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ASSISTANT SECRETARY FOR
PLANNING AND EVALUATION

OFFICE OF
HEALTH POLICY

CONTRACTOR PROJECT REPORT
HP - 2022 - 15

Environmental Scan on Consolidation Trends and Impacts in Health Care Markets

HP-2022-15

Prepared for
the Office of the Assistant Secretary for Planning and Evaluation (ASPE)
at the U.S. Department of Health & Human Services

by
RAND Health Care

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Office of the Assistant Secretary for Planning and Evaluation

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ASPE Executive Summary

The No Surprises Act (NSA) of the 2021 Consolidated Appropriations Act creates protections for those with private health insurance against surprise medical bills. Under Section 109 of the NSA, the Secretary of Health and Human Services must conduct a study by January 1, 2023, and annually thereafter for the following 4 years, on the effects of the Act on any patterns of vertical or horizontal integration of health care facilities, providers, group health plans, or health insurance issuers; overall health care costs; and access to health care.

Responsibility for the Reports to Congress has been delegated to the Office of the Assistant Secretary for Planning and Evaluation (ASPE). We plan two major analytic tasks to set the stage for the reports to the Congress. The first task is to establish a comprehensive baseline report that describes the landscape of market consolidation across the U.S. and analyzes the evidence on the price, cost, and quality effects of consolidation. The attached report from RAND presents the results of these analyses, and the below “Graphics Supplement” provides additional information about the concentration landscape. The second task for the near future will be to develop the analytic models and databases that will allow us to estimate the impact of the NSA provisions on market consolidation, price, quality, and access.

The attached environmental scan discusses trends and impacts of consolidation in health care. Key findings are:

- The literature shows strong evidence that hospital horizontal consolidation increases prices for health care services and increases health care spending.
- While not as thoroughly documented, physician horizontal consolidation has been found to increase prices for health care services.
- Studies also find that insurer horizontal consolidation increases health insurance premiums and increase overall health care spending, with some evidence that it also reduces payment rates to health care providers.
- The literature is less conclusive on questions of how consolidation impacts health care quality and patient access.
- The few existing evaluations on state surprise billing laws do not find direct evidence of those laws on spending, quality, patient access, and consolidation.

Markets for health insurance and health care services are not uniform across the country or over time. The variation in market concentration across geography and over time will influence the local impact of the NSA and will be an important consideration in evaluating the impact of the NSA.

In the attached “Graphics Supplement,” we present insurance and hospital market concentration measures across geographic areas and over time, based on ASPE data analyses.

The RAND report is an independent assessment and does not represent the official views of ASPE or HHS.

Graphics Supplement – Health Care Market Concentration Geography

Health insurance, hospital, and physician organization markets have been characterized as highly concentrated for years.¹ This section displays maps of a commonly-used measure of market concentration in the academic literature, the Herfindahl–Hirschman index (HHI),* for several health care product markets at several levels of geography.[†] The HHI measures the relative sizes of firms in a market. The measure approaches zero when a market has a large number of firms of equal size (i.e. “perfect competition”) and reaches its maximum of 10,000 when the market is a monopoly. The Department of Justice and the Federal Trade Commission generally classify markets into three types based on their HHI:

- Unconcentrated Markets: HHI below 1500
- Moderately Concentrated Markets: HHI between 1500 and 2500
- Highly Concentrated Markets: HHI above 2500.²

In this supplement, health insurance HHI is calculated using DRG Managed Market Surveyor data and is presented at the county and core-based statistical area (CBSA) level. Adjusted hospital admissions[‡] from American Hospital Association data were calculated at the hospital referral region (HRR) and CBSA level. Hospital referral regions (HRR) are regional health care markets designed by the Dartmouth Atlas Project. HRRs are designed to reflect patterns in inpatient tertiary care referrals, while CBSAs reflect urban commuting patterns. Federal antitrust agencies conduct relevant market analyses on a case-by-case basis, meaning the relevant markets in antitrust enforcement actions may differ from the methodology described here.

Hospital Markets

For at least the past three decades, hospital markets have become increasingly concentrated.³ Recent increases have occurred across the country. The percentage of hospital referral regions (HRRs) with an HHI <1,500 – meaning unconcentrated – decreased from 23% (71 of 306) in 2008 to 12% (38 of 306) in 2019 (Figure 1).[§] Using another geographic definition for hospital markets, CBSA (or metropolitan area), also shows a decline: 6% (25 of 392) of CBSAs had an HHI < 1,500 in 2008 while in 2019 just 4% (14 of 392) did (Figure 2). The number of CBSAs with HHI < 2,500 declined from 18% (72 of 392) to 13% (50 of 392) over the same period.

* Herfindahl–Hirschman index (HHI) measures the relative firm size in a market where market share is represented as the sum of squared markets shares in a given market scaled from 0 to 10,000.

† Throughout this document market definitions are not necessarily antitrust product markets nor was a full analysis conducted in accordance with the U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines § 5.3 (revised Aug. 19, 2010) that would establish any of these as an antitrust product or geographic market.

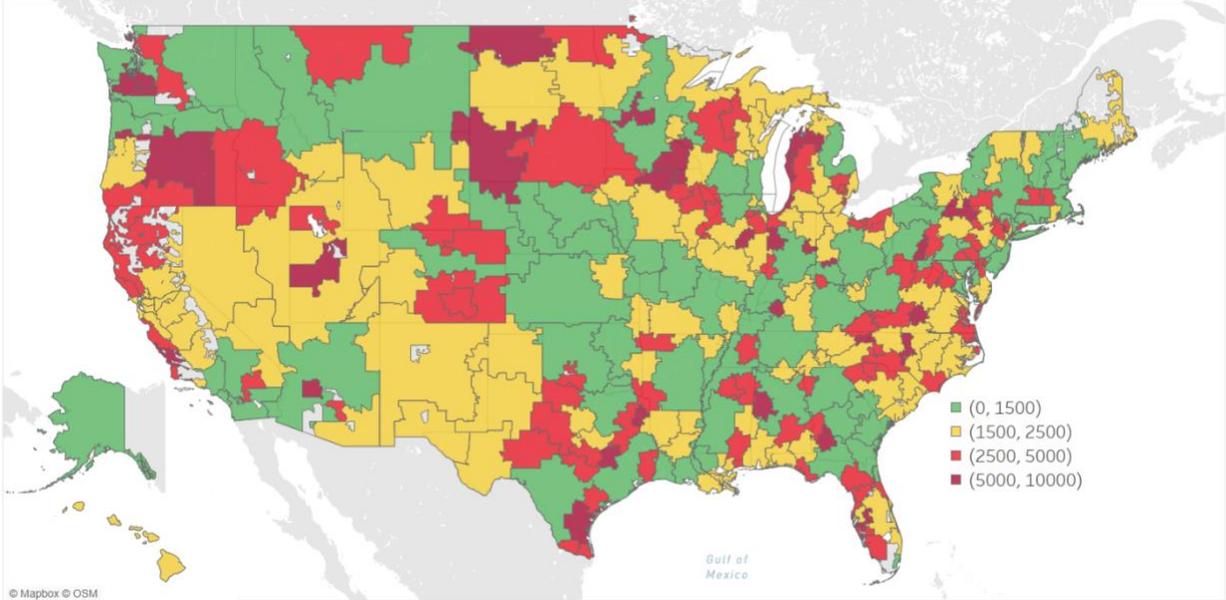
There are multiple potential markets for health insurance and health care services. For example, in the context of commercial health insurance, the DOJ has defined markets for individual, small group, large group, and national accounts. With respect to national accounts, it is not necessarily clear that concentration in a single geography is informative of overall competition for a given national account.

‡ AHA’s adjusted admissions measure attempts to capture both inpatient admissions and outpatient volume by scaling based on relative revenue. Adjusted Admissions = Admissions + (Admissions * (Outpatient Revenue/Inpatient Revenue))

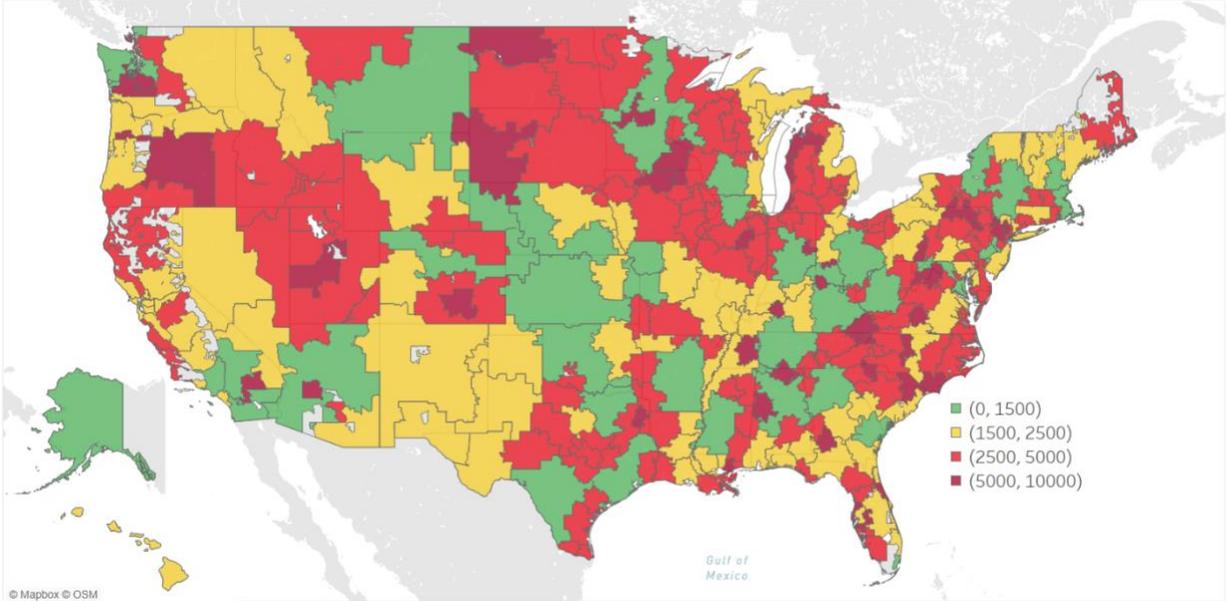
§ The U.S. Department of Justice (DOJ) and FTC merger guidelines classify markets with an HHI below 1,500 as unconcentrated; between 1,500 and 2,500 as moderately concentrated; and over 2,500 as highly concentrated (DOJ and FTC, 2010).

Figure 1. Hospital Referral Region (HRR) Level Herfindahl-Hirschman Index (HHI) For Adjusted Admissions, 2008 and 2019

2008



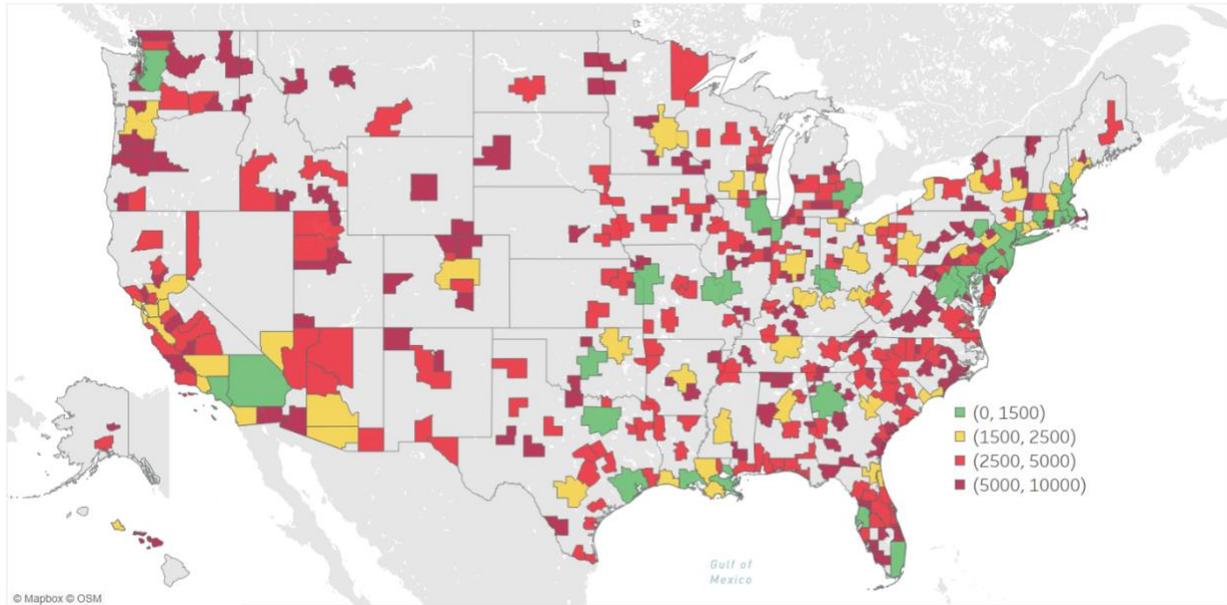
2019



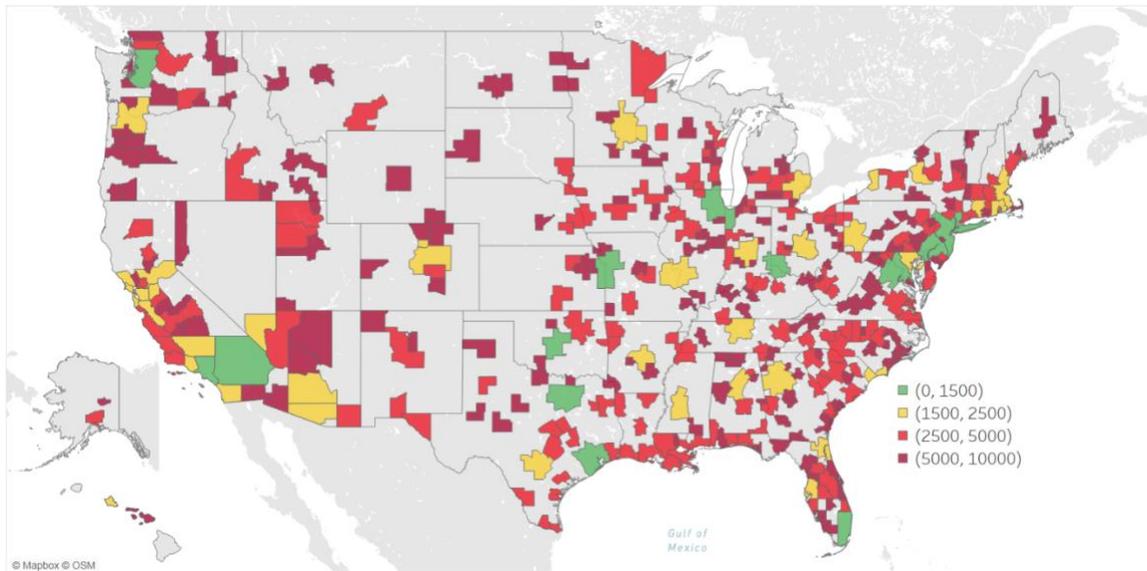
Source: ASPE Analysis of AHA Data

Figure 2. Core-based statistical area (CBSA) Level Herfindahl-Hirschman Index (HHI) For Adjusted Admissions, 2008 and 2019

2008



2019



Source: ASPE Analysis of AHA Data

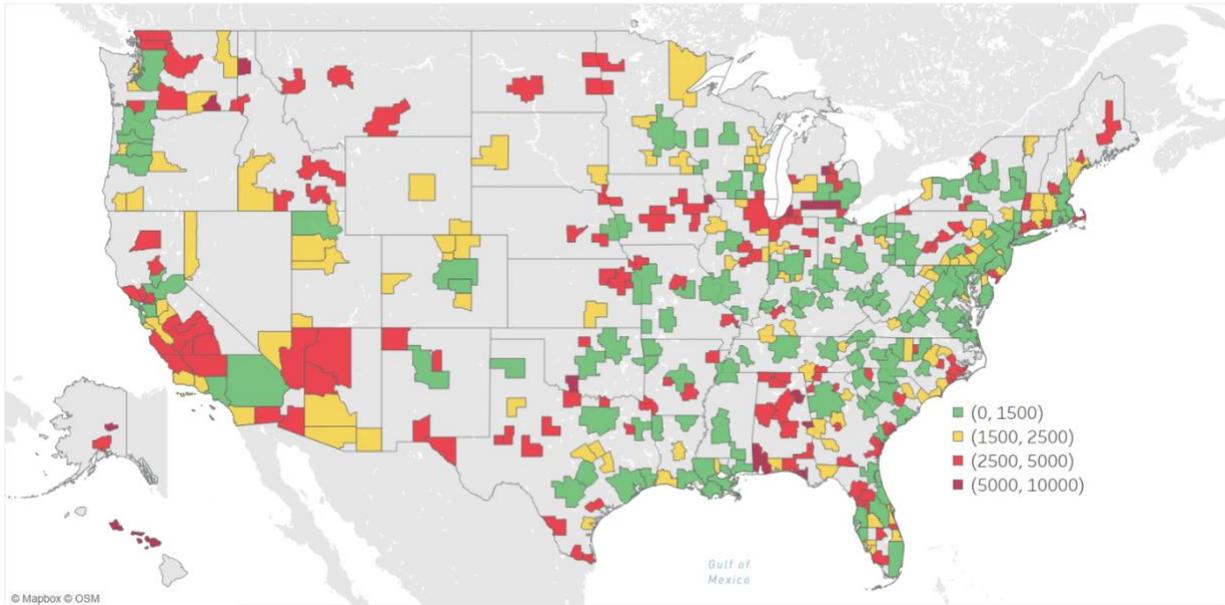
Health Insurance Markets

Markets for health insurance are also concentrated. In 2008, 31% of CBSAs had a commercial health insurance HHI below 1,500 (120 of 384) (Figure 3). In 2019, a similar 35% of CBSAs had a commercial health insurance HHI below 1,500 (135 of 384).

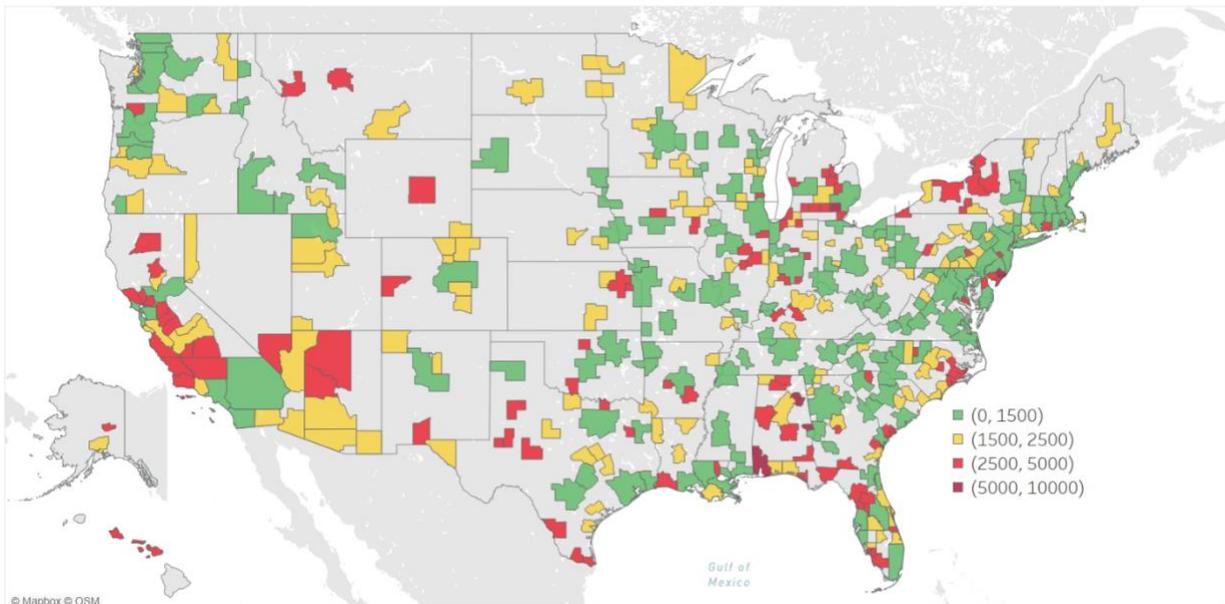
In 2008, 27% of CBSAs had a Medicare Advantage enrollment HHI below 1,500 (103 of 384). In 2019, that figure was nearly steady at 26% (100 of 384) (Figure 4).

Figure 3. Core-based statistical area (CBSA) Level Herfindahl-Hirschman Index (HHI) For Commercial Health Insurance Membership, 2008 and 2019

2008



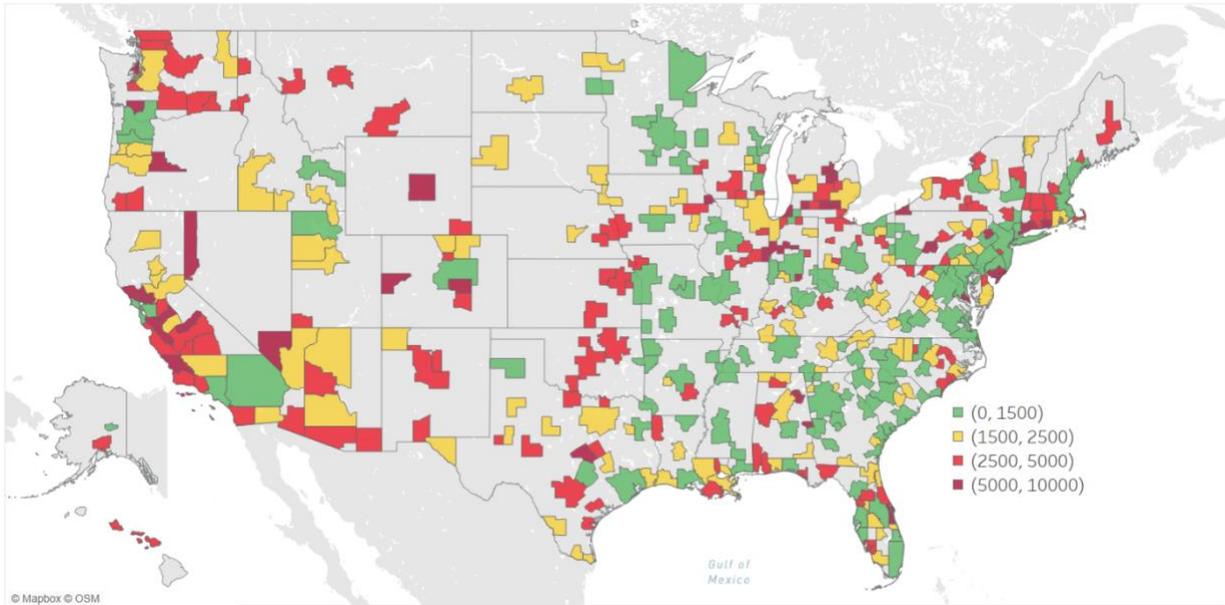
2019



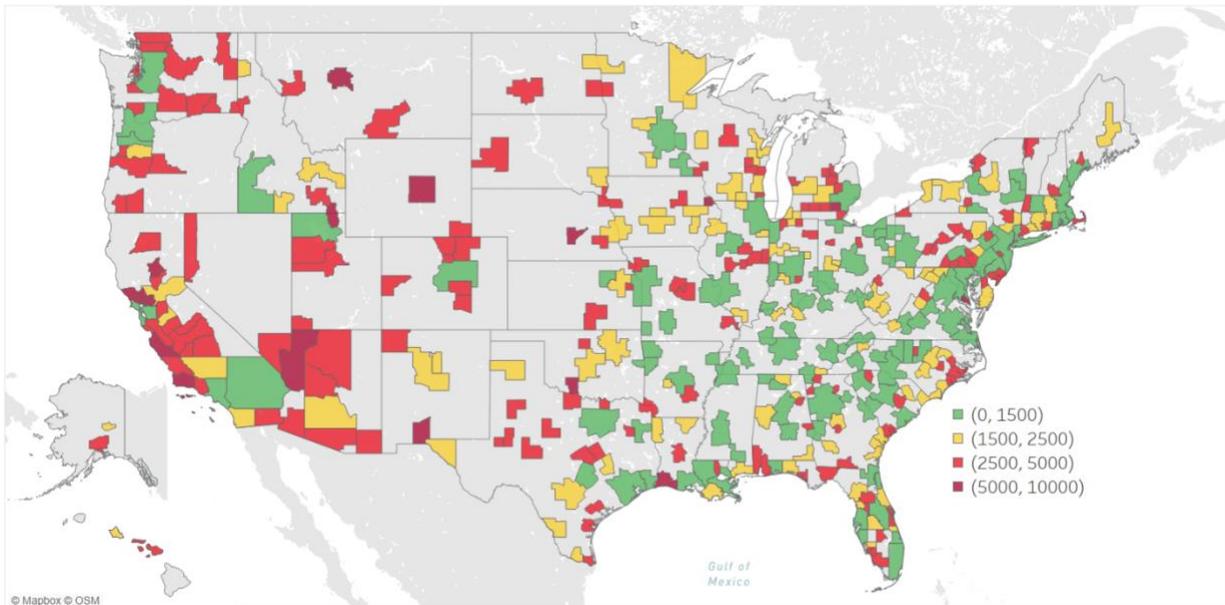
Source: ASPE Analysis of Clarivate | DRG Managed Market Surveyor

Figure 4. Core-based statistical area (CBSA) Level Herfindahl-Hirschman Index (HHI) for Medicare Advantage Plan Enrollment, 2008 and 2019

2008



2019



Source: ASPE Analysis of Clarivate | DRG Managed Market Surveyor

Combined Commercial Insurance and Hospital Markets

The markets for health insurance and health care services interact. A highly concentrated insurance market gives insurers leverage over providers in negotiating reimbursement rates for providers in their networks. Conversely, providers with high market share can command high prices from insurers. Markets with limited competition for both insurance and providers create the potential for both insurers and providers to raise prices and worsen consumer well-being.

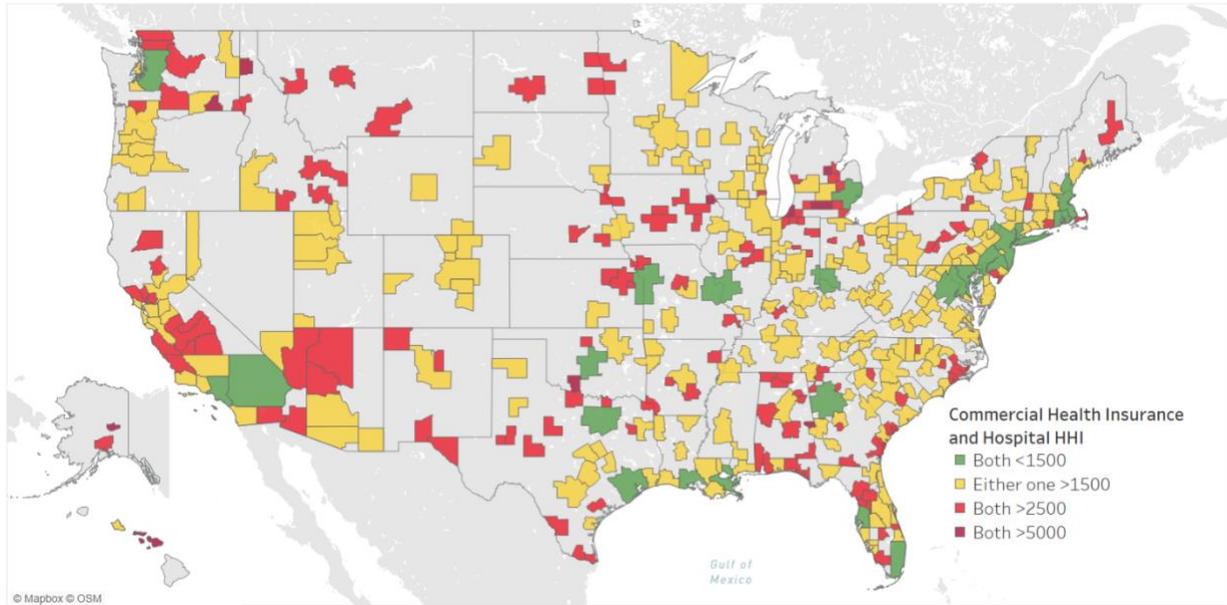
In Figure 5, CBSAs are coded based on the joint HHI measures for commercial insurance and adjusted hospital admissions. The four mutually-exclusive categories are: (1) both commercial health insurance and hospital HHI <1500; (2) at least one of commercial health insurance or hospital HHI >1500; (3) both commercial health insurance and hospital HHI >2500 (but at least one of them ≤5000); and (4) both commercial health insurance and hospital HHI >5000.

In 2019, 28% of CBSAs had both highly concentrated hospital and commercial insurance markets (both commercial health insurance and hospital HHI >5000), down slightly from 32% in 2010.

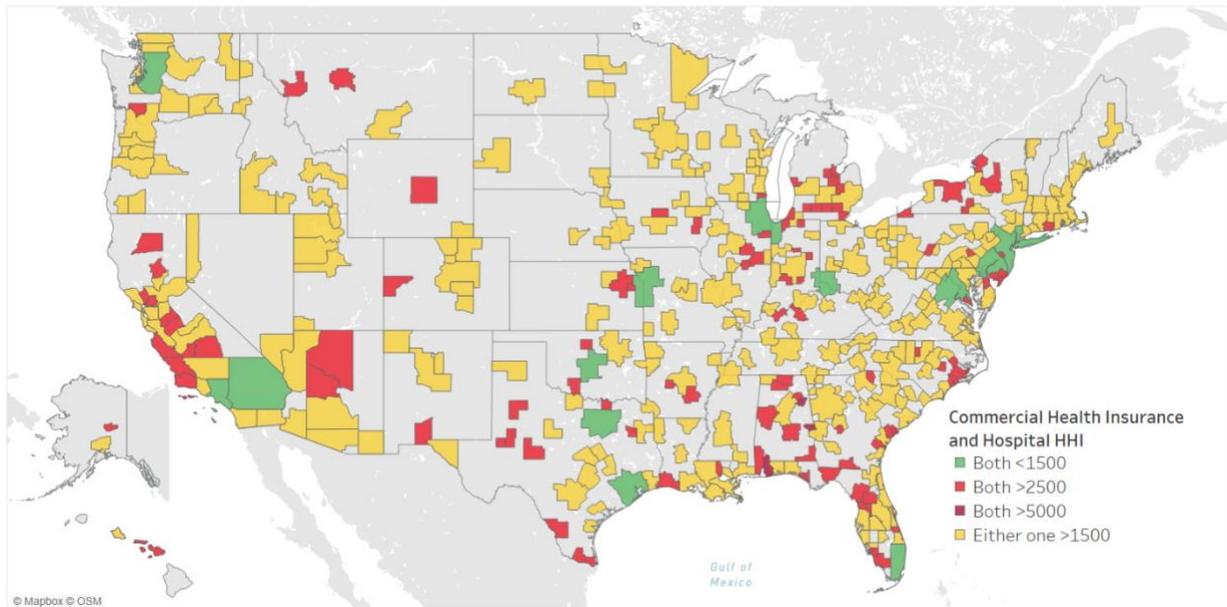
Insurers with more bargaining power can more effectively negotiate in markets with high levels of hospital concentration than insurers with less bargaining power.⁴ However, the evidence is not clear that any benefits of insurer concentration are passed to consumers in the form of lower premiums.⁵ How these two highly concentrated markets interact is an important area of research that may require policy attention as both provider and insurance markets grow more concentrated.

