DOI: 10.1111/1475-6773.14407

RESEARCH BRIEF

HSR Health Services Research

Commercial insurers' market power and hospital prices in Medicaid managed care

Yang Wang PhD | Jeffrey Marr BA | Jianhui Xu PhD | Mark Katz Meiselbach PhD

Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA

Correspondence
Yang Wang, Johns Hopkins Bloomberg School of Public Health, 1812 Ashland Ave, Baltimore, MD 21205, USA.
Email: ywang406@jhu.edu

Funding information
Arnold Ventures

Abstract

Objective: To examine the relationship between insurers' commercial market power and negotiated prices in Medicaid Managed Care (MMC) plans for hospital care.

Data Sources: MMC prices from hospital-disclosed price transparency data as of July 2023 compiled by Turquoise Health, insurance enrollment information from the 2021 Clarivate InterStudy enrollment data.

Study Design: Log-transformed linear regression with hospital and procedure fixed effects estimating the within-hospital MMC price variation as a function of insurers' commercial market share quartile and MMC market share for 15 common outpatient hospital services.

Data Collection/Extraction Methods: A total of 39,049 MMC price samples measured at hospital-procedure-MMC insurer level are merged with county-insurer level market share data.

Principal Findings: Around 25% of price variation in MMC plans are driven by within-hospital factors. Compared with MMC insurers from the lowest commercial market share quartile (<0.8%), those from the highest commercial market share quartile (>17%) are associated with negotiating 4.6% (95% confidence interval: [2.8%–6.4%], $p < 0.001$) lower MMC prices for outpatient hospital care, including 3.6% ($p < 0.05$) for medical/surgical procedures, 3.6% ($p < 0.01$) for radiology, and 6.7% ($p < 0.001$) for emergency department visits.

Conclusions: MMC insurers with substantial commercial market share negotiate lower MMC prices for multiple outpatient hospital services.

KEYWORDS
commercial health insurance, hospitals, Medicaid, price transparency

What is known on this topic

- Hospital prices paid by Medicaid managed care (MMC) plans vary widely across states and hospitals, relative to Medicare's rates.
- Insurers offering MMC plans negotiate prices with hospitals. Many of these insurers also participate in commercial insurance market.

What this study adds

- Within-hospital price variation across different insurers accounts for around one quarter of the total price variation in MMC plans for outpatient hospital services.
- Compared with MMC insurers with no commercial market presence, those with substantial commercial market share negotiate lower MMC prices for outpatient hospital care, especially for emergency department visits.

1 | INTRODUCTION

Medicaid managed care (MMC) plans, financed by public Medicaid programs, are administered by commercial health insurers.[1] As of 2021, MMC had enrolled 68 million beneficiaries, representing three quarters of total Medicaid enrollment.[2] It also incurred $397 billion in spending, approximately 10% of the national health expenditure.[3,4] MMC insurers receive capitated payments from state Medicaid agencies and are expected to cover qualified medical expenditures.[1] While MMC insurers are subject to state oversight, such as network adequacy regulations, they have substantial latitude in the prices that they pay providers.[5] Until recently, little is known regarding their payment rates for hospital care. While a recent study found substantial variation in these prices, the underlying factors driving the variation remain unexplored.[6]

In the commercial health insurance market, it is well-established that insurers with larger market share typically pay lower negotiated prices for hospital care, given their stronger bargaining leverage.[7–11] It is possible that a similar pricing mechanism applies in the negotiations over MMC prices. Large national insurers, including Centene, UnitedHealth group, Molina, Anthem, and CVS/Aetna, play a central role in the MMC market.[1] Most of them also participate in the commercial market, where prices are considerably higher and some insurers maintain substantial market shares.[12,13] Insurance and hospital executives note that they often negotiate over insurer's full book of business when the insurer participates in multiple market segments.[14] Therefore, it is possible that MMC insurers' market share in the commercial market could influence MMC hospital prices, in addition to their MMC market share.

In this study, we empirically examine if greater insurer market share from the commercial insurance market is associated with lower negotiated MMC prices for common hospital services, including medical and surgical procedures, radiology services, and emergency department visits. Using insurer-negotiated MMC prices recently disclosed under the Hospital Price Transparency rule,[15] our study documents the potential spillover of market power across different insurance market segments. Our results also shed light on policymaking regarding Medicaid spending and budgeting.

