Income in CE and CP ZCTAs, by Income Difference Between CP and CE, 2019

Mean income difference between CE and CP ZCTA	Hospital-based arrangements			Grantee-based arrangements			All arrangements		
	Share	Mean ZCTA income of CE	Mean ZCTA income of CP	Share	Mean ZCTA income of CE	Mean ZCTA income of CP	Share	Mean ZCTA income of CE	Mean ZCTA income of CP
0%	31%	\$69,242	\$52,585	35%	\$71,099	\$50,182	33%	\$70,006	\$51,170
> 0% to ≤ 20%	15%	\$56,772	\$61,965	15%	\$53,232	\$58,272	15%	\$54,798	\$59,905
> 20%	54%	\$44,000	\$77,449	50%	\$42,747	\$73,455	52%	\$43,299	\$75,213

CE, covered entity; CP, contract pharmacy; ZCTA, zip code tabulation area.

Source: Health Resources and Services Administration 340B Office of Pharmacy Affairs Information System database merged with US Census Bureau median household income estimates based on 2019 American Community Survey.

in the CP's ZCTA is more than \$8000 higher than in the covered entity's ZCTA: a mean difference of \$9611 for hospitals and \$6943 for grantees.

We note that grantees in general are located in lower-income areas than hospitals and examine the percentage difference in incomes further below. **Figure 2** shows the percentage difference between the incomes using the covered entity's ZCTA income as the basis of comparison. Overall, the mean difference in incomes is roughly 35%: 36% for hospitals and 33% for grantees. Restricting to the 72% of CP arrangements that are within 100 miles, we find that the mean income difference between covered entity and pharmacy is 27% overall: 28% for hospitals and 25% for grantees.

**Table 2** illustrates in greater detail the considerable differences between local income levels for both hospitals and grantees and their community CP partners (ie, pharmacies within 100 miles of the covered entity). For both types of covered entity, more than half of CPs are in ZCTAs where the local income is more than 20% higher than the income in the covered entity's ZCTA; in such arrangements, the covered entity's mean ZCTA income level

is about \$43,000, whereas the mean ZCTA income for the CP is around \$75,000. On the other hand, in roughly one-third of pairs the difference is reversed.

## DISCUSSION

This analysis suggests that it is much more likely for covered entities to establish CP arrangements in locations with relatively higher-income patients than are found in the immediate locale of the covered entity. Our analysis' large sample size and the clear difference in income levels suggest that the differences are likely to reflect a strategic choice. Also, notably, recent data from Guadamuz et al show that pharmacies that closed between 2009 and 2015 were, on average, more likely to have been located in low-income areas.<sup>13</sup> The relative lack of nearby pharmacies may be an important factor in understanding the rationale for covered entities contracting with pharmacies in higher-income ZCTAs. That grantees appear to follow the same strategies as hospitals in terms of CP location suggests that the large, for-profit CPs themselves may be the primary

driver of CP location, raising important questions for policymakers. Grantees in particular may not be in a strong position to negotiate 340B profit-sharing terms with large CP counterparts.

### Limitations

We are unable to provide insight as to how the differences between hospital and grantee CP strategy have evolved over time. Given the rapid growth in CP use for both hospitals and grantees, it would be helpful to see how the income differences have been changing. More broadly, our analysis has nothing to say about how profit sharing might differ between covered entities and their CPs based on income differences. Such an analysis would be illuminating, but would require data about profit sharing that are not generally available at this time. Moreover, a full model of the determinants of CP location that controls for the supply of pharmacies would be a useful extension of this work.

## CONCLUSIONS

This analysis demonstrates that both hospitals and grantees seek to establish relationships with pharmacies in significantly higher-income areas. It therefore seems unlikely that the main rationale for using CPs is to expand access to 340B drugs for low-income customers (although that certainly might happen in some areas and in some relationships). Using the rough metric outlined in the introduction to identify whether CPs are being employed to serve patients directly or to gather more resources, it appears that roughly a third of CPs are located in relatively lower-income ZCTAs and more than 50% of CPs are located in areas where income is greater than 20% higher than in the covered entity's ZCTA. In contrast to the results suggested by Nikpay et al, both hospitals and grantees are working with large pharmacies in wealthier areas to pursue well-insured patients in higher-income ZCTAs to generate additional income. Although such a strategy may generate maximal 340B revenues, previous research has shown that such income may not be shared in full with patients.<sup>3</sup> ■

### Acknowledgments

The authors thank the 2 anonymous referees for comments.