Figure 5. Core-Based Statistical Area (CBSA) Level Herfindahl-Hirschman Index (HHI) Levels Of Concentration For Commercial Health Insurance And Hospital Adjusted Admissions, 2008 and 2019

2008



2019



Source: ASPE Analysis of Clarivate|DRG Managed Market Surveyor, AHA Data

REFERENCES

- ¹ Fulton, Brent D. Health Care Market Concentration Trends In The United States: Evidence And Policy Responses. Health Affairs 2017 36:9, 1530-1538
- ² U.S. Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines § 5.3 (2010). <https://www.justice.gov/atr/horizontal-merger-guidelines-08192010#5c>
- ³ Vogt, William B. "Hospital market consolidation: trends and consequences." Expert Voices (2009).
Fulton, Brent D. Health Care Market Concentration Trends In The United States: Evidence And Policy Responses. Health Affairs 2017 36:9, 1530-1538
Gaynor, Martin. "What to do about health-care markets? Policies to make health-care markets work." Brookings Institution (2020). https://www.brookings.edu/wp-content/uploads/2020/03/Gaynor_PP_FINAL.pdf
- ⁴ Barrette, Eric, Gautam Gowrisankaran, and Robert Town. "Countervailing market power and hospital competition." The Review of Economics and Statistics (2021): 1-33.
- ⁵ Scheffler, Richard M., and Daniel R. Arnold. "Insurer market power lowers prices in numerous concentrated provider markets." Health Affairs 36.9 (2017): 1539-1546.

Environmental Scan on Consolidation Trends and Impacts in Health Care Markets

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About This Report

The No Surprises Act (NSA), part of the Consolidated Appropriations Act, 2021 (Pub. L. 116–260), was created to help protect consumers with private insurance from surprise medical bills from out-of-network health care providers. The NSA requires the Department of Health and Human Services, in conjunction with the Federal Trade Commission and Attorney General, to prepare annual reports to Congress on the effects of the NSA’s legislative provisions on patterns of vertical or horizontal integration of health care facilities, providers, group health plans, or individual health insurance issuers; overall health care costs; and access to health care items and services. To inform the broader public discussion about competition and consolidation in the health care sector, of which the NSA-mandated reports to Congress are a part, this report summarizes the findings of an environmental scan on consolidation trends and impacts in health care markets. It describes the evidence on consolidation trends and impacts on price, quality, and access in health care provider and insurance markets, as well as other market trends, which will be baseline information for the series of reports to Congress.

This research was funded by the U.S. Department of Health and Human Services Office of the Assistant Secretary for Planning and Evaluation (ASPE) and carried out within the Payment, Coverage, and Cost Program in RAND Health Care.

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Summary

The No Surprises Act (NSA) (Division BB, Title I of the Consolidated Appropriations Act, 2021; Pub. L. 116–260) creates protections for privately insured consumers against surprise medical bills from out-of-network health care providers. Section 109 requires the Department of Health and Human Services, in conjunction with the Federal Trade Commission and the Attorney General, to prepare reports to Congress on the effects of the NSA provisions on patterns of vertical or horizontal integration of health care facilities, providers, group health plans, or individual health insurance issuers; overall health care costs; and access to health care items and services. The first report is due January 1, 2023, with subsequent reports due annually for the following four years.

The NSA aims to protect consumers from surprise medical bills and might have other effects on health care markets. To the extent that the law reduces out-of-network prices, theory suggests that in-network prices will decrease as well, given that providers' alternative to joining a network would become less attractive and their bargaining power would subsequently decline. Changes in prices could in turn affect total spending and premiums, provider supply, access to and the quality of health care services, and providers and insurers' decisions to consolidate.

Spending on health care was more than \$4 trillion in 2020, representing nearly 20 percent of gross domestic product in the United States. Because continued consolidation of health care organizations might contribute to the growth in spending and affect providers, employers, and consumers, it is important to understand how markets are organized and the impacts of consolidation.

Consolidation can take different forms. Traditionally, consolidation has referred to the merger, purchase, acquisition, or ownership of entities. More recently, softer forms of consolidation are occurring, such as those involving contractual agreements between entities (e.g., clinically integrated networks) that allow for joint price negotiations. Horizontal consolidation occurs between entities offering similar services, whereas vertical consolidation occurs between entities offering different services (e.g., hospitals acquiring or affiliating with physician practices).

Consolidating organizations might integrate in various ways (e.g., structurally, functionally, and clinically). Financial integration is the most typical way consolidation entities structurally integrate. A proposed benefit of consolidation is that greater integration will lead to increased efficiencies, coordination of care, and patient outcomes. However, the achievement of these benefits is most closely tied to the ability of the consolidating organizations to clinically integrate, which has proven more challenging to achieve.

To inform the development of NSA reports to Congress, this report provides a summary of recent patterns of and trends in vertical or horizontal consolidation of health care facilities,

providers, and health insurers; what is known about the impacts of consolidation on health care prices, health care spending, quality of care, patient access, and health care wages; and the potential impact that the NSA provisions might have on consolidation and its effects. We conducted an environmental scan in the following domains:

- **horizontal provider consolidation**
 - hospitals merging with other hospitals
 - physician practices merging or forming contractual arrangements with other practices
- **horizontal insurer consolidation**
 - commercial insurers merging with other insurers
 - mergers among Medicare Advantage insurers and Medicaid managed care organizations
- **vertical consolidation**
 - hospitals or health systems acquiring or affiliating with physician practices
 - integration of health care hospitals and physicians with insurers
- **other areas of health care market consolidation**
 - pharmacy consolidation
 - telehealth provider consolidation
- **other topics related to consolidation**
 - private equity investments and ownership in nursing homes, hospitals, and physician practices
 - anticompetitive practices (e.g., tiering, steering) and barriers to entry (scope of practice and certificate of need)
 - charity care and medical debt
 - recent trends in litigation (California v. Sutter Health, Anthem/Cigna and Aetna/Humana proposed mergers, Jefferson Health acquisition of Albert Einstein Healthcare Network)
- **surprise medical billing policies**
 - state laws protecting consumers against surprise medical bills.

Methodology

We searched for and abstracted information from peer-reviewed and gray literature. We used existing literature reviews and supplemented with articles published after the most recently published literature review. We also conducted targeted searches for evidence not covered by existing reviews. The research team screened titles and abstracts to identify relevant articles and abstracted pertinent information into a structured template. During the abstraction process, we constructed a database of terms and definitions of measures.

We conducted a simplified assessment of methodological quality (MQ) and strength of evidence (SOE). For each empirical study, we rated MQ (high, medium, or low) based on study design and analytic techniques used. For each domain-outcome, we graded the SOE (high, moderate, low, or insufficient) based primarily on the number and MQ of studies and consideration of consistency, directness, and applicability; we then adjusted the grade of the evidence higher or lower. The SOE grades reflect RAND’s assessment of the evidence and confidence in available evidence. For example, low SOE indicates limited confidence in the evidence that may be due to either few studies available or substantial inconsistency in the evidence. A domain-outcome with SOE graded low due to few studies available may still warrant the attention of policymakers.

We created summary tables to show key trends and impacts on health care prices per service paid to providers, overall health care spending (including premiums), quality of care (including clinical quality and patient experience), patient access to care, and health care wages and labor supply in the relevant domains. We indicate where gaps in the knowledge of impacts remain.

Key Findings

Table S.1 shows a condensed summary of empirical evidence on consolidation effects; more-detailed tables appear in the chapters of this report. This report is accompanied by a spreadsheet-based evidence table (available for download at www.rand.org/t/RRA1820-1) containing the studies included in the environmental scan. We found strong evidence that hospital horizontal consolidation is associated with higher prices paid to providers and some evidence of the same for vertical consolidation of hospitals and physician practices. Health care spending is likely to increase in tandem with these price increases, although fewer studies have directly examined spending than prices. There is one possible beneficial effect for consumers: We found that horizontal consolidation of commercial insurers is associated with lower prices paid to providers as insurers gain market power in negotiations with providers. However, the lower prices paid to providers do not appear to be passed onto consumers, who face higher premiums following insurer consolidation.

There is a body of evidence examining the effects of consolidation on quality of care. Assessment of quality performance is complex and multidimensional, but studies typically examine only a small number of quality measures to assess impacts on quality of care. In addition, studies often examine a specific instance of a merger rather than examine effects nationally. Studies show mixed findings depending on the quality measures studied, setting, and degree of integration: Several studies show no change in most quality measures following horizontal and vertical consolidation. Some studies show a decline in some measures of quality performance following horizontal consolidation, although two studies show an improvement in quality of care (following a rural hospital merger and an urban safety net hospital merger with

“full integration”).¹ Other studies find mixed effects that vary with the degree of vertical integration. There is insufficient evidence of the effects of horizontal or vertical consolidation on patient access to care, and low or insufficient evidence on the effects of consolidation on health care wages.

Although there has been increasing interest in consolidation in pharmacy and telehealth provider markets, private equity ownership and investment, and anticompetitive practices, we found insufficient or weak evidence on the effects of these changes in the health care market. Most of the empirical studies we found on private equity investments focused on nursing homes, and findings were either mixed or too limited to draw clear conclusions.

We found moderate evidence that an expanding scope of practice is associated with, if anything, a decrease in health care spending and increase in access to care and quality of care, but we found insufficient evidence on the effects on health care prices and wages. We also found moderate evidence that certificate of need laws are associated with no change or a decrease in health care quality, but the evidence was low or insufficient for other outcomes.²

We found limited mixed evidence on the effects of hospital and physician consolidation on the provision of charity care and insufficient evidence on medical debt burden and collection (not shown in Table S.1). We found no studies examining the effects of insurer consolidation on charity care and medical debt.

State surprise billing protections are relatively new, and the effects on prices have been heterogeneous depending on the various approaches taken and their implementation. Few studies have examined outcomes other than prices.

Table S.1. Condensed Summary of Consolidation Effects on Health Care Prices, Spending, Quality, Access, and Wages

Domain	Assessment	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Horizontal						
Hospital	Impact	Increase ^a	Increase ^a	Mixed depending on measure and setting ^b	Possible decrease ^d	Decrease ^a
	SOE	High	Moderate	Moderate	Insufficient	Low
Physician	Impact	Increase ^a	Mixed ^d	Mixed ^d	No evidence ^d	No evidence ^d
	SOE	Low	Insufficient	Insufficient	Insufficient	Insufficient

¹ The study authors defined *full integration* as including clinical leadership integration, integrated goals and actionable analytics through combined dashboards, and implementation of value-based interventions (Wang et al., 2022).

² Certificate of need laws require approval from a state board for a new health care facility to enter a market or an existing facility to expand or offer new services.

Domain	Assessment	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Commercial insurers	Impact	Decrease ^c	Increase in premiums ^a	Possible increase in patient experience ^d	No direct evidence, might decrease with premium increase ^d	Possible decrease ^d
	SOE	Low	Moderate	Insufficient	Insufficient	Insufficient
Medicare Advantage	Impact	No evidence ^d	Possible decrease in premiums ^d	No evidence ^d	Mixed for plan generosity and ratings ^d	No evidence ^d
	SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient
Medicaid managed care	Impact	No evidence ^d	No evidence ^d	No evidence ^d	Possible decrease in plan choice ^d	No evidence ^d
	SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient
Vertical						
Hospitals and physicians	Impact	Mixed: increase or no change ^a	Increase ^a	Mixed: small increase or no change ^b	Possible increase ^d	Mixed ^d
	SOE	Moderate	High	Low	Insufficient	Insufficient
Providers and insurers	Impact	No evidence ^d	No evidence ^d	No evidence ^d	No evidence ^d	No evidence ^d
	SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient
Other Markets						
Pharmacy	Impact	Possible decrease ^d	No evidence ^d	No evidence ^d	No evidence ^d	No evidence ^d
	SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient
Telehealth providers	Impact	No evidence ^d	No evidence ^d	No evidence ^d	No evidence ^d	No evidence ^d
	SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient
Private Equity						
Nursing homes	Impact	No evidence ^d	Increase ^a	Mixed ^b	Possible decrease ^d	No evidence ^d
	SOE	Insufficient	Low	Low	Insufficient	Insufficient
Hospitals	Impact	Possible increase ^b	No evidence ^d	Mixed ^d	No evidence ^d	No evidence ^d
	SOE	Low	Insufficient	Insufficient	Insufficient	Insufficient
Physician practices	Impact	Possible increase ^d	Possibly no change ^d	Possible increase ^d	No evidence ^d	No evidence ^d
	SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient
Other Topics						
Anticompetitive practices	Impact	No evidence ^d	No evidence ^d	No evidence ^d	No evidence ^d	No evidence ^d
	SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

Domain	Assessment	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Expanded scope of practice	Impact	Possible decrease ^d	No change or decrease ^b	No change or increase ^b	No change or increase ^b	Mixed: no change or increase for nurse practitioners, decrease for physicians ^d
	SOE	Insufficient	Moderate	Moderate	Moderate	Insufficient
Certificate of need laws	Impact	No change or increase ^d	No change or increase ^d	No change or decrease ^b	No change or decrease ^b	No evidence ^d
	SOE	Insufficient	Insufficient	Moderate	Low	Insufficient
Surprise billing policies	Impact	Mixed ^b	No direct evidence ^d	No evidence ^d	Possible increase or no change ^d	No direct evidence ^d
	SOE	Low	Insufficient	Insufficient	Insufficient	Insufficient

NOTE: *Health care prices* refers to prices per service paid to providers. *Health care spending* includes premiums. *Quality of care* reflects clinical quality and patient experience measures. *No evidence* refers to the lack of empirical studies. Strength of evidence grades are high, moderate, low, and insufficient; evidence was graded based on the number of studies, methodological quality, consistency, directness, and applicability.

^a Cells shaded in red indicate effects that have sufficient SOE and are detrimental to consumers.

^b Cells shaded in yellow indicate effects that have sufficient SOE and are unclear for consumers.

^c Cells shaded in green indicate effects that have sufficient SOE and are beneficial to consumers.

^d Cells shaded in gray indicate effects that have insufficient SOE.

Gaps in Evidence

Using our review of the literature, we identified several gaps in our understanding of the impacts of consolidation. These include the following:

- **Evidence is lacking on the effects of nonownership forms of consolidation that involve contractual arrangements or memorandum of understanding agreements between hospitals or health systems and physicians.** A key challenge to assessing the impacts of these softer forms of consolidation is the lack of data that identifies and maps these nonownership relationships because existing administrative data sets do not capture these relationships.
- **There is an incomplete understanding of consolidation effects on quality of care across a broad set of quality dimensions.** Quality performance has many dimensions, and most studies assessing impacts do not broadly assess quality of care. Furthermore, studies might use different measures that make comparisons of findings between studies challenging. Studies that assess impacts on quality of care tend to rely on measures that can be constructed using claims data; however, many aspects of clinical quality that would be useful to understand the impacts of consolidation can only be assessed using clinical data contained in electronic medical records, which are not routinely available to evaluators.
- **The evidence on consolidation effects on quality of care is mostly limited to the average effects and does not examine the heterogeneity in effects (1) for different settings and subpopulations and (2) by the degree of integration.** Findings might vary

across the different quality measures and settings examined and the degree of integration. Further examination is needed to understand how effects might be heterogenous across subpopulations (e.g., dual eligible and disabled populations) because the average effects might not reflect the experience of all groups.

- **Insufficient evidence exists on consolidation effects on patient access.** There might be particular concern about access in rural settings and among vulnerable populations.
- **There is limited direct evidence on insurer consolidation effects on health care prices.** Understanding the effects of consolidation on prices paid to providers has proven challenging because of the lack of readily available data on actual prices paid to providers. All-payer claims databases (APCDs) and price transparency initiatives that disclose actual prices paid to providers could enable researchers and policymakers to study price effects following consolidation. Not all states have APCDs and there is no federal APCD; as of this writing, 31 states have an APCD or are in the process of developing one. These data will be a valuable resource for understanding the effects of consolidation on prices paid to providers.
- **There is a lack of evidence on the effects of private equity acquisitions.** Most existing research to date has focused on nursing homes and has thereby yielded limited insights into sectors of recent private equity growth, particularly physician practices and behavioral treatment centers. One challenge is that data are difficult to obtain to track private equity acquisitions and investments over time and to evaluate their impact.
- **Few evaluations of state surprise billing laws exist, and there is no direct evidence on the effects on spending, quality, patient access, and consolidation.** Filling this gap in evidence will be important for informing assessments of the NSA and improving state payment methodologies, which will continue to preempt the NSA for state-regulated plans.

Understanding the gaps in knowledge regarding the impacts of consolidation might help inform future data analyses conducted in support of the NSA report to Congress and research by the Office of the Assistant Secretary for Planning and Evaluation, Department of Health and Human Services, other federal and state agencies, and researchers.

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1. Introduction

The No Surprises Act (NSA) (Division BB, Title I of the Consolidated Appropriations Act, 2021; Pub. L. 116–260) creates consumer protections for privately insured consumers against surprise medical bills from out-of-network health care providers. Surprise bills often occur when patients have no choice for emergency or ancillary services, such as those provided by anesthesiologists, assistant surgeons, and diagnostic test providers. The NSA provisions include requiring private health plans to cover out-of-network bills at in-network cost sharing rates, typically based on the median in-network price. The insurer payments to providers are determined by negotiation between the insurer and provider, or an independent dispute resolution (IDR) process can be used to arbitrate the final payment amount.

The impact of the NSA on prices will depend on the implementation of the arbitration process. If out-of-network prices are reduced, theory suggests that in-network prices will also decrease as bargaining power shifts from providers to insurers when providers' alternative to contracting with insurers becomes less favorable. These price changes may affect total health care spending and premiums, as well as provider decisions related to supply, investments in quality of care, and consolidation.

The NSA (Section 109) requires the U.S. Department of Health and Human Services (HHS), in conjunction with the Federal Trade Commission (FTC) and the Attorney General (AG), to prepare reports to Congress on the effects of the NSA provisions on patterns of vertical or horizontal integration of health care facilities, providers, group health plans, or individual health insurance issuers; overall health care costs; and access to health care items and services. The first report is due January 1, 2023, and subsequent reports are due annually for the following four years.

Health care is a large sector of the economy with health care spending representing nearly 20 percent of gross domestic product in the United States, or more than \$4 trillion in 2020 (Hartman et al., 2021). Because continued consolidation of health care organizations might contribute to spending growth and affect providers, employers, and consumers, it is important to understand how markets are organized and the impacts of consolidation.

The Office of the Assistant Secretary for Planning and Evaluation (ASPE) contracted with the RAND Corporation to develop a report summarizing the baseline evidence on consolidation in health care markets to inform the NSA reports to Congress. The objective of this work is to summarize the literature on the following: (1) recent patterns and trends of vertical or horizontal consolidation of health care facilities, providers, and health insurers; (2) what is known about the association between these patterns of consolidation and prices, health care spending, quality of care, patient access to care, and health care wages; and (3) state surprise billing policies and the potential impact the NSA provisions might have on consolidation trends.

To set the stage for the first NSA report to Congress, this environmental scan defines relevant terminology and reviews the literature on consolidation trends and impacts in multiple health care domains, including existing surprise billing policies at the state level. Key concepts, such as horizontal versus vertical consolidation and consolidation versus integration are discussed.

We conducted literature reviews of peer-reviewed and gray literature to provide an overview of recent trends in consolidation in the health care sector and the impacts on health care prices, spending, quality of care, patient access to care, and health care wages. In consultation with ASPE, we focused the literature reviews on the following domains:

- **horizontal provider consolidation**
 - hospitals merging with other hospitals
 - physician practices merging or forming contractual arrangements with other practices
- **horizontal insurer consolidation**
 - commercial insurers merging with other insurers
 - mergers among Medicare Advantage (MA) insurers and Medicaid managed care organizations
- **vertical consolidation**
 - hospitals or health systems acquiring or affiliating with physician practices
 - integration of health care hospitals and physicians with insurers
- **other areas of health care market consolidation**
 - pharmacy consolidation
 - telehealth provider consolidation
- **other topics related to consolidation**
 - private equity investments and ownership in nursing homes, hospitals, and physician practices
 - anticompetitive practices (e.g., tiering, steering) and barriers to entry (scope of practice [SOP], certificate of need [CON])³
 - charity care and medical debt
 - recent trends in litigation (Jefferson Health acquisition of Albert Einstein, Anthem/Cigna and Aetna/Humana proposed mergers, California v. Sutter Health)
- **surprise medical billing policies**
 - state laws protecting consumers against surprise medical bills.

Because these domains cover a broad variety of topics, we limited the scope of this scan to include only high-level summaries for MA, Medicaid managed care, other areas of health care

³ Certificate of need laws require approval from a state board for a new health care facility to enter a market or an existing facility to expand or offer new services.

market consolidation (pharmacy and telehealth providers), and other topics related to consolidation (private equity, anticompetitive practices, barriers to entry, charity care, and medical debt; examples of the recent litigation are included in boxes throughout the report).

Using our summaries and assessment of the literature, we identified gaps in the existing evidence base that might be driven by data problems, methodological challenges, or other factors. Identification of the gaps in knowledge can inform analyses conducted to support the NSA report to Congress and future research by HHS, other federal and state agencies, and researchers.

2. Methodology

For this environmental scan, we reviewed the literature from peer-reviewed sources and gray literature (including reports from research organizations, state and federal agencies, and summaries of court cases). For each domain, we gathered information on trends and impacts on health care prices, health care spending, quality of care, patient access, and health care workers' wages. We then conducted a preliminary assessment of the methodological quality (MQ) of each empirical study and the strength of evidence (SOE) for each domain-outcome.

We took a multistep approach to searching for articles and summarizing the results. First, we identified exemplar articles, including existing literature reviews, for each topic based on knowledge of our team members and colleagues with expertise in health care consolidation and surprise medical billing. Next, we iteratively modified search terms and checked that our search terms were adequate by ensuring that the searches found the exemplar articles (along with other relevant articles).

Second, we searched for articles on PubMed, EconLit, and Business Source Complete. In PubMed, we focused on U.S. health care markets by restricting to articles with *United States* or a state listed in the affiliation, title, or abstract fields. For domains with existing reviews, we restricted the search to years following the most recent review for that domain (e.g., 2015 and on for hospital horizontal consolidation). For domains with a low number of search results, we supplemented with searches on EconLit (for pharmacy consolidation and CON) and Business Source Complete (for telehealth providers). See the Appendix for search terms and year restrictions used.

Third, we conducted additional targeted searches using the same databases. The targeted searches included searches for outcomes that were not covered by literature reviews (e.g., impacts on access, if prior literature reviews did not examine such impacts). Using Google and Google Scholar, we also conducted forward searches of references cited in included studies to look for additional relevant sources as needed and reports in the gray literature.

Among the search results from these steps, we screened titles and abstracts for relevant articles that studied U.S. health care markets and were related to consolidation trends or impacts on the following outcomes: health care prices per service paid to providers, overall health care spending (i.e., price times quantity; including premiums), quality of care (including clinical quality and patient experience), patient access, and health care workers' wages. We found 236 relevant articles, of which 172 were included in the evidence base on the effects of consolidation; see the Appendix for detailed numbers of articles found at each step.

For each domain assessed (e.g., hospital horizontal consolidation), we created an abstraction template with rows for articles and columns for information, such as study design and methodology, recent trends, and the outcomes assessed (prices, spending, quality, access, and

wages). Related to health care wages, we also included information about health care labor supply when it was available. We abstracted information into the template; three Ph.D.-level researchers conducted quality checks by reviewing the abstracted information. During the abstraction process, we also constructed a database of relevant terms and measures.

We conducted a simplified assessment of MQ to indicate the level of study limitations in each individual study and the SOE for each domain-outcome combination following the approach described in the Agency of Healthcare Research and Quality (AHRQ) *Methods Guide for Comparative Effectiveness Reviews* (Berkman et al., 2013). For each empirical study, we assigned ratings of MQ based on study design and analytic techniques. We did not rate studies that were descriptive or qualitative only. Because the vast majority of the relevant studies are observational studies, we rated MQ according to the following categories:

- **high:** use of difference-in-differences, two-way fixed effects, event study, instrumental variables, or regression discontinuity, indicating low risk of bias
- **medium:** use of regression-adjusted comparisons, indicating medium risk of bias
- **low:** unadjusted regression comparisons, statistical tests (e.g., t-test, chi-squared test, analysis of variance [ANOVA]), no statistical tests, or no comparison group, indicating a high risk of bias.

We created an evidence table containing the studies in the environmental scan. The evidence table is a spreadsheet (available for download at www.rand.org/t/RRA1820-1) that accompanies this report and includes the article information, domain, outcome, population studied, setting, time period, data, general methodology, study results, and our MQ rating for each study.

Across studies in each domain and outcome, we assigned grades for the SOE to indicate the confidence level that the estimates reflect the true effect. These SOE grades reflect RAND's assessment of the evidence based on the below criteria. We graded the evidence based primarily on the MQ of empirical studies and also with considerations of consistency and directness of the empirical studies and findings from qualitative studies to adjust the grade of the evidence higher or lower. On a case-by-case basis, we allowed for upgrades or downgrades of SOE grade based on applicability (e.g., external validity) and magnitude of effect; we note these cases in the text. A general description and some examples of the grades are as follows:

- **high:** at least seven studies of high or medium MQ with consistent findings
- **moderate:** at least five studies of high or medium MQ with consistent findings, or at least seven studies with minor inconsistency or indirectness
- **low:** at least two studies with consistent findings, or substantial inconsistency or indirectness
- **insufficient:** no studies; a single study; or two studies with inconsistent findings, low directness, or low applicability.

For example, a SOE grade of **low** indicates limited confidence in the evidence due to few studies or substantially inconsistent or indirect evidence. Domain-outcomes with low SOE may reflect the need for additional evaluations and could be important priority areas for policymakers.

For the subdomain on recent trends in litigation, we focused our search on three cases (Jefferson Health acquisition of Albert Einstein, Anthem/Cigna and Aetna/Humana proposed mergers, and California v. Sutter Health). In this report, we present these in boxes with litigation examples of hospital horizontal consolidation, insurer horizontal consolidation, and anticompetitive practices.

Limitations

This environmental scan is not a systematic review (SR). We relied on existing literature reviews where possible. Although we conducted targeted literature searches to gather studies published after existing literature reviews and to find studies on outcomes not covered by the reviews, we might not have captured all relevant individual studies that were not part of existing reviews.

The domains covered in this environmental scan are not an exhaustive list of areas of interest related to consolidation. For example, we did not search for studies on horizontal consolidation among nursing homes, vertical consolidation of postacute and hospice providers with hospitals and health systems, or the effects of health care real estate investment trusts. Similarly, we did not examine all outcomes of interest (e.g., we did not assess the effects on the profits or revenue of providers and insurers).

Our summary of the impacts focuses on *average effects*. Our approach to identifying studies did not include an exhaustive search for studies on disparities in outcomes; however, we did find some evidence on varying impacts by subpopulations or different geographic areas.

Our MQ ratings and SOE grades reflect a simplified assessment based on AHRQ grading guidelines. The MQ ratings of individual studies are limited to an assessment of the study design and analytic techniques. We did not comprehensively assess the study conduct, appropriateness of statistical methods and comparison groups, sample size, and control of potential confounding factors. Although we did not systematically document the sample size in each study, the study design and analytic techniques used provide some indication of adequate sample size for the selected methodology. We also considered the applicability of each study (i.e., external validity) in the SOE grades.

Similarly, our SOE grades are focused on the MQ across studies, with consideration of the AHRQ scoring domains for directness, consistency, and applicability. A comprehensive critical appraisal of the literature would have included a more detailed assessment of study limitations and all the AHRQ scoring domains in the SOE grading.

Nevertheless, our simplified assessments indicate where there is insufficient evidence because of few or no studies for certain outcomes. The assessments also suggest areas where further research might be needed because of low confidence in the evidence.

3. Definitions of Terms Related to Consolidation

Such terms as *competition*, *concentration*, *consolidation*, and *integration* are often used interchangeably to describe health care markets, but each has a distinct, specific meaning. In this chapter, we describe key terms used to discuss consolidation in health care markets to aid understanding of the landscape and potential effects of consolidation.

Competition and Concentration

Market *competition* refers to multiple firms offering goods or services that might vary by characteristics (Goddard, 2015). Market interactions between buyers and sellers in the health care market affect price, quantity, quality, and access to care (Gaynor and Town, 2012). Competition decreases with fewer firms offering services or goods in a given market.

The level of competition is commonly described using market *concentration* measures, such as the Herfindahl-Hirschman Index (HHI). *HHI* is defined as the sum of the squares of market shares of entities in a given market. As market shares of individual entities grow larger (e.g., mergers result in fewer entities and larger market shares among the remaining entities), market concentration increases and results in less competition.

Health care markets are frequently defined by geographic areas, such as counties, metropolitan statistical areas (MSAs), core-based statistical areas (CBSAs), or hospital referral regions. The U.S. Department of Justice (DOJ) and FTC merger guidelines classify markets with an HHI below 1,500 as *unconcentrated*; between 1,500 and 2,500 as *moderately concentrated*; and over 2,500 as *highly concentrated* (DOJ and FTC, 2015). As hospital market concentration has risen substantially over the past decades, levels above 5,000 have been dubbed “super concentrated” (Fulton, Arnold, and Scheffler, 2018).

Consolidation

A *consolidation* event often refers to a merger, purchase, or acquisition of an entity. However, consolidation also encompasses less-formal joint arrangements between organizations. For example, there has been growth in nonownership arrangements and affiliations between organizations that allow for joint negotiations, such as clinically integrated networks (CINs) and accountable care organizations (ACOs) in a form of “soft consolidation” (Ridgely, Timbie, et al., 2020; Lyu, Chernew, and McWilliams, 2021).

Consolidation can be differentiated into types: horizontal, vertical, and cross-market or within-market. *Horizontal consolidation* reflects arrangements between entities that “operate in a similar position along the production process” (MedPAC, 2020), meaning that they offer the same services and compete with one another. For example, hospital mergers with other hospitals

or physician practice mergers with other practices would constitute horizontal consolidation. Horizontal consolidation events increase market concentration and reduce competition.

In contrast, *vertical consolidation* reflects arrangements between entities that “operate at different points along the production process” (MedPAC, 2020), meaning that they do not directly compete with one another. This could entail hospitals acquiring physician practices, insurers purchasing physician practices, or looser arrangements, such as CINs in which health systems affiliate with physician practices through contracting rather than ownership arrangements. In the literature, vertical consolidation is often referred to as *vertical integration*, which is discussed further in the next section.

Cross-market consolidation refers to mergers or arrangements between entities that do not directly compete with one another in the same geographic or product market (King and Fuse Brown, 2017; Dafny, Ho, and Lee, 2019). Under this definition, cross-market consolidation includes vertical consolidation, which occurs across product markets (e.g., hospitals acquiring physician practices could be described as both vertical and cross-market consolidation). However, discussion of cross-market consolidation among providers and insurers tends to focus on consolidation across geographic markets (King and Fuse Brown, 2017; Berenson et al., 2020), whereas cross-market consolidation in the pharmacy sector might refer to mergers across product types, such as mergers of pharmacy benefit managers and retail clinics. *Within-market consolidation*, in contrast, refers to mergers or arrangements between entities that directly compete with one another (King and Fuse Brown, 2017; Dafny, Ho, and Lee, 2019).