2 | METHODS

2.1 | Data and sample

We used Turquoise Health data, which collects and compiles hospitals' price data under the federal hospital price transparency regulation.[15,16] The data are cross-sectional, reflecting hospitals' self-disclosed pricing information as of July 2023. Specifically, we extracted insurer-negotiated MMC prices for 15 common services with high hospital disclosure rates, including five medical and surgical procedures, five radiology services, and five emergency department (ED) visits, all measured in Current Procedural Terminology (CPT) codes.[6,10,11,17] We further excluded the top and bottom 1% price values per procedure as potential data anomalies.[10] We then constructed our price measure at hospital-insurer-procedure level, using the median value if there are multiple prices (e.g., across different plans offered by the same insurer).[18,19]

We obtained insurer-county level enrollment information from Clarivate's 2021 InterStudy enrollment data.[20] We calculated each insurer's county level commercial market share as its percentage of total enrollment from employer-sponsored plans and the Affordable Care Act marketplace plans. Similarly, we calculated each insurer's county level MMC market share as its percentage of total MMC enrollment. We then linked these two market share measures to our price measure at hospital-insurer-procedure level, by matching county (where the hospital was located) and insurer parent company names.[10] We further merged these data with the 2021 American Hospital Association's (AHA's) annual hospital survey to identify hospital characteristics.[21] Specifically, we only included general acute-care hospitals with positive Medicaid bed days, and located in the 37 states that had over 10% MMC penetration as of 2020.[1,6] To enable cross-insurer price comparisons within hospitals, we further excluded hospital-procedure pairs with prices disclosed by only 1 MMC insurer.

Our final samples included a total of 39,049 price samples disclosed by 1,129 hospitals from 32 states (Appendix S1). Compared to the remaining 2,438 general acute-care hospitals from the 37 states offering MMC plans, hospitals in our sample were more likely to be nonprofit (74% vs. 59%), urban (69% vs. 58%), with larger bed size (average of 218 vs. 154), training medical residents (41% vs. 31%), affiliated with a hospital system (80% vs. 63%), and treating more Medicaid patients (19.8% vs. 18.6%), using T tests and Chi-squared tests (significant level $p < 0.05$) (Appendix S1).

2.2 | Measures and analysis

We first evaluated the extent of within-hospital price variation across MMC insurers by regressing the MMC prices on hospital fixed effects for our 1,129 hospital samples using a linear model for each individual procedure. We then calculated the difference between the R-squared value and 1 for each regression to measure the proportion of MMC

price variation attributable to within-hospital factors. To document the magnitude of MMC price variation, we further calculated the maximum to minimum MMC price ratio within each hospital-procedure across different insurers.

We then assessed if this within-hospital MMC price variation was associated with MMC insurers' commercial market share. Specifically, we first categorized MMC prices into quartiles of commercial market share (low = first quartile, medium-low = second quartile, medium-high = third quartile, and high = fourth quartile) as our key explanatory variable, a method used in prior research on insurance pricing and commercial market share.[11] We summarized the average MMC prices for each procedure, stratified by the four commercial market share quartiles.

For regression analysis, we used log-transformed linear models to examine the relationship between negotiated MMC prices and commercial market share quartile, controlling for MMC market share as well as hospital and procedure fixed effects.[7,9,10] We exponentiated the estimated coefficients, subtracted by one, and interpreted them as the percentage difference in MMC prices associated with insurer's commercial market share quartile, relative to the lowest quartile as the reference group. We tested the sensitivity of our model specification by using a linear specification of commercial market share, as well as separately assessing whether MMC prices are associated with just MMC market share, or just commercial market share. To test the sensitivity of our commercial market share quartile categorization, we reran our model after reclassifying commercial insurers' market share quartile at hospital level (within each hospital instead of across all samples). Moreover, to assess the potential heterogenous results across different services, we further estimated our models stratified by three types of procedures (medical/surgical procedures, radiology services, emergency department visits), as well as by each of the 15 individual procedures. Institutional review board approval was not sought because this study did not involve human participants. Statistical analysis was conducted using Stata software version 17 (StataCorp). Appendix S8 includes supplemental method and a mathematical equation of the regression model.