**Author Affiliations:** Health Capital Group, LLC (NM, FK), Princeton, NJ; Columbia University (NM), New York, NY; Boston University (FK), Boston, MA.

**Source of Funding:** Research was supported by Gilead Sciences, Inc.

**Author Disclosures:** Dr Masia reports that his employer, Health Capital Group, does consulting and advisory work for drug industry clients, including Gilead. Mr Kuwonza reports no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

**Authorship Information:** Concept and design (NM); acquisition of data (NM, FK); analysis and interpretation of data (NM, FK); drafting of the manuscript (NM, FK); critical revision of the manuscript for important intellectual content (FK); and statistical analysis (NM, FK).

**Address Correspondence to:** Neal Masia, PhD, Health Capital Group, LLC, 300 Carnegie Center, Ste 150, Princeton, NJ 08540. Email: neal@healthcapitalgroup.com.

## REFERENCES

- Masia N. 340B drug pricing program: analysis reveals \$40 billion in profits in 2019. 340B Alliance for Integrity & Reform. May 2021. Accessed March 18, 2022. <https://340breform.org/wp-content/uploads/2021/05/AIR340B-Neal-Masia-Report.pdf>
- Conti RM, Bach PB. The 340B drug discount program: hospitals generate profits by expanding to reach more affluent communities. *Health Aff (Millwood)*. 2014;33(10):1786-1792. doi:10.1377/hlthaff.2014.0540
- Masia N, Kuwonza F. Measuring the 340B drug purchasing program's impact on charitable care and operating profits for covered entities. Health Capital Group. Accessed June 1, 2022. <https://www.healthcapitalgroup.com/340b-profits-and-charity-care>
- Mulligan K. The 340B drug pricing program: background, ongoing challenges and recent developments. USC Schaeffer Center. October 14, 2021. Accessed September 15, 2022. <https://healthpolicy.usc.edu/research/the-340b-drug-pricing-program-background-ongoing-challenges-and-recent-developments/>
- Drug discount program: federal oversight of compliance at 340B contract pharmacies needs improvement. US Government Accountability Office. June 21, 2018. Accessed June 1, 2022. <https://www.gao.gov/products/gao-18-480>
- HHS. Notice regarding 340B drug pricing program—contract pharmacy services. *Fed Regist*. 2010;75(43):10272-10279.
- Vandervelde A, Erb K, Hurley L. For-profit pharmacy participation in the 340B program. October 2020. Accessed October 10, 2021. [https://media.thinkbrg.com/wp-content/uploads/2020/10/06150726/BRG-ForProfitPharmacyParticipation340B\\_2020.pdf](https://media.thinkbrg.com/wp-content/uploads/2020/10/06150726/BRG-ForProfitPharmacyParticipation340B_2020.pdf)
- Nikpay S, Gracia G, Geressu H, Conti R. Association of 340B contract pharmacy growth with county-level characteristics. *Am J Manag Care*. 2022;28(3):133-136. doi:10.37765/ajmc.2022.88840
- Office of Pharmacy Affairs 340B OPA Information System. Health Resources and Services Administration. Accessed September 22, 2021. <https://340bopais.hrsa.gov/CoveredEntitySearch>
- ZIP code to ZCTA crosswalk. UDS Mapper. Accessed June 1, 2022. <https://udsmapper.org/zip-code-to-zcta-crosswalk>
- All US ZCTAs with their corresponding latitude and longitude coordinates. Gist. 2013. Accessed October 8, 2021. <https://gist.github.com/erichurst/7882666>
- Median household income in the past 12 months (in 2019 inflation-adjusted dollars). United States Census Bureau. Accessed May 18, 2022. <https://bit.ly/4TKzxA>
- Guadamuz JS, Alexander GC, Zenk SN, Qato DM. Assessment of pharmacy closures in the United States from 2009 through 2015. *JAMA Intern Med*. 2020;180(1):157-160. doi:10.1001/jaminternmed.2019.4588

Visit [ajmc.com/link/89377](https://ajmc.com/link/89377) to download PDF