Integration

When organizations consolidate, *integration* can occur in various ways. Consolidating entities assert that consolidation will lead to increased efficiencies and improved clinical integration in care delivery that will result in better quality, reduced use of low-value care, and improved clinical outcomes. Yet, growth in market power and lack of competition provides leverage to increase prices and reduces incentives to improve quality of care.

Although the term *vertical integration* is commonly used to describe arrangements between physician practices and hospitals or health systems and is often used interchangeably with *vertical consolidation*, in this report, we are treating *integration* as a distinct term that encompasses consolidation.

Singer and colleagues, 2020, developed a comprehensive conceptual model of integration that builds on previous theoretical models of integration to outline different forms of integration that occur within an organization and that are necessary to affect care delivery and quality. This framework has five forms of integration spanning organizational features, social features, and activities:

- **structural:** “physical, operational, financial, or legal ties among organizations in a health system and teams within organizations” (others have called this *organizational integration*)
- **functional:** “formal, written policies and protocols for activities that coordinate and support accountability and decision making among organizations and individuals”
- **normative:** “a common culture and a specific culture of integration across units and organizations within a health system”
- **interpersonal:** “collaboration or teamwork among health care professionals of one or more disciplines and from one or more organizations as well as nonprofessional caregivers and the patients themselves”
- **process:** “courses of organizational actions or activities intended to integrate patient care services into a single process across people, functions, activities and operating units over time; specific activities that demonstrate care has been or is being delivered in a coordinated way” (others have called this *service integration* or *clinical integration*).

Similarly, Casalino, 2006, described clinical integration as “evidenced by the presence of organized processes to control costs and improve quality and by the significant investment of monetary and human capital in these processes.”

Heeringa et al., 2020, described horizontally and vertically integrated structures based on care management functions and administrative oversight for different organization types. The researchers categorized horizontally integrated structures as single specialty group practices, multispecialty group practices, independent practice associations, virtual physician networks, and multihospital systems. They categorized vertically integrated structures as physician-hospital organizations (PHOs), management service organizations, CINs, foundation models, and integrated delivery systems.

Whether the purported benefits of consolidation are realized depends on the forms of integration and the extent of integration between the merging organizations. Consolidation events typically involve becoming financially integrated. Researchers have emphasized that the integration of different organizations is complex, and distinguishing between integration types and the degree of integration is vital to understanding observed effects of increased consolidation on costs, quality, and access (Ridgely, Buttorff, et al., 2020; Short, Ho, and McCracken, 2017). Ridgely, Buttorff, et al., 2020, noted that health system executives described clinical integration as more difficult to achieve than structural and functional integration.

4. Hospital and Physician Horizontal Consolidation

Hospital and physician services comprise a large share of U.S. health care spending. In 2020, hospital services accounted for 31 percent of national health care spending, and physician services accounted for 20 percent (Hartman et al., 2021). Both sectors have experienced persistent consolidation over the past two decades.

The effects of consolidation of providers might be either beneficial or harmful and likely vary by the degree of integration within consolidated organizations. The trends and consequences of provider consolidation have been discussed extensively in the literature, including reviews of the literature in congressional testimonies by Gaynor, 2019, Gaynor, 2021, and Dafny, 2021. Our review includes the studies described in these testimonies, and we supplement these studies with our review of the most recent literature.

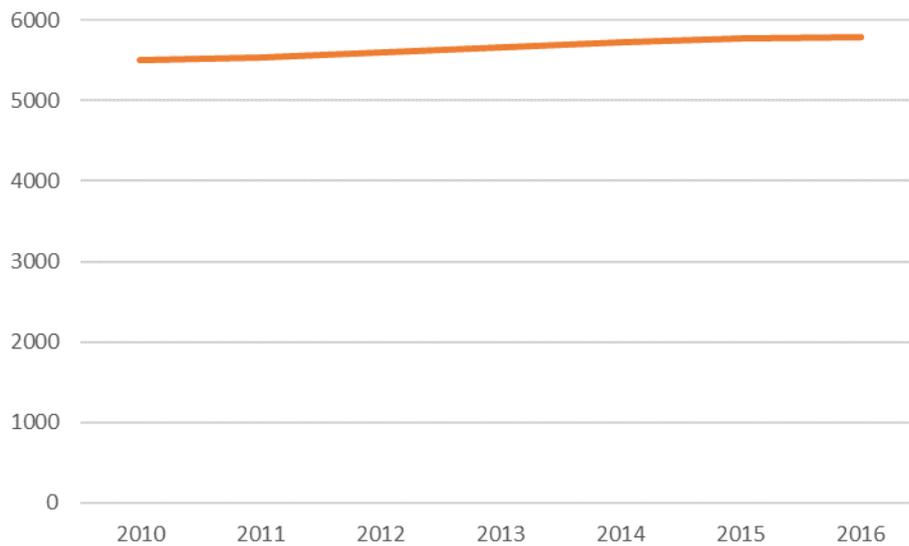
Hospitals

Trends

Hospital markets are highly concentrated and are becoming more concentrated as a result of a steady stream of hospital consolidations. Between 2010 and 2020, there were more than 1,000 announced hospital mergers and acquisitions (Kaufman, Hall & Associates, 2021). From 2010 to 2016, the mean HHI for hospitals increased by about 5 percent from an already high value of more than 5,500 (Fulton, 2017), which is considered “super concentrated” (Figure 4.1).

Most of the mergers were within the same geographic regions, but a notable share occurred between hospitals across geographic regions. From 2010 to 2012, 48.5 percent of hospital mergers were within the same CBSA, 36.6 percent were within the same state but different CBSA, and 15.0 percent were out of state (Dafny, Ho, and Lee, 2019). These cross-market mergers are gaining more attention, as new research is emerging about their potential consequences (Gaynor et al., 2021; Schmit, 2017; Dafny, Ho, and Lee, 2019).

Figure 4.1. Hospital Mean HHI by Metropolitan Statistical Area, 2010–2016



SOURCE: Adapted from Fulton, 2017, p. 1533.

The box that follows provides an example of recent litigation involving hospital horizontal consolidation.

Litigation Example: Hospital Horizontal Consolidation

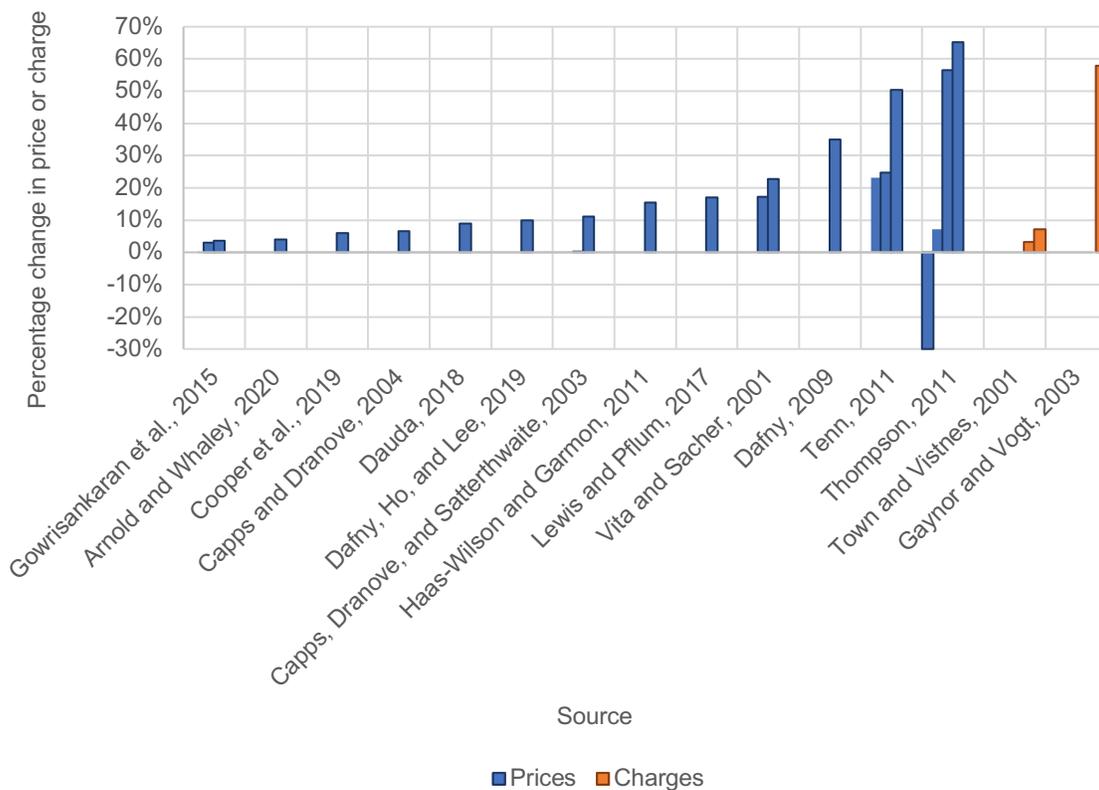
In 2018, Jefferson Health (the largest hospital system in the Philadelphia region) and Albert Einstein Healthcare Network (a system with three hospitals and a network of primary and specialty care locations around Philadelphia) announced a merger worth \$599 million. In February 2020, the FTC and Pennsylvania AG filed a lawsuit to block the merger (FTC, 2021a). The FTC argued that the merged entities would control 60 percent of the inpatient acute care market in North Philadelphia and 70 percent of the inpatient rehabilitation market across the city (Koenig, 2021). In December 2020, a federal judge ruled in favor of the providers, disagreeing with the FTC’s market definition and assessment of the impact on local competition (Brubaker, 2020; Koenig, 2021). The FTC and the Pennsylvania AG subsequently dropped the case, and the merger was finalized in October 2021 (Brubaker, 2021; Koenig, 2021). This was the first hospital merger case in several years that the FTC lost (Koenig, 2021).

Effect on Prices

A large body of literature has found substantial increases in hospital prices as a result of horizontal consolidation (Gaynor, 2021). However, the estimated price increases that are due to a hospital merger vary significantly, ranging from 3 to 65 percent (Figure 4.2; Town and Vistnes, 2001; Krishnan, 2001; Vita and Sacher, 2001; Gaynor and Vogt, 2003; Dafny, 2009; Haas-Wilson and Garmon, 2011; Tenn, 2011; Thompson, 2011; Gowrisankaran, Nevo, and Town, 2015; Dauda, 2018; Cooper et al., 2019; Arnold and Whaley, 2020 [MQ: high]; Capps, Dranove, and Satterthwaite, 2003; Capps and Dranove, 2004). Recent studies examining negotiated prices have found price increases on the lower end of this range. For example, Cooper et al., 2019,

found an average price increase of 6 percent as a result of hospital mergers, and Arnold and Whaley, 2020, found an average price increase of 3.9 percent. Three early retrospective merger analyses conducted by the FTC—the Evanston Northwestern–Highland Park merger in the Chicago area, the Sutter–Summit merger in the San Francisco Bay area, and the merger of Cape Fear and New Hanover hospitals in Wilmington, North Carolina—found that negotiated price changes varied by insurer, ranging from a decrease of 30 percent to an increase of 50 percent (Haas-Wilson and Garmon, 2011; Tenn, 2011; Thompson, 2011 [MQ: high]); however, these larger price changes might not be representative of all mergers because they were retrospective reviews of mergers that the FTC thought might be problematic premerger. Other studies that examined hospital charges rather than actual negotiated prices also have found a wide range of price effects (Town and Vistnes, 2001; Gaynor and Vogt, 2003).

Figure 4.2. Hospital Price or Charge Percentage Changes Following Hospital Horizontal Consolidation



NOTE: Studies that have more than one bar reported price changes for more than one site or payer. For example, Vita and Sacher, 2001, examined the price changes in two hospitals, Dominican Santa Cruz Hospital and Watsonville Community Hospital in California. Thompson, 2011, reported price changes for four insurers following a merger of two hospitals. The results from Krishnan, 2001, indicate price increases of 11.8 to 16.5 percentage points but are not shown on the figure because they do not readily translate into percent changes.

Although the majority of analyses on the effects of hospital consolidation on prices have focused on within-market mergers, some recent studies find evidence that cross-market mergers

between hospitals in different geographical markets can also lead to significant hospital price increases if the facilities are close enough in geographic proximity (e.g., insurance contracts are usually negotiated within state borders). Cross-market mergers have not received as much regulatory attention as within-market mergers, but they have significant anticompetitive potential (King and Fuse Brown, 2017). Three studies looked at mergers of hospitals at different levels of geographic proximity. Although there is a unifying theme that mergers of hospitals closer to each other led to higher price increases, we still do not know how close the proximity needs to be to warrant regulatory attention. Lewis and Pflum, 2017 (MQ: high), found that cross-market mergers led to a price increase of 17 percent. Dafny, Ho, and Lee, 2019 (MQ: high), found that mergers between hospitals in different markets within the same state led to a price increase of 10 percent, but they did not find a price increase as a result of mergers between hospitals in different states. Cooper et al., 2019 (MQ: high), found that mergers of hospitals in close geographic proximity increased prices by 6 percent, but prices did not change for mergers of hospitals that were more than 25 miles apart.

Overall, we graded the SOE that hospital horizontal consolidation **increases health care prices as high**. Within this environmental scan, we rated 14 of 16 studies of either individual mergers or a sample of mergers as having high MQ (i.e., carefully selected control group and well-designed methodology). Although the size of the price increase as a result of consolidation varied, such variations might reflect differences in the circumstances of the mergers studied.

Effect on Spending

Because spending is the product of prices and quantity, it is not surprising that provider prices are a major driver of increased health care spending and that hospital consolidation would also increase total health care spending (Health Care Cost Institute, 2019). Glied and Altman, 2017, noted that competition among insurers can be limited by hospital systems that extend the bargaining power of “must-have” hospitals in an insurer network.

Cooper et al., 2019 (MQ: high), found hospitals in more-concentrated markets have high prices in the private insurance market, and the price variation accounts for half of the cross-market variation in spending in the privately insured population. Arnold and Whaley, 2020 (MQ: high), found direct evidence that hospital consolidation increased total spending per beneficiary among privately insured individuals, and also found that the increase in spending translated into lower wages for private sector workers. Rabbani, 2021 (MQ: high), found that a merger in Ohio led to a 123-percent increase in payments for inpatient care services. Gaynor et al., 2021 (MQ: high), examined the merger of two large hospital chains that occurred in 2008 and found an increase in costs at both acquiring hospitals and target hospitals. Other studies suggesting that hospital consolidation might increase health care spending compared insurer payment and premiums in markets with more-consolidated providers to markets with less-consolidated providers. For example, Scheffler, Arnold, and Whaley, 2018 (MQ: medium), found that hospital consolidation in California can lead to higher premiums in the individual market. Polyakova et

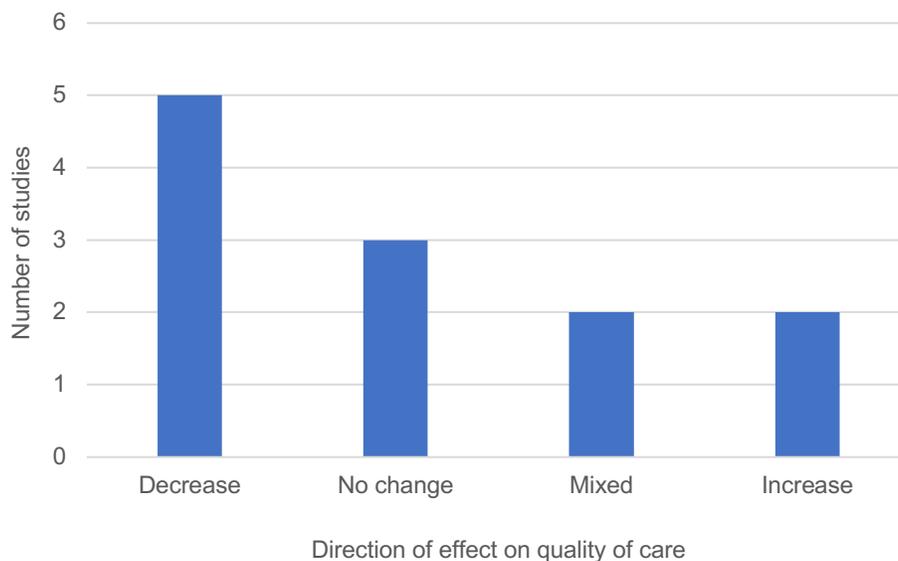
al., 2018 (MQ: medium), showed that markets with more-consolidated providers have higher individual market premiums.

Overall, we graded the SOE that hospital horizontal consolidation **increases health care spending** as **moderate** based on six studies with consistent findings. We reviewed four studies that directly looked at the effect of hospital consolidation on health care costs and spending and all four had high MQ and consistent findings. In addition, findings were consistent with two medium MQ studies on the effect of hospital consolidation on insurer premiums and payment to providers. Going forward, evidence on the effect of hospital consolidation on spending can be strengthened with more-accurate price data from a broader set of providers as a result of the price transparency rule from the Centers for Medicare & Medicaid Services (CMS), which requires hospitals to publicly disclose clear, transparent pricing information online (CMS, 2021).

Effect on Quality of Care

We identified 12 studies that examined the effect of hospital consolidation on selected measures of quality of care, and the majority found no change or worse quality of care after consolidation (Figure 4.3).

Figure 4.3. Number of Studies by the Direction of the Effect on Quality of Care Following Hospital Horizontal Consolidation



The direction of the findings varied with different quality measures examined. A recent study by Beaulieu et al., 2020 (MQ: high), looked at 246 hospital mergers between 2007 and 2016 and found that, relative to similar hospitals that did not experience a merger, hospitals acquired in a merger saw no significant differential change in 30-day readmission rate and 30-day mortality rate in the Medicare population. However, patient experience measures declined.

Two studies on a smaller set of mergers found no effect in risk-adjusted patient outcomes (Romano and Balan, 2011; Capps, 2005 [MQ: high]). Chang et al., 2016 (MQ: high), studied 19 hospital mergers between 2007 and 2013 and found mixed effects on surgical complication rates: Among the seven procedures studied, complication rates decreased for two, increased for three, and did not change for two.

Studies comparing hospitals in more- and less-consolidated markets found that patients in less-consolidated markets have better risk-adjusted clinical outcomes than patients in more-consolidated markets (Kessler and McClellan, 2000; Cooper et al., 2011; Hayford, 2012; Gaynor, Moreno-Serra, and Propper, 2013 [MQ: high]). Consistent with Beaulieu et al., 2020, Attebery et al., 2020 (MQ: high), found that hospital consolidation is associated with less improvement over time of patient experience measures compared with nonconsolidated control hospitals.

In contrast, a recent study examined 172 merged hospitals and 549 matched comparison hospitals in rural areas and found that rural hospital consolidation was associated with a 2-percentage point decrease in mortality from acute myocardial infarction and a few other conditions (Jiang et al., 2021 [MQ: high]). However, another study that examined system-affiliation of rural hospitals (which has both a horizontal and vertical component) found that affiliating hospitals and nonaffiliating hospitals had similar trajectories in patient experience, readmissions, and emergency department use (O’Hanlon et al., 2019 [MQ: high]). It is possible that the effects of consolidation of small, rural hospitals might differ from consolidation between large, urban hospitals. More studies are needed to understand the distinct impacts of consolidation of rural hospitals.

A recent study used interrupted time series data to study the effect of a “full integration” between an academic medical center and a safety net hospital (Wang et al., 2022 [MQ: medium]). The full integration, as defined by the authors, includes some important elements of clinical integration, such as clinical leadership integration, integrated goals and actionable analytics through combined dashboards, and implementation of value-based interventions. They found that risk-adjusted mortality decreased after the merger and patient experience ratings increased. This is the only study we found that explicitly looked at a merger with a known clinical integration component.

The following box presents the effect of consolidation on organizational operations and efficiency.

Effect on Organizational Operations and Efficiency

Two important open questions regarding the mechanism through which consolidation might affect quality and operational costs are as follows:

1. When hospitals merge, are they implementing the promised or intended operational and management changes?
2. Do these changes improve efficiency?

Understanding the “black box” of operational and management practices after consolidation is key for identifying “good mergers” in antitrust assessments (Dafny and Lee, 2015). Much remains unknown about these questions, but some recent studies are starting to shed some light.

Consolidation might enhance the ability of large organizations to reduce operational costs but decrease their incentive to do so. The literature on the effect of consolidation on providers’ operational costs is small. Burns et al., 2015, examined 4,000 hospitals during 2008 and 2010 and found no evidence that hospitals in larger consolidated systems have lower operating costs. Schmitt, 2017, studied 900 hospital mergers between 2000 and 2010 and found a small cost reduction (4 to 7 percent) for the acquired hospitals after the merger. The cost reduction was more pronounced for cross-market mergers than within-market mergers. Prager and Schmitt, 2021, examined the impact of 84 hospitals mergers nationally and found that mergers that significantly increased market concentration led to a reduction in wage growth for skilled workers, such as nurses, pharmacists, and other skilled nonhealth professionals but not for nonskilled workers.

Gaynor et al., 2021, found merged hospitals harmonized both their electronic health records (EHRs) and management practices. However, these changes did not drive gains in profitability or patient outcomes. Beaulieu et al., 2020, found an improvement in clinical process measures after hospital mergers but could not attribute improvement to the merger because of differential improvement in acquired and comparison hospitals prior to merging.

Another study that surveyed health system executives found that hospitals in integrated systems perform considerable activities around centralizing business functions, aligning financial incentives with physicians, establishing unified EHRs, and moving toward single signatory contracting. However, the executives described clinical integration, though essential, as more difficult to achieve than structural integration (Ridgely, Buttorff, et al., 2020). This might explain why many mergers do not lead to improvement in patient outcomes.

Overall, we graded the SOE that hospital horizontal consolidation has **no effect or a decrease in quality of care** based on most quality measures assessed as **moderate** given the high number of high-MQ studies. However, our understanding of the effect of horizontal consolidation on quality of care is limited given that quality of care encompasses many aspects of care delivery, and the existing literature generally assesses impacts on a narrow set of quality measures. We found six high MQ studies that directly examined the effect of consolidation on quality, and three high MQ studies on the correlation between market concentration and competition and quality of care, with the majority finding no change or decreased quality of care among the measures studied. We also found two high MQ studies on the effect of consolidation on quality of care in rural hospitals, and these two studies showed inconsistent results. One study of medium MQ did find quality improvements in risk-adjusted mortality and patient rating.

The evidence on the impacts of consolidation could be further strengthened by expanding the set of measures used to assess impacts on quality of care, including patient experience, safety, receipt of low-value care, clinical processes of care, and clinical outcomes. There might also be heterogeneity in the effect of consolidation on quality of care, such as based on the setting of the merger (e.g., whether the merger occurred in a rural or urban setting), whether the market was

already concentrated prior to consolidation, and how the consolidation was operationalized (e.g., whether clinical integration was achieved in addition to financial integration). Most of the studies also focus on one to five years after consolidation occurred, which might be too short of a period to observe improvements in quality performance because clinical integration and quality improvement following consolidation might take longer to achieve. For mergers involving health systems including ambulatory care practices, interviews with 162 executives of 24 health systems in four states showed that, although executives felt clinical integration was an essential part of consolidation, they often found it difficult to achieve (Ridgely, Buttorff, et al., 2020). We did not find any studies that examined the longer-term impact of hospital horizontal consolidation on quality of care.

The difficulties in studying the effect on quality of care are not specific to horizontal hospital consolidation. There are few definitive answers in assessing the magnitude and effect of many policy and market changes on quality of care, such as pay-for-performance, quality reporting, and health information technology investments, partly because the mechanisms for quality improvement are complex and measuring quality is challenging.

Effect on Patient Access

There are concerns that consolidation of hospitals, particularly rural hospitals, could reduce access to care by leading to closure of facilities and services and increasing the distances for patients to travel to receive care. Similarly, access barriers could be exacerbated for vulnerable populations. However, consolidating hospitals argue that, without financial support provided by mergers, hospitals might be forced to close.

We found two studies examining hospital consolidation in rural settings. Henke et al., 2021 (MQ: high), found that merged rural hospitals were more likely than independent hospitals to eliminate maternal, neonatal, and surgical care services. They also found a decrease in the number of mental health and substance use disorder–related stays at merged hospitals and their catchment areas and an increase in these types of stays in independent hospitals and their catchment areas, suggesting a potential unmet need in rural communities postmerger. However, even though this study used a difference-in-differences method with a carefully generated control group, there could still be unobserved differences between the acquired hospitals and the independent hospitals. It is possible that the acquired hospital might have had difficulties maintaining these services even in the absence of the merger. Understanding the counterfactual situation of a proposed merger (i.e., what would have happened in the absence of a merger, e.g., closure of a hospital) continues to be a challenge in studies of consolidation. O’Hanlon et al., 2019 (MQ: high), found that rural hospitals that became affiliated with integrated health systems experienced a significant reduction in diagnostic imaging technologies, obstetric and primary care service availability, and outpatient nonemergency visits. The authors interpreted these results as evidence of reduced access for patients who rely on these hospitals for these services.

Because we found only two studies examining the effect on patient access in rural settings, we graded the SOE as **insufficient**.

Effects on Health Care Wages

Hospitals in a highly consolidated market might possess monopsony power and drive down wages for health care workers. Studies have demonstrated that hospitals possess and exercise monopsony power in the market for mergers (Staiger, Spetz, and Phibbs, 2010). Although the effect of market consolidation on wages has been more extensively studied in markets outside the health care sector, we considered only evidence within the health care sector here, as the health care sector tends to involve skilled workers and has other unique features.

Sullivan, 1989 (MQ: medium), found that nurse wages decreased with increased consolidation. Prager and Schmitt, 2021 (MQ: high), directly examined the impact of 84 hospitals mergers nationally between 2000 and 2010 and found that mergers that significantly increased market concentration led to a reduction in wage growth for skilled workers, such as nurses, pharmacists, and other skilled nonhealth professionals, but not for nonskilled workers. Although Currie, Farsi, and Macleod, 2005 (MQ: high), found that nurses at acquired hospitals did not experience declines in wages, they did experience increases in patient caseloads.

Overall, we graded the SOE that hospital horizontal consolidation **decreases health care wages** as **low** because of limited evidence. Table 4.1 shows the summary of impacts of hospital horizontal consolidation.

Table 4.1. Summary of Impacts of Hospital Horizontal Consolidation

	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	14 high MQ 2 medium MQ	4 high MQ 2 medium MQ	11 high MQ 1 medium MQ	2 high MQ	2 high MQ 1 medium MQ
Impact	Increase in 15 studies and mixed (increase for three insurers and decrease for one insurer) in one study	Increase	No change in most measures; decrease in some patient outcomes and patient experience; increase following rural hospital merger in one study; increase in one study of full integration; set of quality metrics studied are limited by data availability	Decrease in services offered and use of care in two studies in rural settings	Decrease or no change in wages for nurses or skilled health care workers
SOE	High	Moderate	Moderate	Insufficient	Low

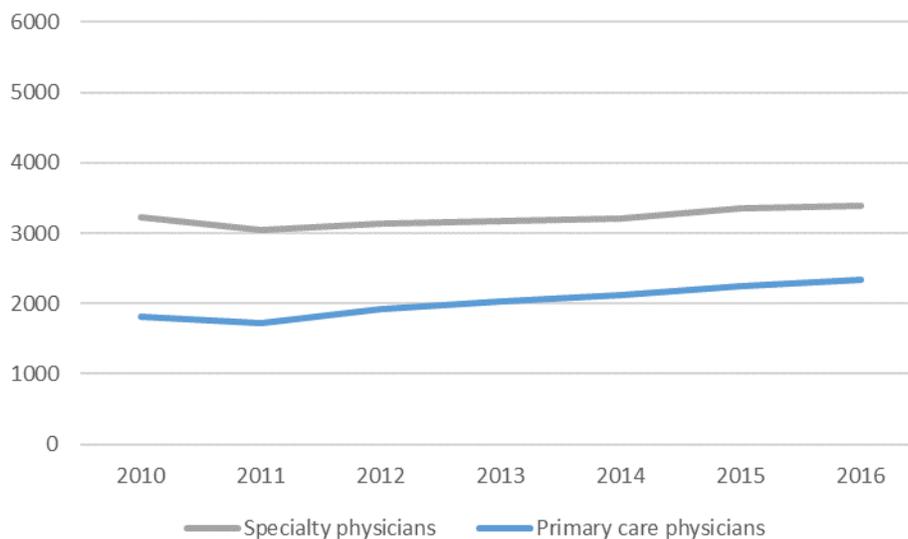
NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, MQ, consistency, directness, and applicability. Studies examining multiple outcomes might be included in more than one column.

Physician Practices

Trends

Physician practices have grown more consolidated in the past decade, with more physicians belonging to larger practices and fewer physicians in single or small practices (Capps, Dranove, and Ody, 2017; Muhlestein and Smith, 2016; Kane, 2021). This trend exists for a variety of specialties, including primary care, emergency medicine, orthopedic surgery, radiology, urology, and neurosurgery (Fulton, 2017; Singh et al., 2021; Pollock et al., 2022; Henretty and He, 2022; Rosenkrantz et al., 2020; Mitchell and Gresenz, 2022; Johnson and Frakt, 2020). Figure 4.4 shows the mean HHI by MSA for primary and specialty physicians from 2010 to 2016. As a result, 65 percent of MSAs were highly concentrated for specialists, and 39 percent were highly concentrated for primary care physicians in 2016 (Fulton, 2017). It is worth noting that the vast majority of physician practice mergers are mergers and acquisitions of very small practices or individual physicians rather than mergers of large physician organizations. These transactions are often not reported to the federal antitrust enforcement agencies because they are too small to fall under the Hart-Scott-Rodino reporting guidelines (Capps, Dranove, and Ody, 2017).

Figure 4.4. Physician Mean HHI by Metropolitan Statistical Area, 2010–2016



SOURCE: Adapted from Fulton, 2017, p. 1533.

Effect on Prices

The body of literature on the effect of horizontal physician practice consolidation on prices is smaller than that on hospital consolidation. This might be partly because, as previously mentioned, many physician practice consolidations are unreported to regulators and thus harder to measure with existing administrative data. Nevertheless, the existing literature has found that physician practices facing less competition have substantially higher prices. We found one study that directly examined the effect of physician practice mergers on prices, which found price increases of 15 to 25 percent (Koch and Ulrick, 2021 [MQ: high]). Three studies that examined the correlation between physician concentration and prices all found a positive correlation (Dunn and Shapiro, 2014 [MQ: high]; Baker et al., 2014; Austin and Baker, 2015 [MQ: medium]).

Overall, we graded the SOE that physician practice horizontal consolidation **increases health care prices** as **low** given the relatively few number of studies. We found only one study of high MQ that directly assessed the effect of physician practice consolidation on prices; however, the findings were consistent with three other studies that found an association between fewer physician practices and higher prices.

Effect on Spending

Two studies examined health care spending following physician practice consolidation, but the findings were not consistent. Koch, Wendling, and Wilson, 2018 (MQ: medium), found that for cardiology patients, living in a geographic area with higher cardiology market concentration is associated with higher risk-adjusted Medicare spending. However, the ability to adequately risk-adjust for patient complexity is limited by the lack of detailed clinical risk variables in Medicare claims data.⁴ Although information on age, gender, and chronic conditions were included, there was no data on disease severity. In contrast, Zhang et al., 2021 (MQ: high), found a decrease in total Medicare spending when a patient's primary care physician became affiliated with a larger organization. It is possible that the effect of consolidation on spending might be different for different specialties.