3 | RESULTS

Our study included a total of 39,049 hospital-procedure-insurer level price samples from 1,129 hospitals and 38 MMC insurers across 32 states (Appendix S1). The largest insurers were Centene, UnitedHealth Group, and Anthem, accounting for 17%, 16%, and 13% of our sample, respectively (Appendix S2). For most of the 15 procedures, around 20%–30% of MMC price variation was attributable to within-hospital factors, indicating a sizable magnitude (Figure 1). The medians of the within-hospital maximum to minimum price ratio ranged between 1.15 and 1.37 while the 75th percentiles varied between 1.64 and 2.23 for the 15 procedures, indicating a sizable within-hospital MMC price variation across insurers (Appendix S5).

Appendix S3 summarizes the variation in MMC insurers' commercial market share by quartiles, where MMC insurers in the lowest

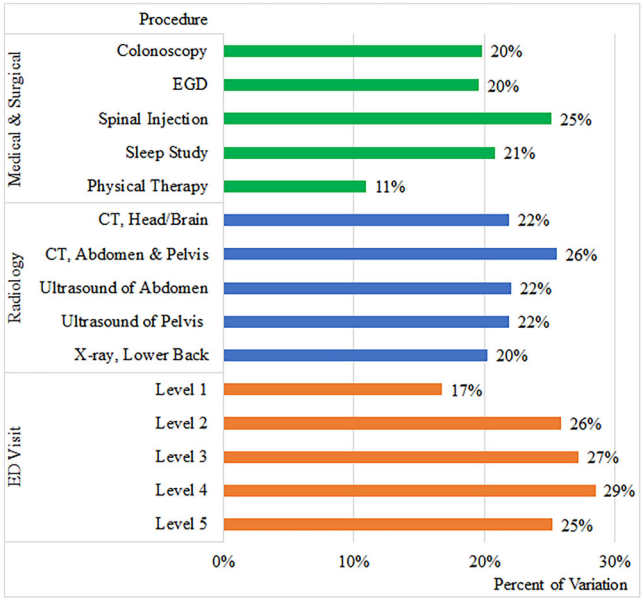

FIGURE 1 Percent of Price Variation in Medicaid Managed Care (MMC) Plans Attributable to Within-Hospital Factors, by Procedure. We regressed the MMC prices on hospital fixed effects for our 1129 hospital samples using a linear model for each individual procedure. Bar chart shows the difference between the R-squared value and 1 for each regression to measure the proportion of MMC price variation attributable to within-hospital factors. EGD, esophagogastroduodenoscopy. CT, computed tomography. ED, Emergency Department.

quartile had virtually no participation in the commercial market (<0.8%), while MMC insurers in the highest quartile had considerable commercial market presence (>17%). In contrast, insurers' MMC market share distribution was less skewed, with a median of 17% and interquartile range of 8%–36%. Among the 1,129 hospitals in our sample, 1,060 (94%) of them had MMC prices from contracting insurers with their commercial market shares categorized under at least two different quartiles. Appendix S4 shows each procedure's unadjusted average MMC prices by insurers' commercial market share quartile, where average MMC prices from the highest quartile were approximately 10% lower than the average MMC prices from the lowest quartile for all five radiology services, all five ER visits, and physical therapy.

Compared to MMC prices from insurers with the lowest commercial market share quartile within the same hospital and procedure, MMC prices from the medium-low and medium-high commercial market share quartile were not significantly different (Figure 2, Appendix S6). However, MMC prices at the highest commercial market share quartile were 4.6% (95% confidence interval [CI]: [2.8%–6.4%], $p < 0.001$) lower. In addition, we did not find a statistically significant association between MMC market share and MMC prices. These findings were robust to six alternative model specifications (Appendix S6). Stratified regressions by procedure category showed similar, but more dynamic results. Specifically, MMC prices paid by insurers with the highest commercial market share quartile were 3.6% (95% CI: [0.7%–6.6%], $p < 0.05$), 3.6% (95% CI:

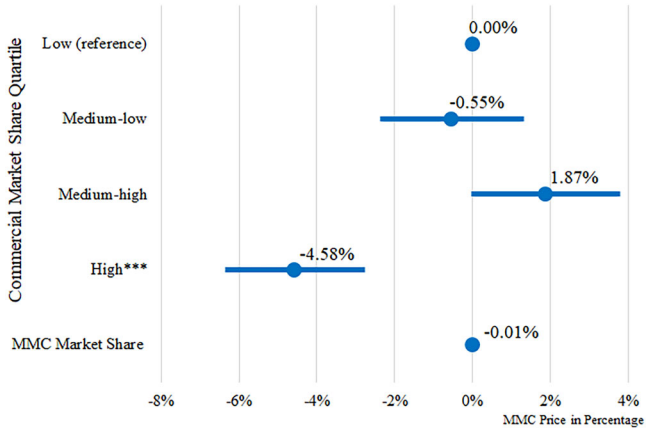

FIGURE 2 Within-Hospital Price Variation in Medicaid Managed Care (MMC) Plans Associated with Insurers' Market Share. Estimates and 95% confidence intervals were from log-transformed linear regression of MMC prices for 15 outpatient hospital services on commercial market share quartile, adjusting for MMC market share, hospital and procedure fixed effects, using the lowest quartile as the reference group. Robust standard errors were applied. Ranges for commercial market share were 0%–0.8%, 0.8%–5.4%, 5.4%–17%, and >17% for the low, medium-low, medium-high, and high quartile, respectively. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

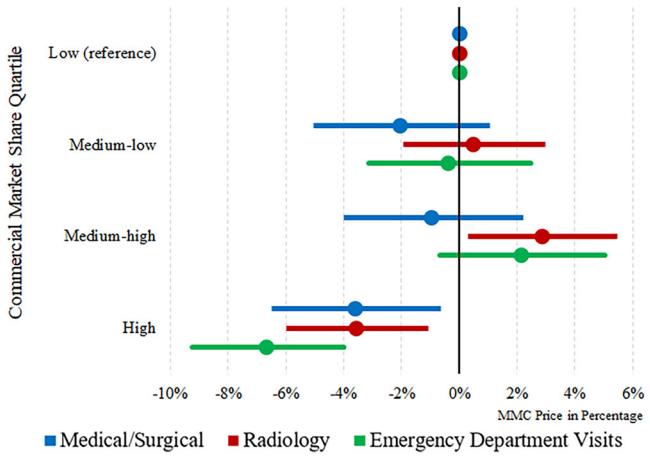

FIGURE 3 Within-Hospital Price Variation in Medicaid Managed Care (MMC) Plans Associated with Insurers' Commercial Market Share Quartile, Stratified by Procedure Type. Estimated coefficients and 95% confidence intervals were from log-transformed linear regressions of MMC prices on commercial market share quartile, adjusting for MMC market share, hospital and procedure fixed effects, using the lowest quartile as the reference group. Robust standard errors were applied. Ranges for commercial market share were 0%–0.8%, 0.8%–5.4%, 5.4%–17%, and >17% for the low, medium-low, medium-high, and high quartile, respectively.

[1.2%–6.1%], $p < 0.01$), and 6.7% (95% CI: [4.1%–9.3%], $p < 0.001$) lower than those from the lowest quartile for medical and surgical services, radiology procedures, and ED visits, respectively (Figure 3). These results were overall consistent with regression estimates stratified by each individual procedure, which are subject to more noise (Appendix S7).

4 | DISCUSSION

Building on recent research that found substantial variation on MMC prices across hospitals and states,[6] we further documented the sizable within-hospital MMC price variation, which accounted for about one quarter of the overall price variation in the MMC market for outpatient hospital care. We found that a key factor driving this price variation across insurers at the same hospital is their commercial market power. On average, MMC insurers in the top quartile of commercial insurer market share paid around 5% lower MMC prices for outpatient hospital care than those with little or no commercial market participation, including nearly 4% lower prices for both medical/surgical procedures and radiology services, and close to 7% lower prices for emergency department visits. These percentage differences corresponded to $5–$35 dollar savings at procedure level for MMC plans issued by insurers in the top quartile of commercial market share, relative to those in the bottom quartile. However, we did not find a strong relationship between MMC market share and MMC hospital prices.