Overall, we graded the SOE on the effect of physician practice consolidation on cost as **insufficient** because of the inconsistency between the two studies.

Effect on Quality of Care

There is some evidence that the quality of care delivered by physicians suffers when physician practices face less competition. Koch, Wendling, and Wilson, 2018 (MQ: medium), found that an increase in consolidation among cardiology practices led to increases in negative health outcomes for their patients. They found that moving from a zip code at the 25th percentile

⁴ Many states have cardiac report cards that reflect risk-adjustment variables, such as those related to the severity and complexity of the disease that are not available in the Medicare claims data.

of cardiology market concentration to one at the 75th percentile is associated with a 5 to 7 percent increase in risk-adjusted mortality. Similarly, Eisenberg, 2011 (MQ: medium), found that cardiologists who face less competition have patients with higher mortality rates, although it is possible that these results might be driven by unmeasured confounders, including social determinants of health for the patient population.

In contrast, an earlier study by Epstein, Ketcham, and Nicholson, 2010 (MQ: medium), suggests that consolidation is associated with greater specialization and better patient matching in obstetric care, and it provides some evidence that such specialization led to improvement in patient outcomes. High-risk patients matched to specialized providers were less likely to have any of the 12 adverse postpartum outcomes. However, when the effect of matching to a specialized physician on each of the 12 outcomes were examined individually, none of the coefficients were statistically significant; some coefficients were positive while others were negative.

There is a need for more evidence on the effect of physician practice consolidation on organizational and management practices that are the intermediate mechanisms toward quality improvement, for example, whether larger practices can and do leverage their resources to develop and use tools to improve quality and reduce cost. O’Hanlon, Whaley, and Freund, 2019, found that physician practice consolidation increased the number of patients shared by different physicians and the stability of the proportion of shared patients across physicians over time. Among physicians sharing patients, increased patient sharing might indicate improvement in care coordination between the physicians. This would be consistent with the argument that physician practice consolidation might increase continuity of care and the referral base for patients, but there has been little evidence that has shown that such changes translate to improvements in patient outcomes.

Overall, we graded the SOE on the effect of physician practice consolidation on quality of care as **insufficient**. We found three studies with medium MQ that looked directly at this relationship, and they focused on cardiology and obstetric practices.

Effect on Patient Access

We did not find any studies that assessed the effects of physician practice consolidation on patient access; therefore, we graded the SOE as **insufficient**.

Effect on Health Care Wages

We did not find any studies that assessed the effects of physician practice consolidation on health care wages; therefore, we graded the SOE as **insufficient**. Table 4.2 shows the summary of impacts of physician horizontal consolidation.

Table 4.2. Summary of Impacts of Physician Horizontal Consolidation

	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	2 high MQ 2 medium MQ	1 high MQ 1 medium MQ	3 medium MQ	0	0
Impact	Increase in one merger analysis (high MQ) and three cross-sectional analyses	Mixed evidence with decrease in one study (high MQ) and increase in another study (medium MQ); might vary depending on degree of integration	Mixed evidence with decrease in two studies (negative health outcomes and increase in mortality) and increase in one study; evidence limited to cardiology and obstetrics	No evidence	No evidence
SOE	Low	Insufficient	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, MQ, consistency, directness, and applicability. Studies examining multiple outcomes might be included in more than one column.

Chapter Summary

There is strong evidence that horizontal consolidation of hospitals leads to increases in prices paid to providers and health care spending, but low evidence that physician horizontal consolidation leads to increases in prices and insufficient evidence for health care spending. We found moderate evidence suggesting no change or declines in quality of care on average in hospitals following consolidation; however, there have also been two studies finding improvements in quality of care in rural settings and with “full” integration, including aspects of clinical integration. We found insufficient evidence on physician practice consolidation on quality of care. Newer literature studying the effect of consolidation on provider costs and the degree of operational and clinical integration between consolidating organizations is sparse but so far has not shown substantial cost reduction or meaningful clinical integration. There is low evidence that hospital consolidation is associated with reduced health care wages, and insufficient evidence on the effects of hospital consolidation on access to care. Evidence for the effects of physician consolidation on both patient access and health care wages is insufficient.

Gaps in knowledge and potential future directions for research are as follows:

- incomplete understanding of the effects of hospital and physician consolidation on quality of care across a broad set of quality measures
- lack of understanding on the heterogeneity observed in the effects of consolidation on quality of care, including across measures that have been studied and in different settings and populations
- limited evidence on what forms of integration are achieved following consolidation events and whether they lead to quality improvement

- insufficient or weak evidence on the effects of physician horizontal consolidation on access to care and health care wages.

Understanding of the effects of consolidation might be improved with studies that use a broader set of quality measures and a longer time period following consolidation events. Better clinical data, including data on intermediate clinical process and patient safety metrics and more-granular risk-adjustment data than those available in claims data are needed to provide a more comprehensive picture of the effect of provider consolidation on quality of care. The existing literature on the effect of consolidation on quality of care only focuses on a selected set of specialties, such as cardiology. Further work is needed to understand the effect of consolidation on a broader set of specialties, including behavioral and mental health. There is also a need to better understand the implications of hospital and physician consolidation for patient access and quality of care for subpopulations, such as rural residents, the uninsured and underinsured populations, and those with social risk factors, as well as for different types of providers who serve these subpopulations.

The literature on the effects of consolidation of physician practices is notably thinner than the literature on hospital consolidation. Part of the challenge is that it is difficult to obtain timely and accurate data on provider organization and ownership, especially physician organization and ownership. Recent initiatives, such as the RAND Center of Excellence on Health System Performance under the AHRQ-funded Comparative Health Systems Performance Initiative, have made advances in generating a comprehensive data set that characterizes ownership and management relationships between providers, but more information on softer forms of consolidation and the level and nature of clinical integration among providers is still needed (RAND Corporation, undated).

5. Insurer Horizontal Consolidation

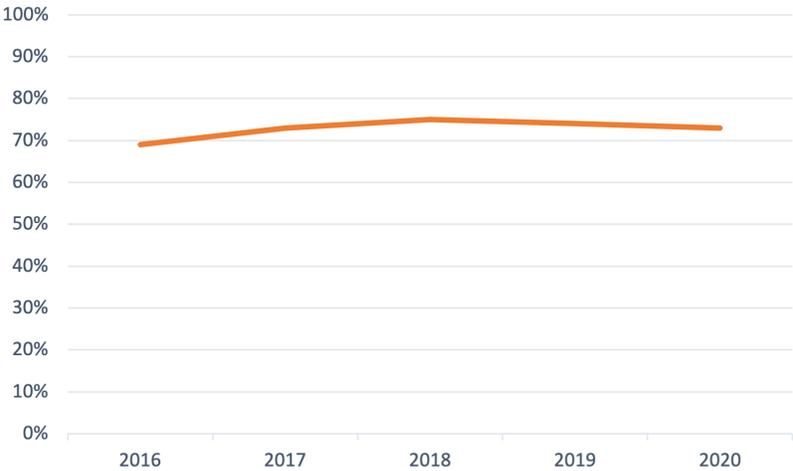
Consolidation in the insurance market has important implications for a well-functioning health care sector. The large majority (91.4 percent) of people in the United States had health insurance coverage in 2020, with 54.4 percent covered by employer-sponsored insurance and 10.5 percent covered by direct-purchase insurance (Keisler-Starkey and Bunch, 2021).⁵ In addition to administering insurance plans, insurers negotiate prices with providers, so market competition among insurers has implications for both insurance premiums and the amounts paid to providers.

Commercial Insurers

Trends

The health insurance industry is highly concentrated. Fulton, 2017, found that 57 percent of health insurance markets were highly concentrated in 2016. The American Medical Association (AMA) reported that 69 to 73 percent of metropolitan areas were highly concentrated (HHI above 2,500) in 2016 to 2020 (AMA, 2021; Figure 5.1).⁶

Figure 5.1. Share of Metropolitan Statistical Areas with Highly Concentrated Insurer Markets, 2016–2020



SOURCE: AMA, 2021.

⁵ Because people can be covered by more than one type of insurance, these estimates are not mutually exclusive.

⁶ The AMA used a different insurer definition, including exclusive provider organizations, than Fulton, 2017.

The box that follows provides an example of recent litigation involving insurer horizontal consolidation.

Litigation Example: Insurer Horizontal Consolidation

In 2015, Anthem announced a \$54 billion merger deal with Cigna, which would have been the largest health insurance merger on record (Livingston, 2017), and Aetna announced a \$38 billion merger deal with Humana (Herman, 2015; Livingston, 2017). Had both of these mergers happened, the number of large health insurers in the country would have decreased from five to three. Anthem would have covered more than half of beneficiaries in nationwide, employer-sponsored plans, and Aetna would have become the largest MA insurer in the country (Herman, 2015; DOJ, 2016). The impetus for these mergers might have reflected an attempt to counter increasing provider consolidation and to corner new and growing individual insurance and MA markets (Picker and Abelson, 2016).

In 2016, the DOJ and a group of states brought separate lawsuits to challenge these mergers (*State of New York, State of Tennessee, and the Commonwealth of Virginia v. Anthem, Inc. and Cigna Corp.*, 855 F.3d 345 [D.C. Cir. 2017]; Livingston, 2017). In the winter of 2017, federal judges blocked the mergers after concluding that they would weaken competition and subsequently lead to premium increases without yielding sufficient efficiency gains (de la Merced and Picker, 2017). Commentators at the time suggested that insurers would continue to seek to increase their market power through smaller mergers that would face less resistance from antitrust agencies (Picker and Abelson, 2016; Herman, 2016).

Effect on Prices

Few studies directly examine the effect of insurer consolidation on prices paid to providers. One study of a single merger found that insurer consolidation led to slower earnings growth for physicians, suggesting that this merger might have lowered prices paid to providers (Dafny, Duggan, and Ramanarayanan, 2012 [MQ: high]). Three other studies examined the correlation between insurer consolidation and price and found that higher insurer concentration is associated with lower prices paid to providers (Dauda, 2018 [MQ: high]; Cooper et al., 2019 [MQ: high]; Trish and Herring, 2015 [MQ: medium]).

We graded the SOE that insurer consolidation **decreases health care prices** as **low**. More evidence is needed to understand the effect of insurer consolidation on prices paid to providers. This area has been historically challenging to study because of the difficulty in obtaining data on negotiated prices, but recent price transparency initiatives and development of all-payer claims databases (APCDs) might open up more opportunities to study this effect.

Effect on Premiums and Spending

For insured consumers, their total health care spending is the sum of premiums and the amount of cost sharing that they contribute toward their medical expenses according to the terms of their plans. There is strong evidence that insurer consolidation drives up premiums. Although large insurers might be able to negotiate lower prices with providers, increased market concentration also reduces the insurers' incentives to pass savings to customers. Studies on the effect of insurer consolidation on premiums and health care spending can be difficult to conduct because data on insurance premiums and the underlying insurer costs is typically proprietary.

Although there are a few high-quality studies on the effect of insurer consolidation on premiums, these studies examine a small number of mergers. A study of the Aetna-Prudential mergers in 1999 found that the mergers led to a 7 percent increase in premiums for large employers (Dafny, Duggan, and Ramanarayanan, 2012 [MQ: high]). Similarly, a study of the 2008 Sierra-United merger found a 14 percent increase in small group premiums as a result of the merger (Guardado, Emmons, and Kane, 2013 [MQ: high]). Where data have been available, research has consistently shown that markets with higher insurer concentration and fewer competitors have higher premiums (Ho and Lee, 2017 [MQ: high]; Dafny, 2010; Jacobs, Banthin, and Trachtman, 2015; Scheffler et al., 2016 [MQ: medium]).

We graded the SOE that insurer consolidation **increases health care spending as moderate**. There is consistent and high-quality evidence that insurer consolidations increase premiums; however, we found no studies on the effect of private insurer consolidation on the amount of cost sharing. It is possible, though unlikely, that insurer consolidation would lead to a decrease in consumer out-of-pocket spending greater than the premium increase, resulting in lower total health care spending. In addition, some of the merger studies on the effect of insurer consolidation were prior to 2014, when the medical loss ratio restriction in the Affordable Care Act (ACA) went into effect and restricted insurers' profits. It is possible that after the ACA, insurers' ability to raise premiums would be more limited, even with market power.

Effect on Quality of Care

Although some insurers have argued that consolidation might improve quality of care if insurer scale enables them to better implement value-based payment or care management programs, no studies have shown this effect as a direct result of consolidation. Experts have been skeptical of a positive association between insurer consolidation and quality of care because insurers in consolidated markets lack the incentive for improvement (Dafny and Lee, 2015). There have been very few studies that examine the relationship between insurer consolidation and quality of care. Hanson, Herring, and Trish, 2019 (MQ: medium), found a positive association between insurer concentration and patient experience, but the study did not directly look at consolidation events.

We graded the SOE on the effect of insurer consolidation on quality as **insufficient** because we found only a single study.

Effect on Patient Access

Although patient access could decrease when premiums increase, we did not find any studies directly assessing the effects of consolidation on access to care. We graded the SOE on the effect of insurer consolidation on access as **insufficient** because of the lack of studies.

Effect on Health Care Wages

A highly consolidated insurer market might lead to monopsony power and reduced wages, but there is a dearth of studies in this area. We identified only one study that found that the 1999 Aetna–Prudential merger reduced health care employment and wages in geographic areas where there was more substantial market overlap between the two insurers (Dafny, Duggan, and Ramanarayanan, 2012 [MQ: high]). We graded the SOE as **insufficient** based on a single study. Table 5.1 shows the summary of impacts of commercial insurer horizontal consolidation.

Table 5.1. Summary of Impacts of Commercial Insurer Horizontal Consolidation

	Health Care Prices	Health Care Spending and Premiums	Quality of Care	Patient Access	Health Care Wages
Number of studies	3 high MQ 1 medium MQ	3 high MQ 3 medium MQ	1 medium MQ	0	1 high MQ
Impact	Decrease	Increase in premiums; incomplete evidence on total spending (premiums plus cost sharing)	Increase in patient experience	No direct evidence but might decrease with premium increase	Decrease in health care employment and wages following a merger
SOE	Low	Moderate	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability. Studies examining multiple outcomes might be included in more than one column.

Insurer Markets with Regulated Competition

An increasing share of beneficiaries are enrolled in government-financed private plans, including MA plans and Medicaid managed care organizations (MCOs; Mani et al., 2019; Freed et al., 2021). These markets are subject to more regulatory complexities and changes than the commercial insurance market. In 2021, 42 percent of all Medicare beneficiaries were enrolled in an MA plan (Freed et al., 2021). In 2019, 70 percent of Medicaid enrollees were in a Medicaid MCO plan (Mathematica, 2021).

Similar to commercial markets, it is important to maintain a healthy level of competition for these markets to function well. But because these markets are highly regulated, entry and exit decisions in response to regulatory and payment changes play at least as large of a role in determining market concentration for these government-financed private plans as consolidation.

Medicare Advantage

There is some evidence that the MA market has grown more concentrated over time. The combined market shares of the four leading MA insurers increased by 13 percentage points

between 2011 and 2015, from 57 to 61 percent (Dafny, 2015). This is not too surprising, given that the leading MA insurers are also top players in the commercial insurance markets. In most areas of the United States, the markets for MA plans are quite concentrated. Although beneficiaries often have many plans to choose from, these plans are offered by just a handful of firms (i.e., parent organizations), including Blue Cross Blue Shield, UnitedHealth, Aetna, and Kaiser Permanente. One calculation suggests that 73 percent of Medicare beneficiaries live in counties where the MA market would be deemed “highly concentrated” per DOJ and FTC guidelines (Frank and McGuire, 2019). However, because MA beneficiaries always have the option to choose the Medicare fee-for-service option, the level of competition that MA plans and insurers face might be greater than what measures of concentration within the MA landscape indicate.

Few studies have directly examined the impact of consolidation of MA insurers. We found one study of high MQ that provided indirect evidence and looked at the effect of market concentration on plan generosity (Pelech, 2018). We also found one study of medium MQ that examined the effect on plan ratings (Adrion, 2019). Pelech, 2018 (MQ: high), studied an increase in market concentration for MA plans as a result of policy-induced plan exits and found that plan exits were associated with reduced generosity of the remaining plans, as measured in expected out-of-pocket spending. This study also noted that the negative effect of plan exits on plan generosity in a particular type of MA plans (private fee-for-service plans) is greater in markets with high provider concentration. Adrion, 2019 (MQ: medium), compared MA plans in less- and more-concentrated markets and found that MA plans that tend to operate in more-concentrated MA markets had a higher predicted probability of receiving a high-quality health plan rating. Operating in more-concentrated MA markets was also found to be associated with higher premiums. However, this study included a limited number of controls, and patient case-mix might be a factor that drives both quality of care and plan rating.

Overall, we graded the SOE on the effects of MA consolidation as **insufficient** given the limited and mixed evidence. Table 5.2 shows the summary of impacts of MA horizontal consolidation.

Table 5.2. Summary of Impacts of Medicare Advantage Horizontal Consolidation

	Health Care Prices	Health Care Spending and Premiums	Quality of Care	Patient Access	Health Care Wages
Number of studies	0	1 high MQ 1 medium MQ	0	1 high MQ 1 medium MQ	0
Impact	No evidence	More-concentrated MA market has higher premiums Indirect evidence: decrease in plan generosity when MA plan exits, which might decrease health care spending if demand for health care among beneficiaries decreases with cost sharing	No evidence	Mixed indirect evidence: decrease in plan generosity in one high-MQ study on MA plan exits; increase in plan ratings in one medium-MQ study	No evidence
SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability.

Medicaid Managed Care Organizations

Medicaid MCOs also offer regulated competition within insurance markets. There were some early studies on the role of competition in the Medicaid market during rapid growth of MCOs in the 1990s (Boben, 2000), but relatively few recent studies have been conducted in this area despite industry trends showing rapid increase in consolidation. In New York state, the number of Medicaid managed care companies declined from 14 to seven, from 1995 to 2017, and the market share of the top five firms grew to 93 percent in 2017 (New York Health Plan Association, 2017). In 2010, just over half of Medicaid MCO beneficiaries nationally enrolled in a plan covering more than 500,000 lives; by 2016, this share increased to 70 percent (Mani et al., 2019). Similar to MA, commercial insurance companies are important players in the Medicaid MCO markets, so consolidation in the commercial insurance markets would affect competition in Medicaid MCO markets as well. The Medicaid MCO market is also affected by entry of new players (start-ups, venture capital, safety net providers), so entry and exit play as much of a role in the competitiveness of this market as consolidation.

Research on the consequences of consolidation and market concentration of Medicaid MCOs is very limited. There are a few challenges in implementing rigorous studies in this area. First, detailed, accurate claims and payment data on Medicaid MCOs are difficult to obtain because the reporting of these data are often not a requirement for government payment (HHS, Office of Inspector General, 2021). Second, as a state-administered program, the implementation and regulatory details vary substantially across the states. The implication of market concentration often depends on these details, such as coverage requirements, risk adjustment policies, and enrollment and assignment mechanisms (Layton, Ndikumana, and Shepard, 2018).

A couple of studies might shed light on the implications of market concentration and competition in Medicaid MCO markets, though neither directly looked at the effect of consolidation. Millet, Chattopadhyay, and Bindman, 2010 (MQ: medium), compared California beneficiaries in counties with plan choice and those without plan choice and found that counties with choice were less likely to have continuity in enrollment and had higher risk-adjusted admissions for ambulatory care sensitive conditions. Thus, the potential benefits of health plan choice might be undermined by the burden of a more complex enrollment decision, which might lead to some consumers giving up on the enrollment process or suboptimal enrollment choices. Another study by Kuziemko, Meckel, and Rossin-Slater, 2013 (MQ: high), found that infant mortality increased for Black children but decreased for Hispanic children after a county transitioned its Medicaid administration from fee-for-service to MCOs. The authors of this study suggested that competitive pressure might drive plans to select away from high-cost patients.

Overall, we graded the SOE on the effects of consolidation in Medicaid managed care as **insufficient**. We did not find any studies that directly studied consolidation in these markets. This might be partially because concentration in these markets is more affected by entry and exit of firms rather than the consolidation of firms. Table 5.3 shows the summary of impacts of Medicaid Managed Care horizontal consolidation.

Table 5.3. Summary of Impacts of Medicaid Managed Care Horizontal Consolidation

	Health Care Prices	Health Care Spending and Premiums	Quality of Care	Patient Access	Health Care Wages
Number of studies	0	0	0	1 high MQ 1 medium MQ	0
Impact	No evidence	No evidence	No evidence	Indirect evidence: decrease in Medicaid MCO plan choice in one medium-MQ study and increase in infant mortality for Black children interpreted as possible result of decreased access in one high-MQ study	No evidence
SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability.

Chapter Summary

The literature suggests that insurer consolidation leads to lower prices and higher premiums. Higher premiums contribute to higher health care spending but could also have implications for lower out-of-pocket spending or reduced patient access. Although there is some evidence that

consolidated insurers might be able to negotiate lower prices with providers, there is little evidence that these lower prices are passed on to employers and consumers.

Gaps in knowledge and potential future directions for research are as follows:

- limited evidence on the effects of insurer consolidation on health care prices paid to providers
- insufficient evidence on the effects of insurer consolidation on quality of care, patient access, and health care wages
- insufficient evidence on the effect of insurer consolidation in highly regulated markets, such as MA and Medicaid MCOs, and the interplay with consolidation in commercial markets.

A key constraint in studying the effects of insurer consolidation on prices is data availability. Increased access to data on commercial prices might be possible with price transparency initiatives and APCDs. However, there is no federal APCD and not all states have APCDs; as of this writing, 31 states have an APCD or are in the process of developing one (APCD Council, undated).

6. Vertical Consolidation

Vertical consolidation occurs between organizations that do not directly compete with one another in health care markets. Unlike horizontal consolidation, which has long been scrutinized by antitrust enforcement agencies, vertical consolidation has only more recently garnered attention from researchers and policymakers as it has become widespread and could be accelerated by the coronavirus disease 2019 (COVID-19) pandemic (Kocher, Shah, and Navathe, 2021). This chapter focuses on consolidation of hospitals and physician practices and of hospitals and physician practices with insurers.

Economic theory on the effects of vertical consolidation for health care is unclear. Post, Buchmueller, and Ryan, 2017, discussed two possible paths: (1) elimination of inefficiencies in production (e.g., aligning incentives, reducing transaction costs) and (2) gains of market power (e.g., vertical foreclosure, horizontal consolidation as a by-product) or comparative advantages (e.g., improving innovation efficiency). In theory, vertical consolidation could lead to greater integration of care across providers in different settings and in turn improve care management and care coordination, reduce low-value care, reduce transaction costs, better align incentives, and increase system-specific investments, such as upgrading information systems. However, it could also lead to increased bargaining power, reduced competition, reconfiguration of the payment mix of nonsystem-affiliated providers, and foreclosures of independent practice groups (e.g., if system-affiliated providers steer patients toward other providers in their system). Health care systems with large provider networks could leverage their bargaining power to negotiate with private insurers for higher prices. The ultimate effects on prices, health care costs, and quality of care are ambiguous. For example, better alignment of incentives between hospitals and physicians could lead to cost reductions—or it could lead to prioritization of profits over patients' health, by referring patients to hospitals for treatment and benefiting from arbitrage opportunities created by site-of-service payment differentials (Chernew, 2021).

The ambiguity of theoretical predictions creates challenges for policymakers and regulators. In 2020, the FTC released the Vertical Merger Guidelines, which describe how the DOJ and FTC analyze nonhorizontal mergers and acquisitions and enforce policies (DOJ and FTC, 2020). Because of the inconclusive theoretical basis and empirical evidence, the FTC withdrew the guidance in 2021 (FTC, 2021b). However, the guidelines are still in effect for the DOJ (DOJ, 2021).

Despite this lack of clarity on its economic effects, there are various empirical studies about the effects of vertical consolidation. Post, Buchmueller, and Ryan, 2017, and Machta et al., 2019, summarized articles that focus on the effects of vertical consolidation on prices, spending, and quality of care published before February 2017 and November 2016, respectively. Building on these two review articles, this chapter extends the examination of the effects of vertical

consolidation to articles published from 2017 to 2021 for all outcomes and also on patient access and health care wages, which were not part of the existing review articles.

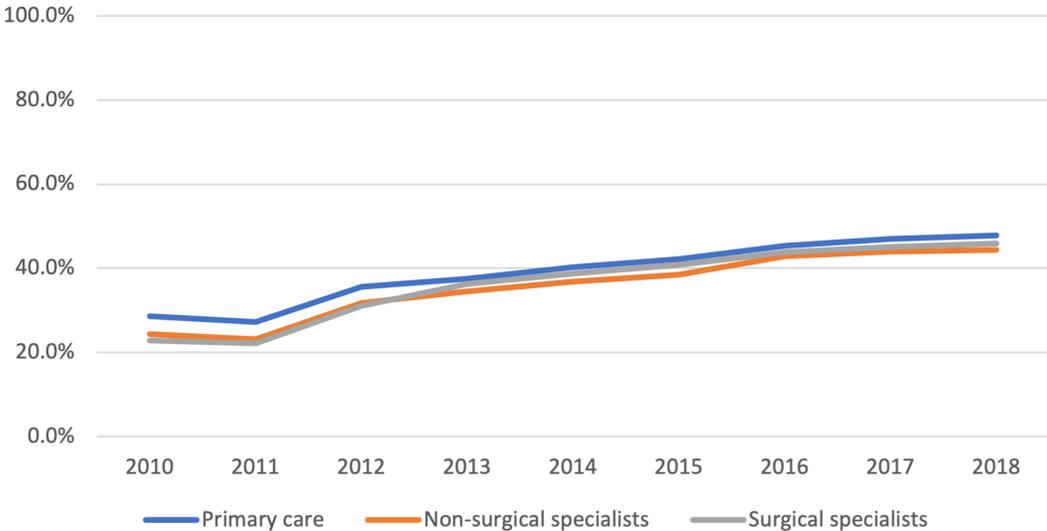
Hospitals and Physicians

Trends

Vertical consolidation between hospitals or health systems and physicians is increasing. Nearly all published research on vertical consolidation of physicians into hospitals or health systems examines ownership or employment forms of consolidation that entail structural integration.

A 2021 report by the AMA found that more than 50 percent of U.S. physicians are employed by a hospital or health system, a roughly 20 percent increase from 2012 (Kane, 2021). The number has been rising even more dramatically during the COVID-19 pandemic, with a 6.6 percent increase from January 2019 to January 2021 (Physicians Advocacy Institute, 2021). Several studies have also documented the increase in the number of physician practices that are owned by or are members of a hospital or health system (Richards, Nikpay, and Graves, 2016; Barnes et al., 2022; Haddad, Resnick, and Nikpay, 2020; Nikpay, Richards, and Penson, 2018; Whaley, Arnold, et al., 2021; Alpert, Hsi, and Jacobson, 2017). Figure 6.1 shows the percentage of physicians in practices owned by hospitals or health systems, which increased from 23 to 29 percent in 2010 to 44 to 48 percent in 2018, depending on physicians’ specialties.

Figure 6.1. Percentage of Physicians in Practices Owned by Hospitals or Health Systems, 2010–2018



SOURCE: Adapted from Whaley, Arnold, et al., 2021, p. 1869.

Aside from ownership, other types of vertical consolidation are occurring. Provisions in the ACA prompted the design and testing of many innovative delivery and alternative payment models, such as ACOs, which are groups of physicians, hospitals, and other health care providers who come together voluntarily to share financial risk and to deliver coordinated care to patients. To bear financial risk, ACOs must accrue size (i.e., number of covered lives), which has fostered increasingly large health care organizations through either ownership or contractual arrangements. Because of the increasing prevalence of total cost of care contracts and other ACA provisions, such as hospital readmission penalties, there is pressure for hospitals to steer care away from inpatient settings and to their ambulatory care settings, which further incentivizes acquisition or contracts with independent physician practices and expansion of their referral networks.

CINs are another emerging form of vertical consolidation, in which independent physician practices affiliate contractually with hospitals and health systems but are not directly owned by health systems (Ridgely, Timbie, et al., 2020). These “softer” forms of consolidation aim to help systems gain size and referral networks without bearing the expense of purchasing a practice. A key challenge with understanding trends in softer forms of vertical consolidation, such as CINs or entities that operate jointly through memorandum of understanding (MOU) agreements, is that existing administrative data on health care organizations and the relationship of entities to one another focus on ownership or management relationships, and these data do not capture CINs or entities operating through MOUs. As a result, these softer forms of consolidation remain invisible to researchers, policymakers, and regulators, and the effects of these arrangements have been unstudied.

Physicians’ individual preferences might also be contributing to trends of increased consolidation. Neprash, McWilliams, and Chernew, 2020, found that, compared with physicians who had been in the Medicare market before 2008, physicians who entered between 2009 and 2017 were more likely to practice in large group and hospital-owned practices than independent practice groups.

Effect on Prices

Overall, we found ten studies examining the effect of vertical consolidation between hospitals or systems and physicians on prices paid to providers. Eight studies showed increases in prices, one found no significant effects, and one found mixed effects.

Six studies showed increases in prices after vertical consolidation by hospitals acquiring or sharing ownership with practice groups (Scheffler, Arnold, and Whaley, 2018; Cuellar and Gertler, 2006 [MQ: medium]; Baker, Bundorf, and Kessler, 2014; Capps, Dranove, and Ody, 2018; Carlin, Feldman, and Dowd, 2017; Whaley, Zhao, et al., 2021 [MQ: high]). The estimated magnitude of effects varied by physician specialty and type of services. For example, Capps, Dranove, and Ody, 2018 (MQ: high), found a 15.1 percent increase in price for primary care

physicians and a 33.5 percent increase for cardiologists in markets with high vertical consolidation.

In addition, a recent study examined prices for independent physician practices that joined, but were not acquired by, system-led and nonsystem-led ACOs (Lyu, Chernew, and McWilliams, 2021 [MQ: high]).⁷ In comparison with independent non-ACO practices, practices joining system-led ACOs had small price increases of 4 percent on average for office visits, whereas those joining nonsystem-led ACOs had no significant changes in prices. Although we did not explicitly search for studies on ACOs (which can take many different forms), ACOs involving partnering of previously unaffiliated organizations might be considered a form of vertical consolidation involving nonownership arrangements.

A key driver of higher prices among vertically consolidated entities is a shift in the place of service delivery to higher-cost settings, specifically the hospital or hospital outpatient department where the system can bill both professional and facility fees. Results from multiple studies suggest that physicians working in hospital-owned practices are more likely to refer patients to hospitals than freestanding facilities, which results in higher facility fees (Capps, Dranove, and Ody, 2018; Whaley, Zhao, et al., 2021 [MQ: high]). Furthermore, studies have found that physicians integrated with hospitals changed their referral patterns, steering more patients to the owning hospitals (Baker, Bundorf, and Kessler, 2016 [MQ: high]; Carlin, Feldman, and Dowd, 2016). Results from Baker, Bundorf, and Kessler, 2016 (MQ: high), also suggest that those owning hospitals are more likely to be higher-cost, less convenient, and lower-quality options.

We found two studies with mixed or no effect on prices. One of these studies focused on only office-based evaluation and management visits and showed that a higher ratio of physicians working at hospital-owned practices was associated with price increases for primary care, orthopedists, and cardiologists, but not for obstetrician-gynecologists or oncologists (Godwin et al., 2021 [MQ: medium]). The second is an older study that found no association between practices that were part of a PHO or integrated service model and price (Ciliberto and Dranove, 2006 [MQ: medium]).⁸

We graded the SOE that hospital-physician integration **increases health care prices** as **moderate**. Although we found ten studies that examined the effect on prices and eight of them had consistent findings of a positive correlation between vertical consolidation and prices (with six studies of high MQ), we downgraded the SOE to moderate because of the two studies that found mixed effects or no effect on prices.

⁷ System-led ACOs are ACOs in which a health system owns or employs a plurality of the ACO's primary care physicians. Nonsystem-led ACOs are those with a nonsystem entity that accounts for a plurality of the ACO's primary care physicians.

⁸ Integrated service models are organizations in which hospitals and physicians share common ownership, i.e., hospitals purchase physician practice groups, and physicians become employees of hospitals.

Effect on Spending

Similar to most of the studies on the effect of vertical consolidation on price, nine studies have found increases in medical spending associated with vertical consolidation (Madison, 2004; Robinson and Miller, 2014; Neprash et al., 2015; Ho et al., 2020; Post et al., 2021 [MQ: medium]; Koch, Wendling, and Wilson, 2017; Whaley, Zhao, et al., 2021; Baker, Bundorf, and Kessler, 2014; Richards, Seward, and Whaley, 2022 [MQ: high]). We found five studies that examined the Medicare population. The study by Madison, 2004 (MQ: high), found that hospitals with salaried physicians were associated with higher inpatient expenditures, whereas PHO hospitals were associated with higher outpatient expenditures. Koch, Wendling, and Wilson, 2017 (MQ: high), found higher Medicare expenditures for physicians working at acquired practices and for acquiring hospitals following consolidation. Whaley, Zhao, et al., 2021 (MQ: high), found ownership-based vertical consolidation was associated with higher spending on imaging and lab tests. Post et al., 2021 (MQ: medium), found that physicians who primarily practice at hospitals had higher Medicare reimbursement amounts. Richards, Seward, and Whaley, 2022 (MQ: high), found, across all payers, the total annual charges of acquired physicians increased about 10 percent, and Medicare charges accounted for more than one-third of this increase. For the privately insured population, studies found hospital-owned physician groups incurred higher annual expenditures per patient than physician-owned groups, for commercial health maintenance organization (HMO) enrollees in California (Robinson and Miller, 2014 [MQ: medium]) and for Blue Cross Blue Shield preferred provider organization (PPO) enrollees in Texas (Ho et al., 2020 [MQ: medium]). Neprash et al., 2015 (MQ: medium), found that vertical consolidation (measured by the proportion of billings at hospital outpatient departments versus freestanding facilities) was associated with higher outpatient spending, but an insignificant increase in inpatient spending. Baker, Bundorf, and Kessler, 2014 (MQ: high), found that hospital ownership of physician groups was associated with higher hospital spending among people with employer-sponsored insurance.

Both price and utilization contribute to increases in spending. Findings from Baker et al., 2014 (MQ: high), Neprash et al., 2015 (MQ: medium), Koch, Wendling, and Wilson, 2017 (MQ: high), and Whaley, Zhao, et al., 2021 (MQ: high), suggest that spending increases are coupled with price increases. In terms of utilization, Madison, 2004 (MQ: high), found higher procedure rates, and Koch, Wendling, and Wilson, 2017 (MQ: high), found greater volume at hospitals, either of evaluation and management claims or any type of claim.

We graded the SOE that hospital-physician integration **increases health care spending as high**. All nine studies examined show evidence of an increase in spending associated with vertical consolidation.

Effect on Quality of Care

Empirical studies examining the effect of vertical consolidation on quality of care showed mixed effects. We found nine studies examining the association between vertical consolidation of hospitals and physicians and quality of care (Madison, 2004; Cuellar and Gertler, 2006; Scott et al., 2017; West, Johnson, and Jha, 2017; Ho et al., 2020; Timbie et al., 2020 [MQ: medium]; Carlin, Dowd, and Feldman, 2015; Crespín et al., 2016; Short and Ho, 2020 [MQ: high]).

Findings from two studies suggest no effects on quality of care (Scott et al., 2017; Madison, 2004). Madison, 2004 (MQ: medium), examined patients admitted with acute myocardial infarction and found that hospital-physician affiliation had no effect on patient treatment or on three outcomes: the rate of receiving a catheterization or angioplasty or bypass surgery, readmission rate, and 90-day mortality rate. In addition to finding no effect on measures of clinical quality, Scott et al., 2017 (MQ: medium), also found no association between physician employment by hospitals and patient satisfaction.

Two studies using American Hospital Association (AHA) survey data examined hospital and physician arrangements, some of which involve vertical consolidation. These studies found mixed effects: Fully integrated organizations (FIOs; foundation and salary models with employed physicians by hospitals or health systems) had small positive effects on some measures of quality, while less integrated arrangements (open PHOs and closed PHOs) had no effect on quality of care. Cuellar and Gertler, 2006 (MQ: medium), found FIOs were associated with small improvements in inpatient mortality rates for managed care patients and had no effect on patient safety indicators for managed care patients and indemnity patients. Open PHOs and closed PHOs had no effect on mortality and patient safety. Out of 29 measures of clinical quality, Short and Ho, 2020 (MQ: high), found that FIOs were associated only with lower readmission rates and better adherence to the continuation of beta-blockers, and closed PHOs were associated with only lower readmission rates. For other measures of clinical processes of care and patient satisfaction, the association between performance on those measures and different forms of vertical consolidation (PHOs or FIOs) was not significant.

Ho et al., 2020 (MQ: medium), also found mixed results: Compared with patients treated by physician-owned practices, those treated by hospital-owned practices were less likely to receive cholesterol testing (for diabetic patients), were more likely to receive breast cancer screening (for women ages 50 to 64), and had no significant difference in 30-day readmission rates or other recommended tests for diabetic patients.

Three studies found associations with clinic acquisition by a hospital or health system and performance on certain quality measures, including higher colorectal and cervical cancer screening rates among some of the 12 clinics in the Minneapolis–Saint Paul, Minnesota area (Carlin, Dowd, and Feldman, 2015 [MQ: high]); better diabetes care performance (Crespín et al., 2016 [MQ: high]); and lower mortality rates from acute myocardial infarction and congestive heart failure, lower readmission rates, and lower pneumonia mortality rates (West, Johnson, and

Jha, 2017 [MQ: medium]). The first two studies used better analytical methods (e.g., differences-in-differences) than the third study, and the magnitude of observed improvement was small.

In addition to the average effects on quality of care, Timbie et al., 2020 (MQ: medium), compared health system–affiliated and –nonaffiliated physician organizations on racial and ethnic disparities using 12 quality measures and found Black and Hispanic Medicare beneficiaries received worse care for five of the 12 measures compared with White beneficiaries for both affiliated and unaffiliated physician organizations. Although one might hypothesize that health system affiliation might confer benefits through greater investments in quality improvement or improved care coordination, this study found that being affiliated with a health system was not associated with reduced racial and ethnic disparities. In fact, system-affiliated organizations had larger disparities, after controlling for case mix, than nonsystem-affiliated organizations.

We graded the SOE on the effect of hospital-physician integration on the quality of care as **low** because of **mixed findings and the small number of measures evaluated**. Among the nine articles we assessed, three found small quality improvements associated with hospital-physician integration, three found mixed results, two found no significant effect on the average quality of care, and one found small to insignificant effects on the size of racial and ethnic disparities. The vertical consolidation of hospitals and physicians into health systems could, in theory, lead to improvements in quality of care, although the effects are likely to vary based on various factors, in particular the degree to which clinical integration is achieved among the consolidating entities.

Effect on Patient Access

We found only two studies that examined the effect of vertical consolidation of hospitals and physician practices on access to care: Haddad, Resnick, and Nikpay, 2020 (MQ: high), and Richards, Nikpay, and Graves, 2016 (MQ: medium). Both studies suggested that hospital or system ownership of a physician practice increased the likelihood of physicians in the system accepting Medicaid patients.

We graded the SOE on the effect of hospital-physician vertical consolidation on access as **insufficient**. We only identified two studies of medium MQ, and both examined only one aspect of access (Medicaid patient acceptance rate).

Effect on Health Care Wages and Labor Supply

Findings from studies on the effect of consolidation on health care wages and labor supply are inconclusive. In terms of compensation, Whaley, Arnold, et al., 2021 (MQ: medium), found that the acquisition by a hospital or health system was associated with overall lower income for physicians, whereas West, Johnson, and Jha, 2017 (MQ: low), studied four acquisition cases and found that physician pay was significantly higher after acquisition of a practice by a hospital. The effect on compensation can differ across physician specialties and the level of market competition. Findings from Whaley, Arnold, et al., 2021 (MQ: medium), showed lower income

for nonsurgical specialists, no difference in income for primary care physicians, and slightly higher income for surgical specialists. Chunn et al., 2020 (MQ: medium), found that the average compensation increased for cardiologists who were employed by hospitals, despite a decrease in their workload (measured by relative value units). Vertical consolidation also might affect the composition of employees. Barnes et al., 2022 (MQ: high), found that practices were more likely to employ nurse practitioners after becoming owned by a hospital or health system.

We graded the SOE on the effect of hospital-physician vertical consolidation on health care wages and labor supply as **insufficient**. We assessed three articles that examined the effect on physician compensation, which were not consistent in their findings, and one article that examined employment of nurse practitioners. The three compensation-focused articles were not consistent in their findings. Table 6.1 shows the summary of impacts of hospital-physician vertical consolidation.

Table 6.1. Summary of Impacts of Hospital-Physician Vertical Consolidation

	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages and Labor Supply
Number of studies	6 high MQ 4 medium MQ	4 high MQ 5 medium MQ	3 high MQ 6 medium MQ	1 high MQ 1 medium MQ	1 high MQ 2 medium MQ 1 low MQ
Impact	Mixed: increase in eight studies (six high MQ, two medium MQ); mixed or no effect in two medium-MQ studies Magnitude of effect varied by physician specialty and type of service Price increases primarily driven by shifts to higher-cost sites of service	Increase in total spending (both price and utilization contribute to the increase)	Mixed: small increase in three studies; mixed findings in three studies; no significant effects in two studies; one study found racial and ethnic disparities; results varied across quality measures and degree of structural integration	Increase in Medicaid patient acceptance rate	Mixed: increase in compensation in two studies; overall decrease with variation by specialty in one study; increase in the use of nurse practitioners in one study
SOE	Moderate	High	Low	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability. Studies examining multiple outcomes might be included in more than one column.

Hospitals and Physicians with Insurers

Provider-insurer consolidation is another form of vertical consolidation and is a phenomenon that has grown significantly in recent years. In this section, we focus on hospital and physician providers.

Integrated delivery systems (IDSs) are vertically consolidated hospitals, physicians, and other providers and might include health insurers. Examples of IDSs include Kaiser Permanente, Geisinger, and Health Partners, though more provider-sponsored health plans have been introduced since the passage of the ACA in 2010. Between 2010 and 2017, provider systems established 37 new health insurance companies and acquired five existing health plans (Baumgarten, 2017).

Insurers also have been acquiring physician practices. For example, in 2018, Humana acquired Family Physicians Group, which serves MA, Medicaid, Medicare fee-for-service, and commercial patients in Florida (Humana, 2018); UnitedHealth acquired DaVita Medical Group in 2019 (UnitedHealth Group, 2019); Anthem acquired Puerto Rico-based MMM in 2021, including MMM's insurance plans and provider networks (Lagasse, 2021); and UnitedHealth acquired Atrius Health in 2021 (Tozzi, 2021). The acquisition of DaVita Medical Group by UnitedHealth made it the largest owner of physician groups (Stone, 2018). As discussed in Mathews, 2020, insurers that have acquired health care providers or clinics might use plan benefit design to steer patients to their owned clinics. For instance, some Aetna plans have zero co-payments for CVS MinuteClinic visits, and Blue Cross Blue Shield of Texas launched a plan in 2020 that included free primary care visits at clinics opened by a partner company.

Although IDSs have a large presence in many markets, there are few published studies comparing outcomes in integrated and nonintegrated delivery systems. We found only two studies that discussed the effect of provider-insurer integration. Baranes and Bardey, 2015, presented a theoretical model showing that vertical consolidation between providers and insurers might decrease health insurers' premiums, although we found no studies demonstrating this potential effect.

Because we did not find any empirical studies that examined the effect of vertical consolidation of hospitals and physicians with insurers on price, spending, quality of care, patient access, and health care wages, we graded the SOE as **insufficient** for all the outcomes. Table 6.2 shows the summary of impacts of vertical consolidation of hospitals and physicians with insurers.

Table 6.2. Summary of Impacts of Vertical Consolidation of Hospitals and Physicians with Insurers

	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	0	0	0	0	0
Impact	No evidence	No evidence	No evidence	No evidence	No evidence
SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability.

Chapter Summary

Vertical consolidation between hospitals and physician practices has risen substantially during the past decade. Furthermore, an emerging trend in vertical consolidation is the consolidation of physician practices with insurers.

Empirical studies have found vertical consolidation measured by physician practice ownership or employment by hospitals is associated with higher prices and medical spending, more usage of hospital services, small or no improvement in quality of care (depending on measures), and higher Medicaid patient acceptance rates. There are limited studies finding mixed effects of vertical consolidation on wages of health care providers.

Gaps in knowledge and potential future directions for research are as follows:

- lack of evidence on nonownership arrangements, including contractual arrangements and MOU agreements; lack of data that identify and describe these relationships between hospitals or health systems and physicians
- limited understanding of the broader impacts on quality of care because of the narrow set of quality measures studied
- limited understanding of the effects on quality of care over a longer time period
- limited evidence on whether there is heterogeneity in the effects of consolidation on quality of care based on population subgroups and extent of integration
- insufficient evidence on the effects of vertical consolidation on access to care and health care wages
- insufficient evidence on the impact of provider-insurer consolidation.

To obtain a comprehensive understanding of vertical consolidation and its effects, future studies need to include nonownership or employment arrangements, such as CINs and organizations operating under MOUs. Because there is an expectation that beneficial effects related to improved efficiencies and quality of care will accrue as vertically consolidated organizations take steps toward clinical integration, it will be important for future research to measure the extent to which clinical integration has occurred and how clinical integration influences outcomes. However, measuring functional and clinical integration is challenging, and data are not readily available.

Although there has been some research looking at a handful of quality measures with mixed effects, future research should seek to expand the set of measures used to examine impacts on quality performance. Furthermore, studying effects over a longer period of time after consolidation activity might uncover benefits that might take longer to accrue because clinical integration of care delivery takes time to achieve. The heterogeneous effects on quality across population subgroups or different types of integration are also understudied.

The small number of studies and inconsistency of findings indicate a need for research about the effects of consolidation on access to care and health care wages. Future research could extend outcomes to appointment waiting time, travelling distance, or other measures of access to care and explore the effect of functional and clinical forms of integration on health care wages.

Horizontal and vertical consolidation are two dimensions correlated with each other. Studies are also needed to understand how vertical consolidation interacts with the increasingly concentrated horizontal structures of provider and insurer markets.

7. Other Areas of Health Care Market Consolidation

This chapter provides a high-level summary of consolidation trends and evidence on the effects of consolidation in pharmacy and telehealth provider markets.

Pharmacy

Most patients receive their prescription drugs from pharmacies. There are many forms of pharmacies: independent, chain or mass retail, mail order, and supermarket colocated. Most are chains (40 percent) and mail order (37 percent). Although more than one-third are independent pharmacies (Dabora, Turaga, and Schulman, 2017), their market share is only 6 percent (Seeley and Singh, 2021).

In the past decade, the pharmacy sector has changed dramatically. Both horizontal mergers (e.g., Walgreens acquiring Alliance Boots in 2014 and Rite Aid in 2018) and vertical mergers (e.g., CVS Health acquiring pharmacy benefit manager [PBM] Caremark Rx in 2007 and Aetna in 2018) have occurred. The sector is dominated by large firms: In 2019, the revenue of the largest five pharmacies accounted for 60 percent of total prescription drug revenue (Fein, 2020).

Although consolidation of pharmacy markets has been well documented (Seeley and Singh, 2021), research examining the effects of consolidation is sparse. We found only one study examining the effect on drug prices. Luo et al., 2019 (MQ: low), compared pharmacies' retail list prices and found prices were higher at independent pharmacies and small chains than at large chains; the difference was larger for generic than brand-name drugs.⁹ Although they did not conduct analysis of the effects of consolidation on drug spending, Aitken et al., 2016, mentioned consolidation among buyers, such as wholesalers, PBMs, and health insurers as a possible factor likely to influence drug spending. We graded the SOE as **insufficient** for all the outcomes. Table 7.1 shows the summary of impacts of pharmacy consolidation.

The following box contains a discussion of the effect of pharmaceutical manufacturer and PBM consolidation.

⁹ Relatedly, Zhu and Hilsenrath, 2015, found pharmacy market concentration was negatively correlated with producer prices and positively correlated with pharmacies' profitability.

Effects of Pharmaceutical Manufacturer and PBM Consolidation

The distribution of and payment for pharmaceuticals involves many entities, including manufacturers, PBMs, pharmacies, providers, and consumers. In the past few decades, the industry has experienced a substantial increase in consolidation. From 1995 to 2015, the 60 leading pharmaceutical companies consolidated to only ten companies (Feldman, 2021). Unlike prior waves that involved mergers of large companies, the recent wave of mergers mostly consists of large companies acquiring small start-ups.

Consolidation has also occurred between PBMs, PBMs and pharmacies, and PBMs and insurers. PBMs help insurance companies or employers manage prescription drug benefits, including negotiating formularies and prices with manufacturers and negotiating payments with pharmacies. The PBM sector itself is highly concentrated—the market share of the largest three companies (CVS Health [Caremark], Cigna [Express Scripts + Ascent Health Services], and UnitedHealth [OptumRx]) was 77 percent in 2020 (Fein, 2021). Furthermore, five of the six largest PBMs are vertically consolidated with large organizations that include insurers, specialty pharmacies, and providers. In February 2022, the FTC failed to pass a motion to allow the use of the FTC’s investigative authority to issue orders to large PBMs to study the impact of contracts, reimbursements, and practices on competition (FTC, 2022).

A literature review conducted by the U.S. Government Accountability Office (GAO) found no empirical studies examining the effect of manufacturer consolidation on drug prices (GAO, 2017).^a However, 13 studies included in that literature review suggest that less competition or higher market concentration is associated with higher prices, particularly for generic drugs.

We did not find any empirical studies examining the effects of PBM consolidation. The theoretical implications of PBM consolidation are ambiguous. Economic theory suggests less competition would lead to higher markup, while increases in PBMs’ bargaining power following consolidation could be double-edged. On the one hand, increased bargaining power could help PBMs obtain lower prices when negotiating with drug manufacturers. This would benefit consumers if the savings were passed to patients. On the other hand, PBMs could exercise their bargaining power when negotiating with insurers or employers, which could result in higher premiums. How PBM consolidation affects drug prices, formulary design, and consumer welfare is an important gap for future empirical studies to address.

^a The GAO also reviewed nine articles on the effects of drug industry consolidation on new drug development or research and development (R&D) spending. The studies showed mixed effects of competition on the number of patents, firm productivity, and R&D spending, suggesting the direction of impact might depend on size and the companies’ financial situation. Cunningham, Ederer, and Ma, 2021, examined acquisitions between 1989 to 2010 and found drug projects of a company acquired by an incumbent with an overlapping drug are 23.4 percent less likely to have continued development activity, compared with drugs acquired by incumbents without overlapping drugs. They found that the probability of discontinuing a project of an acquired company is higher in a less competitive market and such acquisitions were usually below the FTC acquisition transaction value threshold.

Table 7.1. Summary of Impacts of Pharmacy Consolidation

	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	1 low MQ	0	0	0	0
Impact	Lower drug prices at large chain pharmacies	No evidence	No evidence	No evidence	No evidence
SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability.

Telehealth Providers

The telehealth sector is growing rapidly, boosted by payment policy changes from the COVID-19 pandemic. From 2019 to 2020, the proportion of U.S. consumers using telehealth services increased from 11 to 46 percent (Button, 2021). Total annual revenues for U.S. telehealth companies increased from \$3 billion before the pandemic to a predicted \$250 billion in 2021 (Button, 2021). At the same time, market structures are also changing, with consolidation occurring among telehealth providers. Recent notable acquisitions include Teladoc Health acquiring Livongo and InTouch Health (Landi, 2020; Teladoc Health, 2020) and Amwell acquiring SilverCloud Health and Conversa Health (Landi, 2021b).

Prior to the pandemic, most large health care organizations and health systems (including insurance companies and chain pharmacies) partnered with telehealth vendors to offer telehealth services (Nakagawa, Kvedar, and Yellowlees, 2018). Among other changes during the COVID-19 pandemic, providers were temporarily permitted to adopt nonhealth-specific communication tools (e.g., Zoom, Skype, and Facebook Messenger) to deliver telehealth services (HHS, 2020). Thus far, use of such tools is allowable only during the pandemic-related public health emergency. This change lowers entry barriers for small and telehealth-only providers and therefore is expected to enhance the competition in telehealth markets.

Nontraditional entities entering telehealth markets have also contributed to the growth of this sector. Major retailers, such as Walmart and Amazon, are aggressively moving into the health care business through partnerships and acquisitions (Landi, 2021a). Microsoft, Salesforce, Alphabet, and Amazon are investing or considering investing in telehealth (Button, 2021; Jercich, 2021).

The explosion in the growth of telehealth is very new and likely to continue to evolve and has not yet produced research evidence about the structure of this market and the effects of consolidation. We graded the SOE as **insufficient** for all outcomes. Table 7.2 shows the summary of impacts of telehealth provider consolidation.

Table 7.2. Summary of Impacts of Telehealth Provider Consolidation

	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	0	0	0	0	0
Impact	No evidence	No evidence	No evidence	No evidence	No evidence
SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, MQ, consistency, directness, and applicability.

Chapter Summary

Pharmacy and telehealth services are two important and dynamic health care sectors. Although consolidation between providers of these services is growing, the existing literature does not provide evidence of the effects of consolidation. Future research should examine both the consolidation trends and the effects of consolidation on prices, spending, quality of care, patient access, and health care wages.

8. Other Consolidation Trends

This chapter provides high-level summaries of several topics related to consolidation: private equity investments and ownership, anticompetitive practices, barriers to entry (scope of practice and certificate of need), and charity care and medical debt.

Private Equity Investments and Ownership

Private equity (PE) deals in health care have increased substantially over the past decade, and estimated values reached \$120 billion in 2019 before falling to \$96 billion in 2020 (Scheffler, Alexander, and Godwin, 2021). Much of this activity reflects *leveraged buyouts* in which a PE firm relies heavily on loans to acquire ownership of an organization (e.g., a hospital system), takes the organization private, attempts to improve the value of the organization, and aims to sell it at a profit within three to seven years (MedPAC, 2021). Unlike publicly traded companies, PE firms are required to report only limited information to the Securities and Exchange Commission, meaning that their operations are less transparent and subject to little oversight (Appelbaum and Batt, 2020). One common business strategy of PE firms in the health care sector is to facilitate a series of mergers and acquisitions (M&As) to leverage economies of scale and increase market power (MedPAC, 2021). Many are small acquisitions that fall below the threshold of deals that must be reported to antitrust agencies (Scheffler, Alexander, and Godwin, 2021). By 2018, PE acquisitions accounted for nearly half of all health care M&As (Appelbaum and Batt, 2020). PE firms might have also played an outsized role in the growth of surprise billing because they have targeted medical specialties that account for much of this practice (Gustafsson, Seervai, and Blumenthal, 2019). Two PE firms alone account for approximately 30 percent of the outsourced physician market, and these two firms were the largest financial backers of an ad campaign targeting federal surprise billing legislation (Cooper, Scott Morton, and Shekita, 2020; Sanger-Katz, Creswell, and Abelson, 2019).

PE ownership has ambiguous implications for health care spending and quality. On the one hand, PE firms might be able to use their managerial expertise and capital to introduce innovations and improve the efficiency of health care providers, potentially leading to lower costs and improvements in quality (Scheffler, Alexander, and Godwin, 2021). On the other hand, the objective of PE firms is to generate large returns to the equity investors over a short period, and they often do so by raising prices, increasing volume, and cutting costs (Gondi and Song, 2019). By focusing on short-term profits, PE acquisitions might not improve quality performance or might lead to an erosion in the quality of care and weaken the long-term financial health of providers (Appelbaum and Batt, 2020).

For this review, we looked for studies on the effects of PE investments and ownership of nursing homes, hospitals, and physician practices on outcomes of interest.

Nursing Homes

Effects on Prices

We did not find any empirical research studies that evaluated the effect of PE acquisition on nursing home prices and therefore grade the SOE as **insufficient**. Although we did not find studies that directly assessed prices, prices are closely related to spending, which is discussed in the following section.

Effects on Spending

Studies with high methodological quality have found that PE acquisition was associated with increases in total Medicare spending for beneficiaries with skilled nursing facility (SNF) stays and long-term residents (Braun, Jung, et al., 2021; Gupta et al., 2021 [MQ: high]). This association presumably reflects differences in utilization, given that Medicare reimbursement rates are set administratively. We graded the SOE that PE acquisition of nursing homes **increases health care spending** as **low** given that only two studies are available.

Effects on Quality of Care

Studies have found that the association between PE acquisition of nursing homes and the number of deficiencies (i.e., violations of government health and safety standards) was either positive or not statistically significant (Gupta et al., 2021; Pradhan et al., 2014; Stevenson and Grabowski, 2008 [MQ: high]; Harrington et al., 2012 [MQ: medium]); however, one of these studies also found that it was negatively associated with receiving a citation for actual harm to a resident (Pradhan et al., 2014 [MQ: high]). Results for process of care, outcome, and other quality measures have been mixed: Three studies found that the association was typically or always positive or not statistically significant (Gandhi, Song, and Upadrashta, 2020 [MQ: medium]; Huang and Bowblis, 2019; Stevenson and Grabowski, 2008 [MQ: high]), and four found that the association was negative or not statistically significant (Braun et al., 2020 [MQ: medium]; Braun, Jung, et al., 2021; Gupta et al., 2021 [MQ: high]; Pradhan et al., 2014 [MQ: high]). One study, which we believe has a particularly strong methodology,¹⁰ found that PE acquisition was associated with a 10 percent increase in short-term mortality rates among beneficiaries with SNF stays (Gupta et al., 2021 [MQ: high]). Studies have found that the association between PE acquisition and staffing levels was negative (Gupta et al., 2021 [MQ:

¹⁰ Several studies relied on two-way fixed effects models in an effort to account for unobserved differences between nursing homes that were and were not acquired by PE firms. Huang and Bowblis, 2019, and Gupta et al., 2021, went a step further and incorporated an instrumental variable approach in an effort to account for the possibility that PE firms might affect the patient composition of nursing homes following acquisition. We believe that Gupta et al., 2021, is a particularly strong study because it included national data and followed nursing homes over several years.

medium]); not statistically significant when compared to non-PE-owned for-profit and nonprofit facilities but positive when compared to government facilities (Braun et al., 2020 [MQ: medium]); or not statistically significant (Harrington et al., 2012 [MQ: medium]). Two studies have found an increase in staffing skill mix (Gandhi, Song, and Upadrashta, 2021; Gupta et al., 2021 [MQ: high]), although one study found the opposite (Pradhan et al., 2014 [MQ: high]). In sum, the evidence on staffing levels and skill mix is conflicting, with ambiguous overall implications for quality. We graded the SOE that PE acquisition of nursing homes has **mixed effects on nursing home quality of care** as **low** given the conflicting results across studies.

Effects on Patient Access

One study found that PE acquisition was associated with decreases in the share of residents who were enrolled in Medicaid (Stevenson and Grabowski, 2008 [MQ: high]), which raises the possibility that PE acquisition might restrict access for this population. We graded the SOE as **insufficient** given that there was only one available study and it provided indirect evidence.

Effects on Health Care Wages

We did not find any empirical research studies that evaluated the effect of PE acquisition of nursing homes on health care wages and therefore grade the SOE as **insufficient**. Table 8.1 shows the summary of impacts of PE acquisitions on nursing homes.

Table 8.1. Summary of Impacts of Private Equity Acquisitions on Nursing Homes

	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	0	2 high MQ	6 high MQ 3 medium MQ	1 high MQ	0
Impact	No evidence	Increase in total Medicare costs for residents and beneficiaries with SNF stays in two high-MQ studies	Mixed results: no change or increase in nursing home deficiencies in three high-MQ studies and one medium-MQ study; no change or decrease for other quality measures in two high-MQ and one medium-MQ study; no change or increases in two high-MQ studies; generally no change in another high-MQ study; labor results have ambiguous implications for quality	Indirect evidence: decrease in Medicaid share in one high-MQ study	No evidence
SOE	Insufficient	Low	Low	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability. Studies examining multiple outcomes might be included in more than one column.

Hospitals

We found only two studies that evaluated the association of PE hospital acquisition with the outcomes assessed in this report. One study found PE acquisition was associated with increases in prices among both the acquired hospitals and their rivals (Liu, 2021 [MQ: high]), and another found increases in charge-to-cost ratios (a measure of price markups; Bruch, Gondi, and Song, 2020 [MQ: high]). The latter study also found acquisition was associated with improvements in process of care measures overall but the association was not significant when one large acquisition was excluded (Bruch, Gondi, and Song, 2020). However, that study found different results when excluding the acquisition of HCA Healthcare, a large hospital chain that accounted for a sizable share of hospitals in the sample. Among the remaining PE acquisitions, the association of PE ownership with charge-to-cost ratios was not statistically significant, and the association with process of care measures was either negative or not statistically significant. A different study found that hospitals shifted to more-profitable service lines and technologies following PE acquisition (Cerullo et al., 2021). We graded the SOE that PE acquisitions of hospitals **increase health care prices** as **low** (because there are only two studies, but they are consistent and have high MQ) and the **mixed effects on quality of care** as **insufficient** (given that there is only one available study). Table 8.2 shows the summary of impacts of PE acquisitions on hospitals.

Table 8.2. Summary of Impacts of Private Equity Acquisitions on Hospitals

	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	2 high MQ	0	1 high MQ	0	0
Impact	Increase	No evidence	Mixed	No evidence	No evidence
SOE	Low	Insufficient	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability. Studies examining multiple outcomes might be included in more than one column.

Physician Practices

We are only aware of one study that evaluated the association of PE acquisition of physician practices with prices and spending, which focused only on dermatology practices. This study found PE acquisitions were associated with increases in prices and volume but were not significantly associated with total spending or the provision of profitable services (Braun, Bond, et al., 2021 [MQ: high]). We found no studies on quality of care, patient access, and health care wages. We graded the SOE on the effects of PE acquisitions of physician practices as **insufficient** given that only one study is available, and this study only evaluated prices and spending in dermatology practices. Table 8.3 shows the summary of impacts of PE acquisitions on physician practices.

Table 8.3. Summary of Impacts of Private Equity Acquisitions on Physician Practices

	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	1 high MQ	1 high MQ	0	0	0
Impact	Increase in one study of dermatology practices	No effect on total spending in one study of dermatology practices	No evidence	No evidence	No evidence
SOE	Insufficient	Insufficient	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability. Studies examining multiple outcomes might be included in more than one column.