Our findings are consistent with past research that demonstrates the importance of insurer bargaining power (measured in the form of commercial market share) in price negotiations with hospitals.[7–11] We contribute new findings that commercial market power may also relate to MMC hospital prices. These spillovers from the commercial market into the MMC market are important given the extent to which insurers simultaneously participate in both market segments. It is notable that we found within-hospital price variation to be associated with commercial market share but to have little association with MMC market share. Commercial insurance markets are large, and prices are considerably higher than Medicaid.[13] Hospitals want to attract profitable commercial patients, giving large commercial insurers substantial market power. Our results suggest that this commercial market power, but not Medicaid-specific market power, can translate into lower Medicaid prices. Since the commercial market has substantially larger patient enrollment and higher negotiated prices than MMC, an insurer with a large number of high-paying commercial patients may be able to credibly threaten hospitals with exclusion from their commercial network if the hospital is unwilling to accept lower MMC prices.[22] Lower negotiated MMC prices would enable insurers to retain additional profits from the payments set by state Medicaid agencies, which could motivate insurers to use their market power from the commercial market in this way.

Our findings may have further policy implications for Medicaid spending and budgeting. Specifically, our results suggest that MMC patients enrolled in plans operated by MMC insurers with larger commercial market share have lower hospital payment rates, compared with MMC patients enrolled in plans from insurers with little commercial market presence. These lower payment rates could further impact Medicaid budgeting, provider participation due to reimbursement rate, and patient access, which are important research gaps that warrant future investigation.

4.1 | Limitations

This study has several limitations: First, our study sample is contingent on hospitals' disclosure compliance under the Hospital Price

Transparency Rule, and their self-disclosed prices may be subject to potential reporting inaccuracies.[10,18] Second, the MMC prices used in this analysis do not include the supplemental lump-sum payments, which accounts for a sizable proportion of Medicaid payments to hospitals.[6] Third, the time lag between Clarivate's 2021 Interstudy enrollment data and Turquoise Health data as of July 2023 may result in potential measurement inaccuracies, which could attenuate our result estimates. Fourth, our results are limited to hospitals' facility prices for the 15 procedures we examined, which may not be generalizable to other procedures or care settings. Though the relationship between commercial market share and MMC prices are consistent across most included procedure codes, there is heterogeneity in a subset of included procedures. Further research is needed to understand whether this heterogeneity reflects differing mechanisms across procedures or measurement error. Moreover, our findings should be interpreted as association, not causality, and reflect the overall results across all commercial insurance markets in our sample with different levels of market competition. Finally, this study exclusively examines negotiated hospital prices. We are unable to further incorporate information on care utilization, network breath, quality measures, or patient characteristics.[10] These are important gaps that warrant further research.

4.2 | Conclusion

MMC insurers with high commercial insurance market share pay lower MMC outpatient hospital prices, especially for emergency department visits. Market power in the commercial market may have important spillovers into negotiations over prices in the MMC market.

ACKNOWLEDGMENTS

This research is supported by Arnold Ventures.

ORCID

Yang Wang https://orcid.org/0000-0001-8481-3997
Jeffrey Marr https://orcid.org/0000-0002-3733-0244
Jianhui Xu https://orcid.org/0000-0003-2961-4236
Mark Katz Meiselbach https://orcid.org/0000-0003-3583-5588