Anticompetitive Practices

Dominant health care providers and insurers might engage in various anticompetitive practices to increase and leverage their market power. Table 8.4 summarizes five common clauses in contracts between providers and insurers that might limit the competitiveness of local health care markets. During the 116th Congress, legislators introduced the Lower Health Care Costs Act, which would have prohibited many of these practices. In scoring the bill, the Congressional Budget Office (CBO) estimated that prohibiting antitiering and antisteering clauses would have increased enrollment in tiered network plans by 10 percent and reduced employer-sponsored health care costs by about 0.05 percent (CBO, 2019). Ultimately the law did not pass. Although some state legislation has also targeted anticompetitive contract clauses, we were unable to find empirical evaluations of these laws.

Table 8.4. Summary of Anticompetitive Contract Clauses

Practice	Use in Health Care Sector	Anticompetitive Impact	Justification	State Policy^a
Most-favored nation clause	Requires a provider or health system to charge an insurer the lowest rate that they charge to any insurer	Allows dominant insurers to prevent rivals from offering competitive plans (e.g., ones that would use network restrictions to negotiate lower provider reimbursement rates and in turn charge enrollees a low premium)	Simplifies contracting, encourages insurers to make provider-specific investments (with the assurance that providers will not increase prices over time relative to their rivals), and facilitates long-term contracts that are responsive to changing market conditions	19 states have passed laws restricting most-favored nation clauses
All-or-nothing clause	Requires an insurer to contract with all entities of a given provider system rather than contracting with only some of the system's entities	Allows dominant providers to extend their pricing power to other providers in the health system that operate in more-competitive markets	Might facilitate the creation of integrated health systems	Massachusetts has prohibited the use of all-or-nothing clauses in contracts between providers and narrow network or tiered-network plans
Exclusive contracting	Requires an insurer to contract with a given provider at the exclusion of rival providers or requires a hospital to grant privileges to one physician group at the exclusion of rival physician groups	Limits the abilities of rival providers to expand their operations in a given market	Helps ensure steady access to a set of providers with stable pricing, simplifies contracting, and allows hospitals to ensure that they are fully staffed, among other benefits	Some states have prohibited or restricted use; one California bill would expand the AG's authority to challenge these clauses
Antitiering and antisteering clause	Requires insurers to place a provider in its highest tier with the lowest enrollee cost sharing rate	Limits the ability of insurers to steer patients toward high-value providers	Providers might offer to reduce their prices in exchange for including this clause in contracts with insurers	Massachusetts is the only state to prohibit antisteering and antitiering clauses
Gag clauses ^b	Prevents insurers from disclosing provider reimbursement rates to patients or employer plan sponsors	Limits the ability of patient and employer plan sponsors to shop for high-value providers. Limits the ability of employer plan sponsors to monitor costs and identify interventions	Unclear ^c	Five states have banned gag clauses (California, Connecticut, Indiana, Massachusetts, and Minnesota)

SOURCE: Gudiksen, Fuse Brown, and Butler, 2021.

^a Federal law does not explicitly prohibit the contract clauses in this table, although health care entities have challenged these practices under broader antitrust law. During the 116th Congress, legislators introduced the Lower Health Care Costs Act, which would have prohibited most of these practices, but it was not enacted.

^b Recent federal regulations require providers to publicly disclose reimbursement rates, and pending regulations would require plans to do the same. These regulations could undercut the impact of gag clauses to the extent that providers and insurers adhere to comply with federal requirements.

^c The effect of transparency on prices is theoretically ambiguous, although Gudiksen et al., 2020, argued that it is unlikely that eliminating gag clauses would cause price increases because doing so would leave price disclosure at the discretion of contract parties.

The box that follows provides an example of recent litigation involving anticompetitive practices.

Litigation Example: Anticompetitive Practices

In 2014, a large union benefits trust—later joined by the California AG—filed a lawsuit against Sutter Health. The plaintiffs argued that Sutter Health, one of the nation’s largest health systems, used all-or-nothing, antisteering, antitiering, and gag clauses to charge anticompetitive prices (Gudiksen, Fuse Brown, and Butler, 2021). Sutter Health and the plaintiffs eventually reached a settlement agreement that involves no admission of wrongdoing but will require Sutter Health to pay \$575 million in damages, abandon certain anticompetitive practices, limit out-of-network charges, and disclose price and quality information, among other changes (Atkins, 2021; Gudiksen, Fuse Brown, and Butler, 2021). A federal judge finalized the settlement agreement in 2021 (Cole, 2021). Health plans have filed a federal lawsuit against Sutter Health with similar complaints, but the suit remains in active litigation (Gudiksen, Fuse Brown, and Butler, 2021).

Barriers to Entry

Dominant health care providers and government policy might create barriers to market entry that limit competition. For example, anticompetitive clauses in contracts between incumbent providers and insurers might limit the ability of low-cost competitors to enter a market and provider groups might restrict the number of residency spots to decrease competition (Gudiksen, Fuse Brown, and Butler, 2021; Nicholson, 2003). In this section, we focus on scope of practice and certificate of need laws, two sets of state regulations that are often raised in discussions of competition policy reforms.

Scope of Practice

SOP laws determine the variety of services that nonphysician health care providers can offer and the extent to which they can practice without being supervised by physicians (FTC, 2014). Some analysts, including the authors of an Institute of Medicine (IOM, now known as the National Academy of Medicine, or NAM) report, have recommended expanding SOP for certain providers—such as nurse practitioners (NPs)—to address labor shortages, increase access to care, and strengthen the competitiveness of health care markets (IOM, 2011; Adams and Markowitz, 2018; Yang et al., 2021). Critics suggest that expanding SOP might reduce the quality of care to the extent that affected providers are practicing beyond their level of expertise (Gaynor, 2021). States have generally enacted more-liberal SOP laws over time (Adams and Markowitz, 2018). As of 2021, 25 states have granted full practice authority to NPs, allowing them to “evaluate patients; diagnose, order, and interpret diagnostic tests; and initiate and manage treatments, including prescribing medications and controlled substances” without physician supervision (AANP, 2021).

The following section summarizes the literature on expanded SOP laws. These studies relate to NP SOP laws unless noted otherwise and do not include studies that compared outcomes

between provider types in the absence of a SOP expansion. For this summary of the evidence, we relied on a recent SR that included 33 studies (Yang et al., 2021).

Effects on Nurse Practitioner Labor Supply

All but one study found that the association between expanded SOP and NP labor supply is positive or not statistically significant (Luo, Escalante, and Taylor, 2021 [MQ: high]; Markowitz and Adams, 2020 [MQ: high]; Shakya and Plemmons, 2020 [MQ: high]; Smith, 2022 [MQ: high]; Westat, 2015 [MQ: medium]; Yang et al., 2021 [SR]). We graded the SOE that expanded SOP has **no effect or increases NP labor supply** as **high** given that several studies are available, including studies with high MQ, and nearly all have similar findings.

Effects on Health Care Prices

One study found that allowing NPs to prescribe controlled substances is associated with lower prices for well-child exams (Yang et al., 2021 [SR]). We graded the SOE that expanded SOP decreases prices as **insufficient** given only one relevant study within the SR, which evaluates prices for a single service.

Effects on Health Care Spending

Prior studies have found that the association between expanded SOP and costs is negative or not statistically significant (Yang et al., 2021 [SR]). We graded the SOE that expanded SOP has **no effect or decreases spending** as **moderate** given that a handful of studies is available within the SR, including studies with high MQ, and these studies have consistent findings.

Effects on Quality of Care

Studies have found that the association between expanded SOP and quality is either not statistically significant or, more commonly, positive (Markowitz et al., 2017 [MQ: high]; McMichael, 2021 [MQ: high]; Muench et al., 2021 [MQ: high]; Yang, Attanasio, and Kozhimannil, 2016 [MQ: medium]; Yang et al., 2021 [SR]; includes two studies focusing on certified nurse-midwives). Positive findings have involved several quality measures, although the list is not expansive. Measures have included preventive care, potentially avoidable hospitalizations, and mortality. We graded the SOE that expanded SOP has **no effect or increases quality of care** as **moderate** given that several studies are available—including studies with high MQ—that point in the same direction and evaluate key quality measures.

Effects on Patient Access

A majority of studies have found that expanded SOP is associated with increased access to care (Luo, Escalante, and Taylor, 2021 [MQ: high]; Westat, 2015 [MQ: medium]; Yang et al., 2021 [SR]). Positive findings include a greater supply of NPs in areas that are rural and have a shortage of health professionals, closer proximity to care, increased appointment availability, and a greater likelihood of having a usual source of care. We graded the SOE that expanded SOP

increases patient access as **moderate** given that a several studies are available, including studies with high MQ, and these studies have consistent findings.

Effects on Health Care Wages

One study found that allowing NPs to prescribe controlled substances was associated with increases in NP wages and decreases in physician wages, while two other studies found that the association between expanded SOP and NP wages is not statistically significant (Luo, Escalante, and Taylor, 2021 [MQ: high]; Markowitz and Adams, 2020 [MQ: high]; Yang et al., 2021 [SR]). We graded the SOE as **insufficient** given that only three studies are available, and they have mixed findings. Table 8.5 shows the summary of impacts of an expanded scope of practice.

Table 8.5. Summary of Impacts of Expanded Scope of Practice

	Nurse Practitioner Labor Supply	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	4 high MQ 1 medium MQ 1 SR (1 high MQ, 7 medium MQ, 1 low MQ)	1 SR (1 high MQ)	1 SR (3 high MQ, 1 medium MQ, 1 low MQ)	3 high MQ 1 medium MQ 1 SR (4 high MQ, 5 medium MQ)	1 high MQ 1 medium MQ 1 SR (2 high MQ, 4 medium MQ, 1 low MQ)	2 high MQ 1 SR (1 high MQ)
Impact	No change or increase	Decrease	No change or decrease	No change or increase for key quality measures	No change or increase	Mixed: Two studies found no change in NP wages; one study found increases in NP and decreases in physician wages
SOE	High	Insufficient	Moderate	Moderate	Moderate	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability.

Certificate of Need

CON laws require approval from a state board before a new health care facility can enter a market or an existing facility can expand or offer new services (Butler, Rakotoniaina, and Fournier, 2020). The primary intention of CONs is to curb health care costs by reducing the delivery of unnecessary services (Berenson et al., 2020). As of 2020, 35 states continued to operate a CON program or something akin to one, and 29 of these states included short-term care facilities in their purview (National Conference of State Legislatures, 2021; Butler, Rakotoniaina, and Fournier, 2020). Repealing state CON laws could increase market competition in some instances by reducing barriers for new market entrants, although it could reduce market competition in other instances by inhibiting the ability of states to constrain the growth of

dominant providers (Berenson et al., 2020). As noted in the chapters on consolidation, decreased market competition sometimes has ambiguous implications for spending and quality outcomes. A distinct consideration for CON laws is that they constrain the number of facilities and beds in a state. Some studies suggest that concentrating volume among a smaller set of facilities might improve quality, although supply constraints could also reduce access to care (Berenson et al., 2020). In some scenarios, health care providers might exert undue influence over CON programs, which might allow them to prevent the entry of innovative and low-cost competitors (Butler, Rakotoniaina, and Fournier, 2020). The following sections summarize the literature on CON laws, evaluated by a variety of provider types.

Effects on Supply

Studies have found CON laws are associated with fewer facilities and fewer home health agencies (Baker and Stratmann, 2021 [MQ: medium]; Gutierrez et al., 2016 [MQ: low]; Horwitz and Polsky, 2015 [MQ: medium]; Li and Dor, 2015 [MQ: low]; Lorch, Maheshwari, and Even-Shoshan, 2012 [MQ: medium]; Polsky et al., 2014 [MQ: low]). Studies have also found that CON laws are associated with a greater concentration of procedures in high-volume facilities, which might indicate that there are fewer facilities (Cancienne et al., 2020 [MQ: low]; Casp et al., 2019 [MQ: low]; Degen, Cancienne, and Werner, 2019 [MQ: low]; Sridharan et al., 2020 [MQ: low]). We graded the SOE that eliminating CON laws **increases the number of facilities** as **moderate** given that several studies are available, although all have low or medium MQ. It is also worth noting that three studies found that the CON association with market concentration is positive or not statistically significant (Paul, Ni, and Bagchi, 2019; Ni, Paul, and Bagchi, 2017; Polsky et al., 2014; Yuce et al., 2020), which suggests that CON laws might be able to constrain capacity in ways that increase competition in some scenarios.

Effects on Health Care Prices

One study found CON laws did not have a statistically significant association with commercial health care prices (Bailey, Hamami, and McCorry, 2017 [MQ: medium]), while another study found that CON laws were associated with higher colonoscopy prices (Whaley, 2018 [MQ: medium]). We graded the SOE as **insufficient**, given that only two studies are available, and one is limited to colonoscopy prices (low applicability).

Effects on Health Care Spending

One study found that the association of CON laws with total health care spending per capita was positive (Bailey and Hamami, 2019 [MQ: high]). Another study found that CON laws were associated with an increase in the growth of Medicare and Medicaid spending on nursing home care, a decrease in the growth of spending on home health care, and no statistically significant difference for combined spending (Rahman et al., 2016 [MQ: medium]). A third study found that the association with Medicare home health spending was not statistically significant, although

the study did not evaluate potential spillovers on nursing home care (Polsky et al., 2014 [MQ: medium]). We graded the SOE that CON laws lead to **no change or increases in health care spending** as **insufficient**, given that only three studies are available, studies cover a limited set of outcomes, and one of the studies is difficult to interpret.

Effects on Quality of Care

Most studies have found that CON laws are associated with decreases in quality of care (increases in mortality rates and negative effects on quality measures related to surgical procedures, such as increased infections and strokes, and home health agency ratings; Cancienne et al., 2020 [MQ: medium]; Chiu, 2021 [MQ: medium]; Chui et al., 2019 [MQ: medium]; Ho and Ku-Goto, 2013 [MQ: high]; Ohsfeldt and Li, 2018 [MQ: medium]; Wu et al., 2019 [MQ: medium]). Or, studies have found that associations were not statistically significant (Bailey, 2018 [MQ: high], Schultz, Shi, and Lee, 2021 [MQ: low]; Yuce et al., 2020 [MQ: medium]). One study found mixed results when evaluating adverse outcomes and complication rates following hip arthroplasty (Casp et al., 2019 [MQ: medium]). Two studies found that CON laws were associated with increases in quality—one found a reduction in infant mortality when focusing on states with at least one large metropolitan area (Lorch, Maheshwari, and Even-Shoshan, 2012 [MQ: medium]), and another found reductions in complications and readmissions after surgery (Sridharan et al., 2020 [MQ: medium]). Overall, we graded the SOE that CON laws lead to **mixed effects** on quality of care as **moderate**, given that several studies with medium and high MQ have different findings, and the research covers a limited set of outcomes.

Effects on Patient Access

One study found that CON laws were associated with an increase in likelihood of patients traveling outside their home county for imaging services (Baker and Stratmann, 2021 [MQ: medium]), while another found that CON laws were associated with increases in emergency department wait times (Myers and Sheehan, 2020 [MQ: medium]). We graded the SOE that eliminating CON laws leads to **reduced access to care** as **low**, given that only two studies are available, and they cover only a limited number of access measures.

Effects on Health Care Wages

We are not aware of studies that have evaluated the relationship between CON laws and wages and therefore grade the SOE as **insufficient**. Table 8.6 shows the summary of impacts of CON regulations.

Table 8.6. Summary of Impacts of Certificate of Need Regulations

	Health Care Supply	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	3 medium MQ 7 low MQ	2 medium MQ	1 high MQ 2 medium MQ	2 high MQ 9 medium MQ 1 low MQ	2 medium MQ	0
Impact	Decrease in number of providers in five medium- and three low-MQ studies No change or increase in the share of services at high-volume facilities in one medium- and three low-MQ studies	No change or increase	No change or increase	Mixed: decrease in five studies; no change in four studies; mixed findings in one study; and increase in two studies Includes measures related to surgical procedures, home health care, and mortality	No change or decrease	No evidence
SOE	Moderate	Insufficient	Insufficient	Moderate	Low	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability.

Effects of Consolidation on Charity Care and Medical Debt

There have been concerns that consolidation in the provider market might affect the provision of charity care, and in turn, the burden of medical debt on consumers (Schwartz et al., 2020). Providing charity care is costly, and financial pressures from changing market structures might influence the amount of charity care provided and how aggressively health care providers collect unpaid medical bills (Frank and Salkever, 1991). Overall, the empirical literature on the effects of consolidation on the provision of charity care and the burden of medical debt is very limited.

Effect of Hospital and Physician Consolidation on Charity Care

Although we found no studies that directly examined mergers of hospitals and physician practices on charity care, we found seven studies that provided mixed evidence on the relationship between hospital market concentration or competition and the provision of charity care. Most of these studies examined the relationship between the provision or generosity of charity care and on hospital market concentration (i.e., HHI) while controlling for other hospital characteristics. Only one of the seven studies focused on a national sample of hospitals, although the study examined psychiatric hospitals (Schlesinger et al., 1997 [MQ: medium]). The other five used data from California, Texas, and Florida.

Among these seven studies, there are inconsistent results. Two studies showed that hospitals in more-concentrated markets provided more charity care (Gruber, 1994; Schlesinger et al., 1997

[MQ: medium]). In contrast, Mann et al., 1995 (MQ: medium), found that hospitals in more-concentrated markets provided less charity care. Another study using data from California, Texas, and Florida examined the relationship between hospital system affiliation and the provision of charity care and also found that system-affiliated hospitals provided less charity care than independent hospitals (Alexander et al., 2009 [MQ: medium]). The results appear to be sensitive to the controls included in the model, and the studies could not adequately address other factors that might influence both market concentration and charity care. A more recent study found a positive correlation between hospital market power and the volume of charity care, although the relationship was not statistically significant in the model that controlled for hospital fixed effects (Capps, Carlton, and David, 2020 [MQ: medium]). Campbell and Ahern, 1993 (MQ: medium), and Garmon, 2006 (MQ: medium), also found no statistically significant relation between in charity care and level of hospital competition or concentration. Overall, it is difficult to draw a conclusion on how hospital consolidation would affect charity care based on the existing empirical evidence.

We found no empirical study that systemically examined the relationship between physician group consolidation and the provision of charity care. One case study (Cunningham, Bazzoli, and Katz, 2008 [MQ: low]) suggested that growth of large, single-specialty groups that dominate a market might also contribute to decreased charity care.

We graded the SOE on the effect of hospital and physician consolidation on charity care as **low** given the mixed findings.

Effect on Insurer Consolidation on Charity Care

We found no study on the effect of insurer consolidation on charity care. However, some studies have suggested that declines in private revenue can lead to decreases in charity care (Gruber, 1994; Morrisey, 1996). It is possible that lower payments that could result from insurer consolidation could also reduce the bandwidth of providers to provide charity care. We graded the SOE on the effect of insurer consolidation on charity care as **insufficient**.

Effect on Hospital and Physician Consolidation on Medical Debt

The literature on medical debt is relatively new; there are a few papers in recent years that have started to present the magnitude and patterns in medical debt and debt-collecting behaviors (Kluender et al., 2021; Eliason, MacDougall, and Peterson, 2022; Cooper, Han, and Mahoney, 2021). We found two studies that examined the relationship between hospital consolidation and competition on the medical debt-collecting behavior of the hospital. Eliason, MacDougall, and Peterson, 2022 (MQ: low), showed that hospitals that are part of a health system are less likely to aggressively pursue patient debt. Cooper, Han, and Mahoney, 2021 (MQ: low), showed no difference in debt collection lawsuits by hospital market HHI.

We graded the SOE on the effect of provider consolidation on medical debt as **insufficient** given the two studies with mixed findings.

Effect on Insurer Consolidation on Medical Debt

We found no study on the effect of insurer consolidation on medical debt. We graded the SOE on the effect of insurer consolidation on medical debt as **insufficient**. Table 8.7 shows the summary of impacts of consolidation on charity care and medical debt.

Table 8.7. Summary of Impacts of Consolidation on Charity Care and Medical Debt

	Hospital and Physician Consolidation on the Provision of Charity Care	Insurer Consolidation on the Provision of Charity Care	Hospital and Physician Consolidation on Medical Debt	Insurer Consolidation on Medical Debt
Number of studies	7 medium MQ 1 low MQ	0	2 low MQ	0
Impact	Mixed: three medium-MQ studies found hospitals in more-concentrated markets provided more charity care; one medium-MQ study found no change in charity care with increased hospital competition; one medium-MQ study found hospitals in integrated health systems provided less charity care One low-MQ study showed hospitals in more-concentrated markets provided less charity care; one low-MQ study showed no statistically significant relation One low-MQ interview study suggested growth of large single-specialty groups that dominate a market might also contribute to decreased charity care	No evidence	Mixed: one low-MQ study found hospitals in integrated systems were less likely to aggressively pursue patient debt; one low-MQ study found no difference in debt-collection lawsuits by hospital market HHI	No evidence
SOE	Low	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability.

Chapter Summary

The evidence was limited or insufficient for many of the topics in this chapter, although we found moderate evidence that expanding SOP is associated with, if anything, a decrease in health care spending and increase in access to care and health care quality. We also found that CON laws are associated with no change or a decrease in health care quality. We found mixed evidence on the effect of hospital and physician consolidation on charity care, but the strength of evidence is low; there was insufficient evidence on the effects of consolidation on medical debt.

Gaps in knowledge and potential future directions for research are as follows:

- obtaining additional evidence on the effects of PE acquisition, especially for providers other than nursing homes
- assessing the effect of anticompetitive practices
- identifying the association of SOP expansion with prices and health care wages
- determining the association of CON laws with prices, spending, patient access, and health care wages
- improving the understanding of the relationships between consolidation, surprise billing, and medical debt.

As PE acquisitions have become more common in health care markets and have played an important role in recent M&A activity and in the growth of surprise billing, there might be effects on PE-acquired entities following the NSA. Most of the research to date has focused on nursing homes and has thereby yielded limited insights into sectors of recent PE growth, such as physician practices. Acquiring data on hospital and physician practice acquisitions by PE firms is difficult and often requires supplementing existing resources with manual online searches (Braun, Bond, et al., 2021; Bruch, Gondi, and Song, 2020; MedPAC, 2021). Some groups have recommended that the federal government collect additional information on provider ownership, such as through the Medicare Provider, Enrollment, Chain, and Ownership System (PECOS) data set (MedPAC, 2021; Ridgely et al., 2021).¹¹

¹¹ Medicare providers are required to enroll in PECOS. PECOS includes a variable that indicates whether it is owned or managed by another entity or health system.

9. Surprise Billing Policies

Surprise billing typically refers to instances where a patient unknowingly or unavoidably receives care from and is billed by an out-of-network provider.¹² Two common scenarios involve: (1) medical emergencies, where patients generally do not have the ability to choose their provider and (2) patients admitted to in-network hospitals who unknowingly or unavoidably receive care from an out-of-network provider (e.g., an anesthesiologist) during their visit (Rosso, Isserman, and Shen, 2021). Patients incur large expenses under surprise billing, both because insurers typically require greater cost sharing for out-of-network versus in-network providers and because providers bill patients for the difference between their charge and insurer allowed amounts (i.e., *balance billing*)—a potentially substantial sum (Adler, Duffy, Ly, et al., 2019). Researchers have found that surprise billing is common, especially for emergency medical services and even more so for ambulance and air ambulance transports.¹³

The NSA creates protections for privately insured consumers against surprise medical bills from out-of-network health care providers beginning in January 2022. In general, individuals with commercial health insurance are only responsible for in-network cost-sharing amounts (and in-network deductibles and out-of-pocket spending limits will apply) when receiving: (1) out-of-network emergency services, (2) out-of-network services provided at an in-network facility, (3) certain out-of-network services following receipt of emergency care, (4) out-of-network air ambulance services, (5) services from a provider that left a given insurer’s network during the course of treatment, and (6) services that a given insurer erroneously identified as being provided in-network (Rosso, Isserman, and Shen, 2021).¹⁴

The NSA also establishes a process for determining how much an insurer will pay an out-of-network provider in surprise billing scenarios.¹⁵ The law requires insurers and providers to first negotiate independently and then, if that fails, enter an IDR process (Rosso, Isserman, and Shen, 2021). Under the IDR process, the insurer and provider each submit an offer and a neutral third-

¹² This chapter includes substantial overlap with an ASPE issue brief on surprise billing, which we have reviewed (ASPE, 2021).

¹³ For example, Garmon and Chartock, 2017, estimated that 9 percent of elective hospital admissions, 20 percent of hospital admissions originating in the emergency department, 14 percent of outpatient emergency department visits, and 51 percent of air ambulance transports in 2014 led to a surprise bill.

¹⁴ This financial protection would not apply in certain circumstances if the patient received required information about the network status of the patient’s provider options and, in some scenarios, if the patient gives consent to receive out-of-network care (Rosso, Isserman, and Shen, 2021). This exception does not apply to emergency care, scenarios where an in-network provider is not available, or for ancillary hospital-based services (Keith, Hoadley, and Lucia, 2021).

¹⁵ This process does not apply to scenarios covered by a CMS All-Payer Model Agreement or where amounts are specified by state law (HHS et al., 2021).

party arbitrator selects one or the other (Rosso, Isserman, and Shen, 2021). The NSA requires the arbitrator to take some factors into account—including the *qualified payment amount* (QPA), i.e., the insurer’s median 2019 in-network rate for the relevant region, adjusted for inflation—and prohibits it from considering other factors, including provider charges (Rosso, Isserman, and Shen, 2021; Keith, Hoadley, and Lucia, 2021). The Biden-Harris administration released an interim final rule that requires arbitrators to use the QPA unless the insurer or provider shares evidence that justifies a different rate, although provider groups recently challenged this rule in court (AHA, 2021; Keith, Hoadley, and Lucia, 2021).

Many states have separately enacted surprise billing laws. As of February 2021, 18 states had comprehensive surprise billing laws, and 15 states had laws that are more limited in scope (Kona, 2021). Comprehensive surprise billing laws include provisions that apply to both emergency department and in-network hospital settings, cover both HMO and PPO plans, prohibit balance billing, restrict patient cost sharing to in-network amounts, and establish a formula for determining how much an insurer will pay a provider in surprise billing scenarios, a dispute resolution process for settling disagreements over payments, or both (Kona, 2021). The NSA supplements state surprise billing laws—such as by broadly extending protections to self-insured plans—but defers to state approaches for determining out-of-network prices under surprise billing scenarios when applicable (Rosso, Isserman, and Shen, 2021).

States with comprehensive surprise billing laws rely on three different types of payment methodologies. Seven states rely exclusively on an IDR process, although the details often differ substantially from the approach established under the NSA (Kona, 2021). For example, New York relies on a benchmark that is set at the 80th percentile of provider charges, which is likely much higher than the NSA standard (Adler, Fiedler, et al., 2019). Six states directly set a payment standard (Kona, 2021). For instance, in California, the insurer must pay 125 percent of Medicare or their average in-network rate in the region, whichever is greater (La Forgia et al., 2021). The remaining five states use a hybrid approach that combines payment standards with an IDR process (Kona, 2021). Surprise billing laws vary substantially in specified price levels and in rates arbitrators must take into account during the IDR process (Table 9.1).

Table 9.1. Surprise Billing Payment Method Examples

Source	Payment Method	Details
California	Payment standard	<ul style="list-style-type: none"> • Emergency services: reasonable and customary amounts • Nonemergency services: greater of 125% of Medicare and average in-network rate for plan and region
Connecticut	Payment standard and IDR hybrid	<ul style="list-style-type: none"> • Emergency services: greater of 80th percentile of charges in region and other amounts • Nonemergency services: in-network rate for plan unless another amount is agreed on
New York	IDR	<ul style="list-style-type: none"> • Arbitrator is required to consider the 80th percentile of charges
NSA	IDR	<ul style="list-style-type: none"> • Arbitrator is required to consider the median in-network rate for region • Interim final rules require this amount to be the default; providers are challenging this rule in court

SOURCES: AHA, 2021; Corlette and Hoppe, 2019; Keith, 2021; and Kona, 2021.

Effect on Prices

Surprise billing laws could lead to higher or lower out-of-network prices, depending on the payment level stipulated by a given state or the structure of a given IDR process (e.g., the level of any benchmarks that arbitrators are required to consider). Theory suggests that in-network prices will move in the same direction as out-of-network prices because the latter reflects providers’ alternative to joining a network and therefore will affect their bargaining power with insurers (Cooper, Scott Morton, and Shekita, 2020). Because most health care is delivered within patients’ provider networks, the CBO projected that reductions in in-network prices would account for the majority of savings under one surprise billing proposal (CBO, 2019).

The small body of research evaluating the effects of surprising billing laws on prices has found varied results across states (Table 9.2). One study found that surprise billing laws were associated with lower in-network and out-of-network prices for anesthesiologists in California and Florida (La Forgia et al., 2021 [MQ: high]). That study found the same in New York, and a separate study similarly found that the New York surprise billing law was associated with lower in-network prices for emergency physicians (Cooper, Scott Morton, and Shekita, 2020 [MQ: high]). However, a third, unpublished study by Adler and colleagues found higher in-network prices for emergency services, although results for out-of-network and overall prices were not statistically significant (MQ: high).¹⁶ One study found that the Connecticut surprise billing law

¹⁶ Results for in-network prices were statistically significant for triple-differences analyses that incorporated the fact that the New York law only applied to fully insured and not self-insured prices. The authors were also able to reject the hypothesis that the law led to a decrease in in-network, out-of-network, and overall prices during the third year following implementation, which stands in contrast to the two other studies that evaluated the effect of the state law.

was associated with higher out-of-network prices for emergency physician services but was not clearly associated with in-network prices (Adler, Duffy, Ly, et al., 2021 [MQ: low]).¹⁷

Differences in findings by state might partly reflect varying state approaches for determining out-of-network prices in surprise billing scenarios. For example, the finding that the California surprise billing led to lower prices for anesthesiologists aligns with the fact that the state stipulates relatively low prices for nonemergency services (125 percent of Medicare or the average in-network rates for a plan and region, whichever is greater; Kona, 2021). Conversely, the finding that the Connecticut surprise billing law led to price increases for emergency physician services aligns with the fact that the state sets relatively high prices for that care (at least the 80th percentile of charges, which was more than three times the average in-network rate for one emergency physician service code in 2015; Adler, Duffy, Ly, et al., 2021; Kona, 2021). We graded the SOE that state surprise billing protections has **mixed effects** on health care prices—which might reflect different approaches taken by states in setting or determining the out-of-network price cap—as **low** given the limited number of studies and the different state approaches.

Focusing on prices determined through an IDR process, prior state experience suggests that benchmark rates might serve as an important anchor. In New York, arbitrators must consider the 80th percentile of charges among other factors, and average arbitration decisions were 8 percent above this amount on average from 2015 through 2018. In New Jersey, the state shares information on the 80th (and 90th and 95th) percentile of charges, and average arbitration decisions were 7 percent above this amount in 2019 (although median decisions were 24 percent lower; Chartock et al., 2021). Because these benchmarks and arbitration decisions are high, it is conceivable that the IDR might have led to price increases—in contrast to findings from two of the three studies evaluating New York’s IDR process—both by directly increasing reimbursement for providers participating in the IDR process and by increasing providers’ leverage when negotiating prices outside the IDR process (Adler, Fiedler, et al., 2019). We do not include these results in the summary table because this study did not empirically evaluate price effects.

¹⁷ This study relied on a difference-in-differences framework, which we categorize as high MQ, but did not test for statistical significance, which we generally categorize as low MQ. However, we note that the magnitude of the difference-in-differences estimate was very large for out-of-network emergency physician prices and might therefore be a more compelling result.

Table 9.2. Summary of State Surprise Billing Law Payment Methods and Effects on Prices

State	Payment Method Evaluated	Out-of-Network Prices	In-Network Prices
California	Low price specified ^a	Decrease in one high-MQ study	Decrease in one high-MQ study
Connecticut	High price specified ^b	Increase in one medium-MQ study	No change in one low-MQ study
Florida	Price specified (level unclear); ^c IDR	Decrease in one high-MQ study	Decrease in one high-MQ study
New York	High price considered under IDR ^d	Decrease in one high-MQ study; increase in one high-MQ study	Decrease in two high-MQ studies; increase in one high-MQ study

SOURCES: Corlette and Hoppe, 2019, and Kona, 2021, for payment method details.

^a Greater of (1) 125% of Medicare or (2) average in-network rate for plan or region.

^b Greater of (1) 80th percentile of charges in region, (2) in-network rate for plan, and (3) 100% of Medicare.

^c Lesser of (1) usual and customary charges, (2) provider's charge, and (3) agreed-upon charge.

^d Arbitrator must consider 80th percentile of charges, among other factors.

The CBO has projected that the NSA will lead to lower prices and thereby reduce commercial health insurance premiums by 0.5 to 1.0 percent in most affected markets and years (CBO, 2021). In its analysis of proposed legislation similar to the NSA, the CBO apparently assumed the following: (1) out-of-network prices would typically equal the median in-network rate (i.e., the QPA benchmark), (2) in-network prices would converge to the QPA (which is lower than in-network rates on average),¹⁸ and (3) savings from out-of-network and in-network price decreases would more than offset any increases in insurer spending (CBO, 2019).¹⁹

Effect on Spending

We did not find empirical research directly assessing the relationship between state surprise billing laws and total health care spending. We graded the SOE as **insufficient** given the lack of studies. However, the CBO projects that the NSA will reduce net federal outlays because the federal government subsidizes employer-sponsored plans and plans on the Affordable Care Act health insurance exchanges and because the CBO assumes premiums would fall with provider reimbursement rates (by 0.5 to 1.0 percent in most affected markets and years; CBO, 2021). Lower prices and premiums would also presumably reduce consumer spending. It is conceivable

¹⁸ The CBO did not clearly explain why out-of-network prices would tend to equal the median in-network rate. Presumably, their rationale is that the QPA benchmark would drive the outcome of the IDR process and, as a result, insurers and providers would also agree on the median in-network rate if they reached a settlement before the IDR process. That CBO report further suggests that the QPA is lower than both average out-of-network and in-network prices, meaning that both would decline under their modeling assumptions.

¹⁹ We inferred the third assumption based on CBO's projection that premiums will decrease. Increases in insurer spending could include the costs of participating in the IDR process and greater health care utilization resulting from price decreases, although the latter effect would presumably be small in emergency scenarios.

that the NSA might reduce total health care expenditures given that the CBO projects that it will reduce health care prices and premiums, and the law eliminates balance billing for surprise medical bills.

Effect on Quality of Care

We did not find research evaluating the relationship between surprise billing laws and quality of care. It is conceivable that providers might reduce investments in quality to the extent that prices decrease. We graded the SOE as **insufficient** given the lack of studies.

Effect on Patient Access

We did not find empirical research directly evaluating the relationship between surprise billing laws and access to care. On the one hand, surprise billing laws would reduce financial barriers to care by eliminating surprise billing and by lowering prices (to the extent that they actually do so).²⁰ On the other hand, surprise billing laws that reduce prices could lead to decreases in provider supply and thereby access to care. Some physicians have raised this possibility (CMA, 2019; Duffy, 2019). However, it is also possible that health care facilities might offer physicians additional payments to ensure adequate staffing, which would mitigate the effect of price reductions on physicians (Adler, Fiedler, et al., 2019; Ippolito, 2019).

Prior studies have examined the effect of surprise billing laws on in-network service use, which might provide some indirect evidence of the effect on access. Five studies found that the association of surprise billing laws with the share of medical bills that are for in-network care is not statistically significant, negligible, or positive. These studies examined surprise billing laws in California, Maryland, and New York (Adler, Duffy, Ly, et al., 2019 [MQ: low]; Adler, Duffy, Ly, et al., 2021 [MQ: low]; Adler et al., unpublished [MQ: high]; Cooper, Scott Morton, and Shekita, 2020 [MQ: high]; Social and Scientific Systems, Inc., 2015 [MQ: low]). In addition, an industry-sponsored survey found that insurers reported having more in-network providers following California's surprise billing law (AHIP, 2019 [MQ: low]). We graded the SOE as **insufficient** given the indirectness of evidence in a limited number of studies. The empirical findings are in contrast with concerns raised by some physicians in a survey and a set of targeted interviews that decreases in out-of-network prices could lead insurers to drop providers from their networks (CMA, 2019; Duffy, 2019).

²⁰ In this and the following sections, we speculate what would happen if surprise billing laws led to lower prices as the CBO has predicted would occur under the NSA. In general, the reverse logic could be used to evaluate surprise billing laws that lead to higher prices.

Effect on Health Care Wages

We did not find research directly evaluating the relationship between surprise billing laws and health care wages. A surprise billing law that decreases health care prices would presumably decrease health care wages as well. However, as noted earlier, it is also possible that health care facilities would offer additional compensation to mitigate effects on wages and therefore ensure adequate staffing (Adler, Fiedler, et al., 2019). We graded the SOE as **insufficient** given the lack of studies.

Effect on Consolidation

We did not find empirical research that evaluates the relationship between surprise billing laws and consolidation. On the one hand, it is possible that reductions in prices could increase physicians' openness to horizontal or vertical consolidation, for example, as a way to restore bargaining power relative to insurers (Duffy, 2019). In one qualitative study, physicians reported that the California law had nudged them into merging practices, and in an industry-sponsored survey of California physicians, the large majority (91 percent) stated that national legislation based on the California law would increase consolidation (CMA, 2019). Nonetheless, to the extent that surprise billing laws constrain the ability of providers to charge high prices, they might reduce the incentive to consolidate. In addition, there are high levels of concentration in the majority of markets for specialist physicians, and industry reports indicate that there has been increasing consolidation among specialties associated with surprise billing (Adler, Duffy, Ly, et al., 2019; Fulton, 2017). Surprise billing laws might be unlikely to increase consolidation in regions where there is already limited competition. Table 9.3 shows the summary of impacts of surprise billing laws.

Table 9.3. Summary of Impacts of Surprise Billing Laws

	Health Care Prices	Health Care Spending	Quality of Care	Patient Access	Health Care Wages
Number of studies	3 high MQ 1 medium MQ	0	0	2 high MQ 4 low MQ	0
Impact	Mixed: decrease in two high-MQ studies and increase in one medium- and one high-MQ study, with varied results given states' different approaches	No direct evidence	No evidence	Indirect evidence: increase or no change in the share of services provided in-network	No direct evidence
SOE	Low	Insufficient	Insufficient	Insufficient	Insufficient

NOTE: The SOE grades (high, moderate, low, insufficient) reflect a preliminary assessment of the number of studies, methodological quality, consistency, directness, and applicability.

Chapter Summary

We found mixed evidence on the association of state surprise billing laws with health care prices, which might partly reflect varying approaches for determining out-of-network prices. The limited number of studies on the effects of surprise billing laws likely reflects the fact that these laws are relatively new. Although the CBO projects that the law will reduce prices, premiums, and federal spending, the effects of the NSA will depend on how its IDR process plays out.

Gaps in knowledge and potential future directions for research are as follows:

- gathering additional evidence on the effects of state surprise billing laws on health care prices
- identifying the effects of state surprise billing laws on health care spending, health care quality, access to care, health care wages, and health care consolidation
- evaluating the effects of the NSA.

Evaluations of state surprise billing laws on prices and other outcomes will continue to have important policy implications, given that the NSA will defer to state approaches for determining out-of-network prices under surprise billing scenarios when applicable. Research on state laws will also help inform evaluations of the NSA, although there are important limitations to the applicability of state findings. For example, research to date has evaluated states with much different payment methodologies than the NSA and has not included self-insured plans.

10. Discussion and Key Gaps

An understanding of the landscape of consolidation prior to implementation of the NSA is important for considering the types of responses providers might have to the NSA given existing market conditions. This baseline understanding of consolidation will also be useful for future evaluations of the NSA's impact on consolidation and other outcomes. Through this environmental scan, we have identified areas where there is evidence on the effects of consolidation and surprise billing policies on health care prices, health care spending, quality of care, patient access, and health care wages, as well as areas where there is a lack of evidence. Where there are gaps in knowledge, such as the effect of consolidation on patient access and differential impacts on population subgroups, further work is needed to prioritize the questions that should be addressed, given limited resources, and to identify necessary data to address the questions.

Hospital, physician, and insurer markets are already highly concentrated and are becoming more concentrated. Horizontal hospital and physician consolidation has continued its upward trend, and there has been substantial growth in vertical consolidation between hospitals and physician organizations and health systems and physician organizations through ownership arrangements. Vertical consolidation is also happening through nonownership arrangements, which are largely invisible yet could lead to underestimates of the impacts of consolidation. Consolidation within and across provider and insurer markets affects relative market power and price negotiations, which has implications for overall health care spending.

Overall, there is evidence showing that consolidation increases prices. The strongest body of evidence exists for hospital horizontal consolidation, for which higher prices also translate to higher overall health care spending. The price increases following vertical consolidation of hospitals and physicians is largely driven by changes in referral patterns that shift care to higher-cost sites of service, which also leads to higher overall spending. Although insurer consolidation could theoretically counter the market power of provider consolidation among hospitals and physicians, we found limited evidence that insurer consolidation led to reductions in price paid to providers, and we found evidence that insurer consolidation increased premiums.

A key gap in the evidence of the effects on hospital-physician vertical consolidation relates to nonownership or contractual arrangements that are not tracked in existing databases describing the relationship between different entities. Existing studies on hospital-physician vertical consolidation focus on hospital ownership or employment of physicians. Largely unseen and unmeasured is consolidation occurring through contractual arrangements and MOUs, such as those between health systems and physician practices through CINs. Researchers have highlighted challenges in identifying relationships between entities within an organization because of limitations of existing administration data sources (e.g., PECOS), the lack of a

specific identifier for health systems to track their evolution over time and to link with other data sets, and the incomplete capture of all entities affiliated with the health system (Ridgely, Timbie, et al., 2020). Existing administrative data, such as PECOS, which identifies ownership and management relationships between health systems and physician practices (as identified by taxpayer identification numbers), do not capture CIN relationships, making it difficult to assess the effect of vertical consolidation through contractual arrangements on outcomes. Improvements in data to describe relationships between health care entities are needed to be able to track health care consolidation, and in particular, growing trends in informal arrangements between physicians and hospitals, including affiliations between organizations and PE acquisitions. In addition, better data on the types and extent of integration between organizations would promote a deeper understanding of the impacts of consolidation.

Although many studies have examined consolidation effects on quality of care, the body of evidence is limited and only scratches the surface of the many facets of quality performance. Examination of the variation in the effects on different measures of quality of care and subpopulations is warranted. Studies typically examine a limited number of quality measures, typically those that can be constructed using claims data, which take considerable resources to construct and limit the areas of quality that can be accurately measured from claims data. To gain deeper understanding of impacts on quality performance, it will be important to leverage clinical information from electronic health records. Furthermore, studies are needed to assess how quality performance varies across population subgroups (e.g., rural versus urban, higher versus lower socioeconomic status) and with the degree of organizational integration because the potential benefits of increased efficiencies and care coordination likely require more comprehensive integration than financial integration.

We found insufficient evidence on consolidation effects on patient access, which might be of particular concern for certain settings or vulnerable populations. The few studies we found on access were in rural hospital settings or examined the association between hospital-physician practice affiliation and Medicaid patient acceptance rates. Future studies should examine the contention between rural hospital consolidation and potential closures.

Although there is strong evidence showing that insurer consolidation increases premiums, **there is limited direct evidence on the effects of insurer consolidation on health care prices paid to providers largely because of confidential negotiated prices between commercial insurers and providers.** Future studies might be able to leverage data on negotiated prices made available as price transparency initiatives and APCDs gain traction. APCDs also provide an opportunity to examine market power and cross-subsidization across all payers, as insurers are increasingly operating across commercial and regulated insurer markets.

We found limited evidence on the effect of PE acquisitions in health care markets. PE health care acquisitions have increased substantially over time, and PE firms have played an import role in M&A activity and surprise billing. Collecting additional information on ownership, such as through PECOS, would help facilitate research in this area.

Few studies evaluated state surprise bills, and none assessed effects on spending, quality, access to care, or consolidation. Accumulating evidence will complement evaluations of the NSA and help policymakers refine state surprise billing laws, which will take precedence over the NSA in certain scenarios.

The evidence gathered in this environmental scan provides a baseline landscape of consolidation. The gaps identified might help inform future analyses measuring the effects of consolidation and the impact of the NSA going forward.

Appendix. Literature Search Terms and Results

PubMed Search Terms

(“hospital”[Title] OR “hospitals”[Title]) AND (“hospital consolidation” OR “provider consolidation” OR “horizontal consolidation” OR “consolidation” OR merger OR (“Health Facility Merger”[MeSH Terms])) AND (price OR cost OR quality OR wage OR health) AND ((“2015”[Date – Publication] : “3000”[Date – Publication]))

(“physician”[Title] OR “physicians”[Title]) AND (“provider consolidation” OR “horizontal consolidation” OR merger OR (“Health Facility Merger”[MeSH Terms])) AND (price OR cost OR quality OR wage OR health) AND ((“2005”[Date – Publication] : “3000”[Date – Publication]))

(“insurer”[Title] OR “insurance”[Title] OR “managed care”[Title] OR “Medicare Advantage”[Title] OR “health plan” OR “health plans”) AND (competition[Title] OR consolidation[Title] OR merger[Title]) AND (price OR cost OR quality OR wage OR premium)

(“Medicaid”[Title]) AND (“insurer”[Title] OR “insurance”[Title] OR “managed care”[Title] OR “health plan” OR “health plans”) AND (competition[Title] OR consolidation[Title] OR merger[Title])

(“vertical integration”[TIAB] OR “vertical merge*”[TIAB] OR “vertical consolidation” [TIAB] OR “vertical acquisition”[TIAB] OR bargain*[TIAB] OR ownership[TIAB] OR “hospital physician affiliation*”[TIAB] OR “hospital physician consolidation*”[TIAB] OR “physician network*”[TIAB] OR “provider network*”[TIAB] OR “hospital network*”[TIAB]) AND (“health care”[TIAB] OR healthcare[TIAB] OR physician*[TIAB] OR hospital*[TIAB] OR provider*[TIAB] OR insurer[TIAB] OR insurance[TIAB] OR “health plan”[TIAB])

(“vertical integration”[TIAB] OR “vertical merge*”[TIAB] OR “vertical consolidation”[TIAB] OR “acquisition”[TIAB] OR bargain*[TIAB]) AND (insurer*[TIAB] OR insurance[TIAB] OR “health plan”[TIAB]) AND (hospital*[TIAB] OR “physician*”[TIAB] OR “provider*”[TIAB]) AND (“health care”[TIAB] OR healthcare[TIAB])

(“vertical integration”*[TIAB] OR “vertical merge*”[TIAB] OR “vertical consolidation”[TIAB] OR “vertical acquisition”[TIAB] OR

bargain*[TIAB] OR ownership[TIAB] OR “hospital physician affiliation*”[TIAB] OR “hospital physician consolidation*”[TIAB] OR “physician network*”[TIAB] OR “provider network*”[TIAB] OR “hospital network*”[TIAB]) AND (“health care”[TIAB] OR healthcare[TIAB] OR physician*[TIAB] OR hospital*[TIAB] OR provider*[TIAB] OR insurer[TIAB] OR insurance[TIAB] OR “health plan”[TIAB]) AND (employment[TIAB] OR labor[TIAB])

(“private equity”[Title/Abstract] OR “venture capital”[Title/Abstract] OR “growth capital”[Title/Abstract] OR “mid-market buyout”[Title/Abstract] OR “buyout”[Title/Abstract]) AND (health[Title/Abstract] OR “health care”[Title/Abstract] OR healthcare[Title/Abstract])

(“scope of practice”[TIAB]) AND (“law*”[TIAB] OR “legislation”[TIAB] OR “polic*”[TIAB]) AND (“cost*”[TIAB] OR “price*”[TIAB] OR “rate*”[TIAB] OR “spending”[TIAB] OR “utilization”[TIAB] OR “use”[TIAB] OR “quality” OR “outcome*”[TIAB] OR “supply”[TIAB] OR “number of”[TIAB]) AND (2011:2021[DP])

(“certificate of need”[TIAB]) AND (“health*”[TIAB]) AND (“law*”[TIAB] OR “legislation”[TIAB] OR “polic*”[TIAB]) AND (“cost*”[TIAB] OR “price*”[TIAB] OR “rate*”[TIAB] OR “spending”[TIAB] OR “utilization”[TIAB] OR “use”[TIAB] OR “quality” OR “outcome*”[TIAB] OR “supply”[TIAB] OR “number of”[TIAB] OR “concent*”[TIAB] OR “consolid*”[TIAB] OR “compet*”[TIAB] OR “market power”[TIAB]) AND (2011:2021[DP])

(“medical debt”[All Fields] OR “unpaid bills”[All Fields])

(“market power”[All Fields] OR “consolidation”[All Fields] OR “competition”[All Fields] OR “merger”[All Fields] OR “antitrust”[All Fields]) AND (“charity care”[All Fields] OR “uncompensated care”[All Fields])

((“surprise bill*”[Title/Abstract] OR (“surprise medical bill*”) OR (“balance bill*”[Title/Abstract] OR (“out-of-network bill*”[Title/Abstract] OR (“no surprises act”)[Title/Abstract] AND (health[Title/Abstract] OR “health care”[Title/Abstract] OR “healthcare”)[Title/Abstract]))

EconLit Search Terms

TI(consolidat* OR “market structure*” OR “market concentrat*” OR “market share*” OR merge* OR acquisition* OR acquir*) OR AB(consolidat* OR “market structure*” OR “market concentrat*” OR “market share*” OR merge* OR acquisition* OR acquir*) AND TI(“prescription drug*” OR “drug industr*”) OR AB(“prescription drug*” OR “drug

industr*”) OR (TI(pharmaceutical* OR pharmacy OR pharmacies) AND TI(market* OR industry OR industries OR company OR companies OR sector*)) OR (TI(pharmaceutical* OR pharmacy OR pharmacies) AND AB(market* OR industry OR industries OR company OR companies OR sector*)) OR (AB(pharmaceutical* OR pharmacy OR pharmacies) AND TI(market* OR industry OR industries OR company OR companies OR sector*)) OR (AB(pharmaceutical* OR pharmacy OR pharmacies) AND AB(market* OR industry OR industries OR company OR companies OR sector*)) OR TI(“pharmacy benefit manager*” OR “Medicare Part D”) OR AB(“pharmacy benefit manager*” OR “Medicare Part D”) AND TI(price* OR spending* OR quality OR access) OR AB(price* OR spending* OR quality OR access)

TI (“certificate of need” or certificate-of-need) OR AB (“certificate of need” or certificate-of-need)

Business Source Complete Search Terms

TI(consolidat* OR “market structure*” OR “market concentrat*” OR “market share*” OR merge* OR acquisition* OR acquir*) OR AB(consolidat* OR “market structure*” OR “market concentrat*” OR “market share*” OR merge* OR acquisition* OR acquir*) AND TI(price* OR spending* OR quality OR access) OR AB(price* OR spending* OR quality OR access) AND (Telehealth or telemedicine)

Search Results and Included Articles

Table A.1 shows the number of articles found and included in this scan.

Table A.1. Number of Studies Identified

Topic	Exemplar Articles^a	Database Search Results	Review Articles	Total Included Articles^b	Total Included in Evidence Tables
Horizontal hospital and physician consolidation	10	260	5	51	44
Horizontal insurer consolidation	6	51	0	15	14
Vertical consolidation	4	452	2	32	27
Pharmacy consolidation	5	1,865	0	7	1
Telehealth consolidation	5	342	0	6	0
Private equity investments and ownership	0	67	0	19	12
Anticompetitive practices	0	0	0	2	0
Barriers to entry	0	412	1	68	57
Recent trends in litigation	0	0	0	6	0
Charity care and medical debt	1	231	0	10	10
Surprise billing policies	0	71	0	20	7
TOTAL	31	3,751	8	236	172

^a Includes review articles and Congressional testimonies.

^b Includes articles from targeted searches.

Abbreviations

ACA	Affordable Care Act
ACO	accountable care organization
AG	Attorney General
AHA	American Hospital Association
AHRQ	Agency of Healthcare Research and Quality
AMA	American Medical Association
APCD	all-payer claims database
ASPE	Office of the Assistant Secretary for Planning and Evaluation
CBO	Congressional Budget Office
CBSA	core-based statistical area
CIN	clinically integrated network
CMS	Centers for Medicare & Medicaid Services
CON	certificate of need
COVID-19	coronavirus disease 2019
DOJ	U.S. Department of Justice
FIO	fully integrated organization
FTC	Federal Trade Commission
GAO	U.S. Government Accountability Office
HHI	Herfindahl-Hirschman Index
HHS	U.S. Department of Health and Human Services
HMO	health maintenance organization
IDR	independent dispute resolution
IDS	integrated delivery system
M&A	mergers and acquisitions
MA	Medicare Advantage
MCO	managed care organization
MOU	memorandum of understanding
MQ	methodological quality
MSA	metropolitan statistical area
NP	nurse practitioner
NSA	No Surprises Act
PBM	pharmacy benefit manager
PE	private equity
PECOS	Provider, Enrollment, Chain, and Ownership System
PHO	physician-hospital organization

PPO	preferred provider organization
QPA	qualified payment amount
SNF	skilled nursing facility
SOE	strength of evidence
SOP	scope of practice
SR	systematic review

References

AANP—*See* American Association of Nurse Practitioners.

Adams, E. Kathleen, and Sarah Markowitz, *Improving Efficiency in the Health-Care System: Removing Anticompetitive Barriers for Advanced Practice Registered Nurses and Physician Assistants*, Washington, D.C.: Brookings Institution, June 2018.

Adler, Loren, Erin Duffy, Bich Ly, Conrad Milhaupt, and Erin Trish, “Changes in Emergency Physician Service Prices After Connecticut’s 2016 Surprise Billing Law,” USC-Brookings Schaeffer Initiative for Health Policy essay, September 23, 2021. As of January 17, 2022: <https://www.brookings.edu/essay/changes-in-emergency-physician-service-prices-after-connecticuts-2016-surprise-billing-law/>

Adler, Loren, Erin Duffy, Bich Ly, and Erin Trish, “California Saw Reduction in Out-of-Network Care from Affected Specialties After 2017 Surprise Billing Law,” USC-Brookings Schaeffer Initiative for Health Policy, blog, September 26, 2019. As of January 17, 2022: <https://www.brookings.edu/blog/usc-brookings-schaeffer-on-health-policy/2019/09/26/california-saw-reduction-in-out-of-network-care-from-affected-specialties-after-2017-surprise-billing-law/>

Adler, Loren, Matthew Fiedler, Paul B. Ginsburg, Mark Hall, Erin Trish, Christen Linke Young, and Erin Duffy, “State Approaches to Mitigating Surprise Out-of-Network Billing,” USC-Brookings Schaeffer Initiative for Health Policy, blog, February 19, 2019. As of January 13, 2022: <https://www.brookings.edu/research/state-approaches-to-mitigating-surprise-out-of-network-billing/>

Adrion, Emily R., “Competition and Health Plan Quality in the Medicare Advantage Market,” *Health Services Research*, Vol. 54, No. 5, October 2019, pp. 1126–1136.

AHA—*See* American Hospital Association.

AHIP—*See* America’s Health Insurance Plans.

Aitken, Murray, Ernst R. Berndt, David Cutler, Michael Kleinrock, and Luca Maini, “Has the Era of Slow Growth for Prescription Drug Spending Ended?” *Health Affairs*, Vol. 35, No. 9, 2016, pp. 1595–1603.

Alexander, Jeffrey A., Gary J. Young, Bryan J. Weiner, and Larry R. Hearld, “How Do System-Affiliated Hospitals Fare in Providing Community Benefit?” *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, Vol. 46, No. 1, 2009, pp. 72–91.

- All-Payer Claims Database Council, “Interactive State Report Map,” webpage, undated. As of March 10, 2022:
<https://www.apcdouncil.org/state/map>
- Alpert, Abby, Helen Hsi, and Mireille Jacobson, “Evaluating the Role of Payment Policy in Driving Vertical Integration in the Oncology Market,” *Health Affairs*, Vol. 36, No. 4, April 2017, pp. 680–688.
- AMA—*See* American Medical Association.
- American Association of Nurse Practitioners, “State Practice Environment,” webpage, updated August 4, 2021. As of December 16, 2021:
<https://www.aanp.org/advocacy/state/state-practice-environment>
- American Hospital Association, “Hospital and Physician Groups File Lawsuit Over No Surprises Act Final Rules That Jeopardize Patient Access to Care,” webpage, December 10, 2021. As of December 16, 2021:
<https://www.aha.org/legal-documents/2021-12-10-hospital-and-physician-groups-file-lawsuit-over-no-surprises-act-final>
- American Medical Association, *Competition in Health Insurance: A Comprehensive Study of U.S. Markets*, Chicago, Ill., 2021.
- America’s Health Insurance Plans, “Can We Stop Surprise Medical Bills AND Strengthen Provider Networks? California Did,” *American Journal of Managed Care*, August 22, 2019.
- APCD—*See* All-Payer Claims Database.
- Appelbaum, Eileen, and Rosemary Batt, *Private Equity Buyouts in Healthcare: Who Wins, Who Loses?* New York: Institute for New Economic Thinking, Working Paper No. 118, March 15, 2020.
- Arnold, Daniel, and Christopher Whaley, “Who Pays for Health Care Costs? The Effects of Health Care Prices on Wages,” SSRN, July 21, 2020.
- ASPE—*See* Office of the Assistant Secretary for Planning and Evaluation.
- Atkins, Dorothy, “Sutter’s Revised \$575M Calif. Antitrust Deal Nears Initial OK,” *Law360*, March 9, 2021.
- Attebery, Timothy, Larry R. Hearld, Nathan Carroll, Jeff Szychowski, and Robert Weech-Maldonado, “Better Together? An Examination of the Relationship Between Acute Care Hospital Mergers and Patient Experience,” *Journal of Healthcare Management*, Vol. 65, No. 5, Sep–Oct 2020, pp. 330–343.

- Austin, Daniel R., and Laurence C. Baker, “Less Physician Practice Competition Is Associated with Higher Prices Paid for Common Procedures,” *Health Affairs*, Vol. 34, No. 10, October 2015, pp. 1753–1760.
- Bailey, James, “The Effect of Certificate of Need Laws on All-Cause Mortality,” *Health Services Research*, Vol. 53, No. 1, 2018, pp. 49–62.
- Bailey, James, and Tom Hamami, *Competition and Health-Care Spending: Theory and Application to Certificate of Need Laws*, Federal Reserve Bank of Philadelphia, Working Paper 19-38, October 2019.
- Bailey, James, Tom Hamami, and Daniel McCorry, “Certificate of Need Laws and Health Care Prices,” *Journal of Health Care Finance*, Vol. 43, No. 4, 2017.
- Baker, Laurence C., M. Kate Bundorf, and Daniel P. Kessler, “Vertical Integration: Hospital Ownership of Physician Practices Is Associated with Higher Prices and Spending,” *Health Affairs*, Vol. 33, No. 5, May 2014, pp. 756–763.
- Baker, Laurence C., M. Kate Bundorf, and Daniel P. Kessler, “The Effect of Hospital/Physician Integration on Hospital Choice,” *Journal of Health Economics*, Vol. 50, December 2016, pp. 1–8.
- Baker, Laurence C., M. Kate Bundorf, Anne B. Royalty, and Zachary Levin, “Physician Practice Competition and Prices Paid by Private Insurers for Office Visits,” *JAMA*, Vol. 312, No. 16, 2014, pp. 1653–1662.
- Baker, Matthew C., and Thomas Stratmann, “Barriers to Entry in the Healthcare Markets: Winners and Losers from Certificate-of-Need Laws,” *Socio-Economic Planning Sciences*, Vol. 77, October 2021.
- Baranes, Edmond, and David Bardey, “Competition Between Health Maintenance Organizations and Nonintegrated Health Insurance Companies in Health Insurance Markets,” *Health Economics Review*, Vol. 5, No. 36, 2015.
- Barnes, Hilary, Grant R. Martsolf, Matthew D. McHugh, and Michael R. Richards, “Vertical Integration and Physician Practice Labor Composition,” *Medical Care Research and Review*, Vol. 79, No. 1, 2022, pp. 46–47.
- Baumgarten, Allan, *Analysis of Integrated Delivery Systems and New Provider-Sponsored Health Plans*, Princeton, N.J.: Robert Wood Johnson Foundation, June 2017.
- Beaulieu, Nancy D., Leemore S. Dafny, Bruce E. Landon, Jesse B. Dalton, Ifedayo Kuye, and J. Michael McWilliams, “Changes in Quality of Care After Hospital Mergers and Acquisitions,” *New England Journal of Medicine*, Vol. 382, No. 1, January 2, 2020, pp. 51–59.

- Berenson, Robert A., Jaime S. King, Katherine L. Gudiksen, Roslyn Murray, and Adele Shartzter, *Addressing Health Care Market Consolidation and High Prices: The Role of the States*, Washington, D.C.: Urban Institute, January 2020.
- Berkman Nancy D., Kathleen N. Lohr, Mohammed Ansari, Marian McDonagh, Ethan Balk, Evelyn Whitlock, James Reston, Eric Bass, Mary Butler, Gerald Gartlehner, Lisa Hartling, Robert Kane, Melissa McPheeters, Laura Morgan, Sally C. Morton, Meera Viswanathan, Priyanka Sista, and Stephanie Chang, *Grading the Strength of a Body of Evidence When Assessing Health Care Interventions for the Effective Health Care Program of the Agency for Healthcare Research and Quality: An Update*, Rockville, Md.: Agency for Healthcare Research and Quality, November 2013.
- Boben, Paul J., “Medicaid Reform in the 1990s,” *Health Care Financing Review*, Vol. 22, No. 2, Winter 2000, pp. 1–5.
- Braun, Robert Tyler, Amelia M. Bond, Yuting Qian, Manyao Zhang, and Lawrence P. Casalino, “Private Equity in Dermatology: Effect on Price, Utilization, and Spending,” *Health Affairs*, Vol. 40, No. 5, May 2021, pp. 727–735.
- Braun, Robert Tyler, Hye-Young Jung, Lawrence P. Casalino, Zachary Myslinski, and Mark Aaron Unruh, “Association of Private Equity Investment in US Nursing Homes with the Quality and Cost of Care for Long-Stay Residents,” *JAMA Health Forum*, Vol. 2, No. 11, 2021.
- Braun, Robert Tyler, Hyunkyung Yun, Lawrence P. Casalino, Zachary Myslinski, Farai M. Kuwonga, Hye-Young Jung, and Mark Aaron Unruh, “Comparative Performance of Private Equity–Owned US Nursing Homes During the COVID-19 Pandemic,” *JAMA Network Open*, Vol. 3, No. 10, 2020.
- Brubaker, Harold, “Jefferson and Einstein Merger Clears Latest Legal Challenge by the FTC,” *Philadelphia Inquirer*, December 21, 2020.
- Brubaker, Harold, “Jefferson Completes Acquisition of Einstein Healthcare Network After Three-Year Wait,” *Philadelphia Inquirer*, October 4, 2021.
- Bruch, Joseph D., Suhas Gondi, and Zirui Song, “Changes in Hospital Income, Use, and Quality Associated with Private Equity Acquisition,” *JAMA Internal Medicine*, Vol. 180, No. 11, 2020, pp. 1428–1435.
- Burns, Lawton Robert, Jeffrey S. McCullough, Douglas R. Wholey, Gregory Kruse, Peter Kralovec, and Ralph Muller, “Is the System Really the Solution? Operating Costs in Hospital Systems,” *Medical Care Research and Review*, Vol. 72, No. 3, 2015, pp. 247–272.