REFERENCES

1. Hinton E, Raphael J. 10 things to know about Medicaid managed care. KFF. Published March 1, 2023. Accessed July 24, 2023. https://www.kff.org/medicaid/issue-brief/10-things-to-know-about-medicaid-managed-care/
2. 2021 Medicaid Managed Care Enrollment Summary. Enrollment report. Centers for Medicare & Medicaid Services. Accessed Dec 6, 2023. https://www.medicaid.gov/medicaid/managed-care/enrollment-report/index.html
3. Financial Management Report for FY. *Expenditure Reports from MBES/CBES*. Centers for Medicare & Medicaid Services; 2021 Accessed December 6, 2023. https://www.medicaid.gov/medicaid/financial-management/state-expenditure-reporting-for-medicaid-chip/expenditure-reports-mbescbes/index.html
4. NHE Fact Sheet. Centers for Medicare & Medicaid Services. Sep 6, 2023. Accessed December 6, 2023. https://www.cms.gov/data-research/statistics-trends-and-reports/national-health-expenditure-data/nhe-factsheet#:~:text=Medicare%20spending%20grew%208.4%25%20to,28%20percent%20of%20total%20NHE
5. Medicaid Base and Supplemental Payments to Hospitals. Medicaid and CHIP payment and access commission. June 2021. https://www.macpac.gov/wp-content/uploads/2020/03/Medicaid-Base-and-Supplemental-Payments-to-Hospitals.pdf Accessed December 25, 2023
6. Marr J, Wang Y, Xu J, Bai G, Anderson G, Meiselbach MK. Hospital prices in Medicaid managed care. *JAMA Netw Open*. 2023;6(11):e2344841. doi:10.1001/jamanetworkopen.2023.44841
7. Cooper Z, Craig SV, Gaynor M, van Reenen J. The Price Ain't right? Hospital prices and health spending on the privately insured. *Q J Econ*. 2019;134(1):51-107. doi:10.1093/qje/qjy020
8. Roberts ET, Chernew ME, McWilliams JM. Market share matters: evidence of insurer and provider bargaining over prices. *Health Aff (Millwood)*. 2017;36(1):141-148. doi:10.1377/hlthaff.2016.0479
9. Scheffler RM, Arnold DR. Insurer market power lowers prices in numerous concentrated provider markets. *Health Aff (Millwood)*. 2017;36(9):1539-1546. doi:10.1377/hlthaff.2017.0552
10. Wang Y, Meiselbach MK, Xu J, Bai G, Anderson G. Do insurers with greater market power negotiate consistently lower prices for hospital care? Evidence from hospital price transparency data. *Med Care Res Rev*. 2024;81(1):78-84. doi:10.1177/10775587231193475
11. LoSasso AT, Toczydlowski K, Yang Y. Insurer market power and hospital prices in the US. *Health Aff (Millwood)*. 2023;42(5):615-621. doi:10.1377/hlthaff.2022.01184
12. Meiselbach MK, Larm Larweh HM, Marr J, Xu J. Overlap in carriers and networks in Medicaid and the individual marketplaces. *Health Aff (Millwood)*. 2024;43(7):1032-1037. doi:10.1377/hlthaff.2023.00840
13. Cohen M, Meada J, Pelech D. The prices that commercial health insurers and Medicare pay for Hospitals' and Physicians' Services. Congressional Budget Office. January 2022. https://www.cbo.gov/system/files/2022-01/57422-medical-prices.pdf Accessed February 1, 2024
14. Berenson RA, Sunshine JH, Helms D, Lawton E. Why Medicare advantage plans pay hospitals traditional Medicare prices. *Health Aff*. 2015;34(8):1289-1295.
15. Centers for Medicare and Medicaid Services. Medicare and Medicaid programs: CY 2020 hospital outpatient PPS policy changes and payment rates and ambulatory surgical center payment system policy changes and payment rates. Price transparency requirements for hospitals to make standard charges public. *Fed Regist*. 2019;84(229):65524-65606. Accessed May 26, 2022. https://www.federalregister.gov/documents/2019/11/27/2019-24931/medicare-and-medicaid-programs-cy-2020-hospital-outpatient-pps-policy-changes-and-payment-rates-and
16. Price transparency data for Researchers. Turquoise Health. https://turquoise.health/researchers Accessed May 20, 2022
17. Henderson MA, Mouslim MC. Hospital and regional characteristics associated with emergency department facility fee cash pricing. *Health Aff (Millwood)*. 2022;41(7):1029-1035. doi:10.1377/hlthaff.2022.00045
18. Meiselbach MK, Wang Y, Xu J, Bai G, Anderson GF. Hospital prices for commercial plans are twice those for Medicare advantage plans when negotiated by the same insurer. *Health Aff (Millwood)*. 2023;42(8):1110-1118. doi:10.1377/hlthaff.2023.00039
19. Wang Y, Plummer E, Chernew ME, Anderson G, Bai G. Facility fees for colonoscopy procedures at hospitals and ambulatory surgery centers. *JAMA Health Forum*. 2023;4(12):e234025. doi:10.1001/jamahealthforum.2023.4025
20. Decision resources group is now Clarivate. Clarivate. 2023 Accessed December 6, 2023. https://clarivate.com/drg-is-now-clarivate/

21. Wharton Research Data Services. WRDS overview of health forum AHA data. Accessed December 6, 2023. https://wrds-www.wharton.upenn.edu/pages/support/manuals-and-overviews/aha/wrds-overview-aha/
22. Ho K, Lee RS. Equilibrium provider networks: bargaining and exclusion in health care markets. *Am Econ Rev*. 2019;109(2):473-522.

How to cite this article: Wang Y, Marr J, Xu J, Meiselbach MK. Commercial insurers' market power and hospital prices in Medicaid managed care. *Health Serv Res*. 2024;1-6. doi:10.1111/1475-6773.14407

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.