- Butler, Johanna, Adney Rakotoniaina, and Deborah Fournier, “50-State Scan Shows Diversity of State Certificate-of-Need Laws,” National Academy for State Health Policy, webpage, May 22, 2020. As of January 17, 2022:
<https://www.nashp.org/50-state-scan-shows-diversity-of-state-certificate-of-need-laws/>
- Button, Keith, “M&A Forecast 2021: Telehealth Is Suddenly the Norm, and Deals Follow,” Middle Market Information, Mergers & Acquisitions, webpage, January 6, 2021. As of January 17, 2022:
<https://www.themiddlemarket.com/feature/ma-forecast-2021-telehealth-is-suddenly-the-norm-and-deals-follow>
- California Medical Association, *Surprise Billing Survey Results: Physicians Decry Unintended Consequences of California’s Surprise Billing Laws*, Sacramento, Calif., November 1, 2019.
- Campbell, Ellen S., and Melissa W. Ahern, “Have Procompetitive Changes Altered Hospital Provision of Indigent Care?” *Health Economics*, Vol. 2, No. 3, October 1993, pp. 281–289.
- Cancienne, Jourdan M., Robert Browning, Emmanuel Haug, James A. Browne, and Brian C. Werner, “Certificate-of-Need Programs Are Associated with a Reduced Incidence, Expenditure, and Rate of Complications with Respect to Knee Arthroscopy in the Medicare Population,” *HSS Journal*, Vol. 16, Suppl. 2, 2020, pp. 264–271.
- Capps, Cory S., *The Quality Effects of Hospital Mergers*, Washington, D.C.: U.S. Department of Justice, Economic Analysis Group discussion paper, October 2005.
- Capps, Cory S., Dennis W. Carlton, and Guy David, “Antitrust Treatment of Nonprofits: Should Hospitals Receive Special Care?” *Economic Inquiry*, Vol. 58, No. 3, July 2020, pp. 1183–1199.
- Capps, Cory, and David Dranove, “Hospital Consolidation and Negotiated PPO Prices,” *Health Affairs*, Vol. 23, No. 2, March/April 2004, pp. 175–181.
- Capps, Cory, David Dranove, and Christopher Ody, “Physician Practice Consolidation Driven by Small Acquisitions, So Antitrust Agencies Have Few Tools to Intervene,” *Health Affairs*, Vol. 36, No. 9, September 2017, pp. 1556–1563.
- Capps, Cory, David Dranove, and Christopher Ody, “The Effect of Hospital Acquisitions of Physician Practices on Prices and Spending,” *Journal of Health Economics*, Vol. 59, May 2018, pp. 139–152.
- Capps, Cory, David Dranove, and Mark Satterthwaite, “Competition and Market Power in Option Demand Markets,” *RAND Journal of Economics*, Vol. 34, No. 4, Winter 2003, pp. 737–763.

- Carlin, Caroline S., Bryan Dowd, and Roger Feldman, “Changes in Quality of Health Care Delivery After Vertical Integration,” *Health Services Research*, Vol. 50, No. 4, August 2015, pp. 1043–1068.
- Carlin, Caroline S., Roger Feldman, and Bryan Dowd, “The Impact of Hospital Acquisition of Physician Practices on Referral Patterns,” *Health Economics*, Vol. 25, No. 4, April 2016, pp. 439–454.
- Carlin, Caroline S., Roger Feldman, and Bryan Dowd, “The Impact of Provider Consolidation on Physician Prices,” *Health Economics*, Vol. 26, No. 12, December 2017, pp. 1789–1806.
- Casalino, Lawrence P., “The Federal Trade Commission, Clinical Integration, and the Organization of Physician Practice,” *Journal of Health Politics, Policy and Law*, Vol. 31, No. 3, 2006, pp. 569–585.
- Casp, Aaron J., Nicole E. Durig, Jourdan M. Cancienne, Brian C. Werner, and James A. Browne, “Certificate-of-Need State Laws and Total Hip Arthroplasty,” *Journal of Arthroplasty*, Vol. 34, No. 3, March 2019, pp. 401–407.
- CBO—See Congressional Budget Office.
- Centers for Medicare and Medicaid Services, “Hospital Price Transparency,” webpage, updated December 1, 2021. As of January 17, 2022:
<https://www.cms.gov/hospital-price-transparency>
- Cerullo, Marcelo, Kelly Kaili Yang, James Roberts, Ryan C. McDevitt, and Anaeze C. Offodile II, “Private Equity Acquisition and Responsiveness to Service-Line Profitability at Short-Term Acute Care Hospitals,” *Health Affairs*, Vol. 40, No. 11, November 2021, pp. 1697–1705.
- Chang, Victor, Robert H. Blackwell, Ryan M. Yau, Stephanie Besser, Joslyn M. Albright, Gopal N. Gupta, Paul C. Kuo, and Anai N. Kothari, “Variable Surgical Outcomes After Hospital Consolidation: Implications for Local Health Care Delivery,” *Surgery*, Vol. 160, No. 5, November 2016, pp. 1155–1161.
- Chartock, Benjamin L., Loren Adler, Bich Ly, Erin Duffy, and Erin Trish, “Arbitration Over Out-of-Network Medical Bills: Evidence from New Jersey Payment Disputes,” *Health Affairs*, Vol. 40, No. 1, January 2021, pp. 130–137.
- Chernew, Michael E., “Disparities in Payment Across Sites Encourage Consolidation,” *Health Services Research*, Vol. 56, No. 1, February 2021, pp. 5–6.
- Chiu, Kevin, “The Impact of Certificate of Need Laws on Heart Attack Mortality: Evidence from County Borders,” *Journal of Health Economics*, Vol. 79, No. 102518, September 2021.

- Chui, Philip W., Craig S. Parzynski, Joseph S. Ross, Nihar R. Desai, Hitinder S. Gurm, John A. Spertus, Arnold H. Seto, Vivian Ho, and Jephtha P. Curtis, “Association of Statewide Certificate of Need Regulations with Percutaneous Coronary Intervention Appropriateness and Outcomes,” *Journal of the American Heart Association*, Vol. 8, No. 2, January 22, 2019.
- Chunn, Vance M., Bisakha Sen, Stephen J. O’Connor, William F. Jessee, Joseph Sasson, and Amy Yarbrough Landry, “Integration of Cardiologists with Hospitals: Effects on Physician Compensation and Productivity,” *Health Care Management Review*, Vol. 45, No. 4, October/December, 2020, pp. 342–352.
- Ciliberto, Federico, and David Dranove, “The Effect of Physician-Hospital Affiliations on Hospital Prices in California,” *Journal of Health Economics*, Vol. 25, No. 1, January 2006, pp. 29–38.
- CMA—See California Medical Association.
- CMS—See Centers for Medicare and Medicaid Services.
- Cole, Christopher, “Class Attys Get \$152M as Sutter Settles Antitrust Case in Calif.,” *Law360*, August 31, 2021.
- Congressional Budget Office, *H.R. 2328, Reauthorizing and Extending America’s Community Health Act*, Washington, D.C., September 18, 2019.
- Congressional Budget Office, *Estimate for Divisions O Through FF H.R. 133, Consolidated Appropriations Act, 2021, Public Law 116-260*, Washington, D.C., January 14, 2021.
- Cooper, Zack, Stuart V. Craig, Martin Gaynor, and John Van Reenen, “The Price Ain’t Right? Hospital Prices and Health Spending on the Privately Insured,” *Quarterly Journal of Economics*, Vol. 134, No. 1, February 2019, pp. 51–107.
- Cooper, Zack, Stephen Gibbons, Simon Jones, and Alistair McGuire, “Does Hospital Competition Save Lives? Evidence from the English NHS Patient Choice Reforms,” *Economic Journal*, Vol. 121, No. 554, August 2011, pp. F228–F260.
- Cooper, Zack, James Han, and Neale Mahoney, “Hospital Lawsuits Over Unpaid Bills Increased by 37 Percent in Wisconsin from 2001 to 2018,” *Health Affairs*, Vol. 40, No. 12, 2021, pp. 1830–1835.
- Cooper, Zack, Fiona Scott Morton, and Nathan Shekita, “Surprise! Out-of-Network Billing for Emergency Care in the United States,” *Journal of Political Economy*, Vol. 128, No. 9, September 2020, pp. 3626–3677.

- Corlette, Sabrina, and Olivia Hoppe, “New York’s Law to Protect People from Surprise Balance Bills Is Working as Intended, but Gaps Remain,” CHIRblog, May 13, 2019. As of January 17, 2022:
<http://chirblog.org/new-york-law-surprise-balance-billing/>
- Crespin, Daniel J., Jon B. Christianson, Jeffrey S. McCullough, and Michael D. Finch, “Health System Consolidation and Diabetes Care Performance at Ambulatory Clinics,” *Health Services Research*, Vol. 51, No. 5, October 2016, pp. 1772–1795.
- Cuellar, Alison Evans, and Paul J. Gertler, “Strategic Integration of Hospitals and Physicians,” *Journal of Health Economics*, Vol. 25, No. 1, January 2006, pp. 1–28.
- Cunningham, Colleen, Florian Ederer, and Song Ma, “Killer Acquisitions,” *Journal of Political Economy*, Vol. 129, No. 3, 2021, pp. 649–702.
- Cunningham, Peter J., Gloria J. Bazzoli, and Aaron Katz, “Caught in the Competitive Crossfire: Safety-Net Providers Balance Margin and Mission in a Profit-Driven Health Care Market,” *Health Affairs*, Vol. 27, Suppl. 1, January 2008, pp. w374–w382.
- Currie, Janet, Mehdi Farsi, and W. Bentley Macleod, “Cut to the Bone? Hospital Takeovers and Nurse Employment Contracts,” *ILR Review*, Vol. 58, No. 3, April 2005, pp. 471–493.
- Dabora, Matan C., Namrata Turaga, and Kevin A. Schulman, “Financing and Distribution of Pharmaceuticals in the United States,” *JAMA*, Vol. 318, No. 1, 2017, pp. 21–22.
- Dafny, Leemore, “Estimation and Identification of Merger Effects: An Application to Hospital Mergers,” *Journal of Law and Economics*, Vol. 52, No. 3, August 2009, pp. 523–550.
- Dafny, Leemore S., “Are Health Insurance Markets Competitive?” *American Economic Review*, Vol. 100, No. 4, September 2010, pp. 1399–1431.
- Dafny, Leemore S., *Evaluating the Impact of the Health Insurance Industry Consolidation: Learning from Experience*, New York: The Commonwealth Fund, November 2015.
- Dafny, Leemore S., “How Health Care Consolidation Is Contributing to Higher Prices and Spending, and Reforms That Could Bolster Antitrust Enforcement and Preserve and Promote Competition in Health Care Markets,” testimony before the U.S. Committee on the Judiciary, Subcommittee on Antitrust, Commercial and Administrative Law, April 29, 2021.
- Dafny, Leemore, Mark Duggan, and Subramaniam Ramanarayanan, “Paying a Premium on Your Premium? Consolidation in the US Health Insurance Industry,” *American Economic Review*, Vol. 102, No. 2, April 2012, pp. 1161–1185.
- Dafny, Leemore, Kate Ho, and Robin S. Lee, “The Price Effects of Cross-Market Mergers: Theory and Evidence from the Hospital Industry,” *RAND Journal of Economics*, Vol. 50, No. 2, Summer 2019, pp. 286–325.

- Dafny, Leemore S., and Thomas H. Lee, “The Good Merger,” *New England Journal of Medicine*, Vol. 372, No. 22, May 2015, pp. 2077–2079.
- Dauda, Seidu, “Hospital and Health Insurance Markets Concentration and Inpatient Hospital Transaction Prices in the U.S. Health Care Market,” *Health Services Research*, Vol. 53, No. 2, April 2018, pp. 1203–1226.
- Degen, Ryan M., Jourdan M. Cancienne, and Brian C. Werner, “Do Certificate of Need Regulations Impact Total Shoulder Arthroplasty Volumes and Associated Complication Rates?” *Physician and Sportsmedicine*, Vol. 47, No. 3, September 2019, pp. 357–363.
- DOJ—See U.S. Department of Justice.
- Duffy, Erin L., “Influence of Out-of-Network Payment Standards on Insurer–Provider Bargaining: California’s Experience,” *American Journal of Managed Care*, Vol. 25, No. 8, August 2019, pp. e243–e246.
- Dunn, Abe, and Adam Hale Shapiro, “Do Physicians Possess Market Power?” *Journal of Law and Economics*, Vol. 57, No. 1, February 2014, pp. 159–193.
- Eisenberg, M, “Reimbursement Rates and Physician Participation in Medicare,” unpublished manuscript, Pittsburgh, Pa.: Carnegie Mellon University, 2011.
- Eliason, Erica L., Hannah MacDougall, and Lauren Peterson, “Understanding the Aggressive Practices of Nonprofit Hospitals in Pursuit of Patient Debt,” *Health and Social Work*, Vol. 47, No. 1, February 2022, pp. 36–44.
- Epstein, Andrew J., Jonathan D. Ketcham, and Sean Nicholson, “Specialization and Matching in Professional Services Firms,” *RAND Journal of Economics*, Vol. 41, No. 4, Winter 2010, pp. 811–834.
- Federal Trade Commission, *Competition and the Regulation of Advanced Practice Nurses*, Washington, D.C., March 2014.
- Federal Trade Commission, “In the Matter of Thomas Jefferson University,” case proceedings, webpage, last updated March 15, 2021a. As of January 17, 2022:
<https://www.ftc.gov/enforcement/cases-proceedings/181-0128/thomas-jefferson-university-matter>
- Federal Trade Commission, “Federal Trade Commission Withdraws Vertical Merger Guidelines and Commentary,” press release, Washington, D.C., September 15, 2021b.
- Federal Trade Commission, “Open Commission Meeting—February 17, 2022,” event description, February 17, 2022. As of February 25, 2022:
<https://www.ftc.gov/news-events/events-calendar/open-commission-meeting-february-17-2022>

- Fein, Adam J., “The Top 15 U.S. Pharmacies of 2019: Specialty Drugs Drive the Industry’s Evolution,” Drug Channels, webpage, March 3, 2020. As of February 18, 2022: <https://www.drugchannels.net/2020/03/the-top-15-us-pharmacies-of-2019.html>
- Fein, Adam J., “The Top Pharmacy Benefit Managers of 2020: Vertical Integration Drives Consolidation,” Drug Channels, webpage, April 6, 2021. As of January 22, 2022: <https://www.drugchannels.net/2021/04/the-top-pharmacy-benefit-managers-pbms.html>
- Feldman, Robin, “Drug Companies Keep Merging. Why That’s Bad for Consumers and Innovation,” *Washington Post*, April 6, 2021.
- Frank, Richard G., and Thomas G. McGuire, *Market Concentration and Potential Competition in Medicare Advantage*, New York: The Commonwealth Fund, February 2019.
- Frank, Richard G., and David S. Salkever, “The Supply of Charity Services by Nonprofit Hospitals: Motives and Market Structure,” *RAND Journal of Economics*, Vol. 22, No. 3, Autumn 1991, pp. 430–445.
- Freed, Meredith, Jeannie Fuglesten Biniek, Anthony Damico, and Tricia Neuman, “Medicare Advantage in 2021: Enrollment Update and Key Trends,” Kaiser Family Foundation, webpage, June 21, 2021. As of January 17, 2022: <https://www.kff.org/medicare/issue-brief/medicare-advantage-in-2021-enrollment-update-and-key-trends/>
- FTC—*See* Federal Trade Commission.
- Fulton, Brent D., “Health Care Market Concentration Trends in the United States: Evidence and Policy Responses,” *Health Affairs*, Vol. 36, No. 9, September 2017, pp. 1530–1538.
- Fulton, Brent D., Daniel R. Arnold, and Richard M. Scheffler, “Market Concentration Variation of Health Care Providers and Health Insurers in the United States,” Commonwealth Fund blog, July 30, 2018. As of January 17, 2022: <https://www.commonwealthfund.org/blog/2018/variation-healthcare-provider-and-health-insurer-market-concentration>
- Gandhi, Ashvin, YoungJun Song, and Prabhava Upadrashta, “Have Private Equity Owned Nursing Homes Fared Worse Under COVID-19?” SSRN, August 28, 2020.
- Gandhi, Ashvin, YoungJun Song, and Prabhava Upadrashta, “Private Equity, Consumers, and Competition: Evidence from the Nursing Home Industry,” SSRN, February 12, 2021.
- GAO—*See* U.S. Government Accountability Office.
- Garmon, Christopher, *Hospital Competition and Charity Care*, Washington, D.C.: Bureau of Economics, Federal Trade Commission, Working Paper 285, October 2006.

- Garmon, Christopher, and Benjamin Chartock, “One in Five Inpatient Emergency Department Cases May Lead To Surprise Bills,” *Health Affairs*, Vol. 36, No. 1, January 2017, pp. 177–181.
- Gaynor, Martin, “Hearing: Diagnosing the Problem: Exploring the Effects of Consolidation and Anticompetitive Conduct in Health Care Markets,” Washington, D.C.: U.S. House of Representatives, Subcommittee on Antitrust, Commercial, and Administrative Law (Committee on the Judiciary), March 7, 2019. As of January 17, 2022: <https://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=109024>
- Gaynor, Martin, *Antitrust Applied: Hospital Consolidation Concerns and Solutions*, statement before the Committee on the Judiciary, Subcommittee on Competition Policy, Antitrust, and Consumer Rights, May 19, 2021.
- Gaynor, Martin, Rodrigo Moreno-Serra, and Carol Propper, “Death by Market Power: Reform, Competition, and Patient Outcomes in the National Health Service,” *American Economic Journal: Economic Policy*, Vol. 5, No. 4, November 2013, pp. 134–166.
- Gaynor, Martin, Adam Sacarny, Raffaella Sadun, Chad Syverson, and Shruthi Venkatesh, *The Anatomy of a Hospital System Merger: The Patient Did Not Respond Well to Treatment*, Cambridge, Mass.: National Bureau of Economic Research, Working Paper No. 29449, November 2021.
- Gaynor, Martin, and Robert J. Town, “Chapter Nine—Competition in Health Care Markets,” in Mark V. Pauly, Thomas G. McGuire, and Pedro P. Barros, eds., *Handbook of Health Economics*, Vol. 2, Oxford, United Kingdom: Elsevier, 2012, pp. 499–637.
- Gaynor, Martin, and William B. Vogt, “Competition Among Hospitals,” *RAND Journal of Economics*, Vol. 34, No. 4, Winter 2003, pp. 764–785.
- Glied, Sherry A., and Stuart H. Altman, “Beyond Antitrust: Health Care and Health Insurance Market Trends and the Future of Competition,” *Health Affairs*, Vol. 36, No. 9, September 2017, pp. 1572–1577.
- Goddard, Maria, “Competition in Healthcare: Good, Bad or Ugly?” *International Journal of Health Policy and Management*, Vol. 4, No. 9, September 2015, pp. 567–569.
- Godwin, James, Daniel R. Arnold, Brent D. Fulton, and Richard M. Scheffler, “The Association Between Hospital-Physician Vertical Integration and Outpatient Physician Prices Paid by Commercial Insurers: New Evidence,” *Inquiry*, Vol. 58, January–December 2021.
- Gondi, Suhas, and Zirui Song, “Potential Implications of Private Equity Investments in Health Care Delivery,” *JAMA*, Vol. 321, No. 11, 2019, pp. 1047–1048.

- Gowrisankaran, Gautam, Aviv Nevo, and Robert Town, “Mergers When Prices Are Negotiated: Evidence from the Hospital Industry,” *American Economic Review*, Vol. 105, No. 1, January 2015, pp. 172–203.
- Gruber, Jonathan, “The Effect of Competitive Pressure on Charity: Hospital Responses to Price Shopping in California,” *Journal of Health Economics*, Vol. 13, No. 2, July 1994, pp. 183–212.
- Guardado, Jose R., David W. Emmons, and Carol K. Kane, “The Price Effects of a Large Merger of Health Insurers: A Case Study of UnitedHealth-Sierra,” *Health Management, Policy and Innovation*, Vol. 1, No. 3, 2013, pp. 16–35.
- Gudiksen, Katherine L., Erin C. Fuse Brown, and Johanna Butler, *A Tool for States to Address Health Care Consolidation: Prohibiting Anticompetitive Health Plan Contracts*, Portland, Me.: National Academy for State Health Policy, 2021.
- Gudiksen, Katherine L., Alexandra D. Montague, Jaime S. King, Amy Y. Gu, Brent D. Fulton, and Thomas L. Greaney, *Preventing Anticompetitive Contracting Practices in Healthcare Markets*, San Francisco, Calif.: Source on Healthcare Price and Competition, September 2020.
- Gupta, Atul, Sabrina T. Howell, Constantine Yannelis, and Abhinav Gupta, *Does Private Equity Investment in Healthcare Benefit Patients? Evidence from Nursing Homes*, Cambridge, Mass.: National Bureau of Economic Research, Working Paper No. 28474, February 2021.
- Gustafsson, Lovisa, Shanoor Seervai, and David Blumenthal, “The Role of Private Equity in Driving Up Health Care Prices,” *Harvard Business Review*, October 29, 2019.
- Gutierrez, Catherine, Rachel A. Lindor, Olesya Baker, David Cutler, and Jeremiah D. Schuur, “State Regulation of Freestanding Emergency Departments Varies Widely, Affecting Location, Growth, and Services Provided,” *Health Affairs*, Vol. 35, No. 10, October 2016, pp. 1857–1866.
- Haas-Wilson, Deborah, and Christopher Garmon, “Hospital Mergers and Competitive Effects: Two Retrospective Analyses,” *International Journal of the Economics of Business*, Vol. 18, No. 1, February 2011, pp. 17–32.
- Haddad, Diane N., Matthew J. Resnick, and Sayeh S. Nikpay, “Does Vertical Integration Improve Access to Surgical Care for Medicaid Beneficiaries?” *Journal of the American College of Surgeons*, Vol. 230, No. 1, January 2020, pp. 130–135.
- Hanson, Caroline, Bradley Herring, and Erin Trish, “Do Health Insurance and Hospital Market Concentration Influence Hospital Patients’ Experience of Care?” *Health Services Research*, Vol. 54, No. 4, August 2019, pp. 805–815.

- Harrington, Charlene, Brian Olney, Helen Carrillo, and Taewoon Kang, “Nurse Staffing and Deficiencies in the Largest For-Profit Nursing Home Chains and Chains Owned by Private Equity Companies,” *Health Services Research*, Vol. 47, No. 1, February 2012, pp. 106–128.
- Hartman, Micah, Anne B. Martin, Benjamin Washington, Aaron Catlin, and the National Health Expenditure Accounts Team, “National Health Care Spending in 2020: Growth Driven by Federal Spending in Response to the COVID-19 Pandemic,” *Health Affairs*, Vol. 41, No. 1, December 2021.
- Hayford, Tamara B., “The Impact of Hospital Mergers on Treatment Intensity and Health Outcomes,” *Health Services Research*, Vol. 47, No. 3 Pt. 1, June 2012, pp. 1008–1029.
- Health Care Cost Institute, *2017 Health Care Cost and Utilization Report*, Washington, D.C., February 2019.
- Heeringa, Jessica, Anne Mutti, Michael F. Furukawa, Amanda Lechner, Kristin A. Maurer, and Eugene Rich, “Horizontal and Vertical Integration of Health Care Providers: A Framework for Understanding Various Provider Organizational Structures,” *International Journal of Integrated Care*, Vol. 20, No. 1, January–March 2020.
- Henke, Rachel Mosher, Kathryn R. Fingar, H. Joanna Jiang, Lan Liang, and Teresa B. Gibson, “Access to Obstetric, Behavioral Health, and Surgical Inpatient Services After Hospital Mergers in Rural Areas,” *Health Affairs*, Vol. 40, No. 10, October 2021, pp. 1627–1636.
- Henretty, Kristen N., and Fang He, “Trends in Orthopedic Surgeon Practice Consolidation from 2008 to 2019,” *Journal of Arthroplasty*, Vol. 37, No. 3, March 2022, pp. 409–413.
- Herman, Bob, “Anthem-Cigna Merger Poses Promise and Perils,” *Modern Healthcare*, webpage, July 25, 2015. As of January 17, 2022:
<https://www.modernhealthcare.com/article/20150725/MAGAZINE/307259961/anthem-cigna-merger-poses-promise-and-perils>
- Herman, Bob, “Insurers Will Consolidate Even if Mega-Mergers Fail,” *Modern Healthcare*, webpage, July 23, 2016. As of January 17, 2022:
<https://www.modernhealthcare.com/article/20160723/MAGAZINE/307239989/insurers-will-consolidate-even-if-mega-mergers-fail>
- HHS—See U.S. Department of Health and Human Services.
- Ho, Kate, and Robin S. Lee, “Insurer Competition in Health Care Markets,” *Econometrica*, Vol. 85, No. 2, March 2017, pp. 379–417.
- Ho, Vivian, and Meei-Hsiang Ku-Goto, “State Deregulation and Medicare Costs for Acute Cardiac Care,” *Medical Care Research and Review*, Vol. 70, No. 2, April 2013, pp. 185–205.

- Ho, Vivian, Leanne Metcalfe, Lan Vu, Marah Short, and Robert Morrow, “Annual Spending per Patient and Quality in Hospital-Owned Versus Physician-Owned Organizations: An Observational Study,” *Journal of General Internal Medicine*, Vol. 35, No. 3, 2020, pp. 649–655.
- Horwitz, Jill R., and Daniel Polsky, “Cross Border Effects of State Health Technology Regulation,” *American Journal of Health Economics*, Vol. 1, No. 1, Winter 2015, pp. 101–123.
- Huang, Sean Shenghsiu, and John R. Bowblis, “Private Equity Ownership and Nursing Home Quality: An Instrumental Variables Approach,” *International Journal of Health Economics and Management*, Vol. 19, No. 3-4, December 2019, pp. 273–299.
- Humana, “Humana Acquires Family Physicians Group in Central Florida,” press release, Louisville, Ky., April 10, 2018.
- Institute of Medicine, Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing, *The Future of Nursing: Leading Change, Advancing Health*, Washington, D.C.: National Academies Press, 2011.
- Ippolito, Benedic, “Testimony on the Lower Health Care Costs Act,” statement before the Senate Committee on Health, Education, Labor, and Pensions, Washington, D.C., June 18, 2019.
- IOM—See Institute of Medicine.
- Jacobs, Paul D., Jessica S. Banthin, and Samuel Trachtman, “Insurer Competition in Federally Run Marketplaces Is Associated with Lower Premiums,” *Health Affairs*, Vol. 34, No. 12, December 2015, pp. 2027–2035.
- Jercich, Kat, “Amazon Looks to Bring Telehealth, In-Person Care to 20 More Cities,” *Healthcare IT News*, September 7, 2021. As of January 7, 2022:
<https://www.healthcareitnews.com/news/amazon-looks-bring-telehealth-person-care-20-more-cities>
- Jiang, H. Joanna, Kathryn R. Fingar, Lan Liang, Rachel M. Henke, and Teresa P. Gibson, “Quality of Care Before and After Mergers and Acquisitions of Rural Hospitals,” *JAMA Network Open*, Vol. 4, No. 9, 2021.
- Johnson, Garret, and Austin Frakt, “Hospital Markets in the United States, 2007–2017,” *Healthcare*, Vol. 8, No. 3, September 2020.
- Kane, Carol K., *Recent Changes in Physician Practice Arrangements: Private Practice Dropped to Less Than 50 Percent of Physicians in 2020*, Chicago, Ill.: American Medical Association, 2021.
- Kaufman, Hall & Associates, *M&A Quarterly Activity Report: Q1 2021*, Chicago, Ill., 2021.

- Keisler-Starkey, Katherine, and Lisa N. Bunch, *Health Insurance Coverage in the United States: 2020*, Washington, D.C.: U.S. Census Bureau, September 2021.
- Keith, Katie, Jack Hoadley, and Kevin Lucia, “Banning Surprise Bills: Biden Administration Issues First Rule on the No Surprises Act,” *Health Affairs Blog*, July 6, 2021. As of January 17, 2022:
<https://www.healthaffairs.org/doi/10.1377/hblog20210706.903518/full/>
- Kessler, Daniel P., and Mark B. McClellan, “Is Hospital Competition Socially Wasteful?” *Quarterly Journal of Economics*, Vol. 115, No. 2, May 2000, pp. 577–615.
- King, Jaime S, and Erin C. Fuse Brown, “The Anti-Competitive Potential of Cross-Market Mergers in Health Care,” *Saint Louis University Journal of Health Law and Policy*, Vol. 11, No. 1, 2017.
- Kluender, Raymond, Neale Mahoney, Francis Wong, and Wesley Yin, “Medical Debt in the US, 2009–2020,” *JAMA*, Vol. 326, No. 3, July 20, 2021, pp. 250–256.
- Koch, Thomas, and Shawn W. Ulrich, “Price Effects of a Merger: Evidence from a Physicians’ Market,” *Economic Inquiry*, Vol. 59, No. 2, April 2021, pp. 790–802.
- Koch, Thomas G., Brett W. Wendling, and Nathan E. Wilson, “How Vertical Integration Affects the Quantity and Cost of Care for Medicare Beneficiaries,” *Journal of Health Economics*, Vol. 52, March 2017, pp. 19–32.
- Koch, Thomas, Brett Wendling, and Nathan E. Wilson, “Physician Market Structure, Patient Outcomes, and Spending: An Examination of Medicare Beneficiaries,” *Health Services Research*, Vol. 53, No. 5, October 2018, pp. 3549–3568.
- Kocher, Robert P., Soleil Shah, and Amol S. Navathe, “Overcoming the Market Dominance of Hospitals,” *JAMA*, Vol. 325, No. 10, 2021, pp. 929–930.
- Koenig, Bryan, “FTC Abandons Challenge to \$599M Philly Hospital Deal,” Law360 Legal News, webpage, March 1, 2021.
- Kona, Maanasa, “State Balance-Billing Protections,” Commonwealth Fund, webpage, February 5, 2021. As of January 13, 2022:
<https://www.commonwealthfund.org/publications/maps-and-interactives/2021/feb/state-balance-billing-protections>
- Krishnan, Ranjani, “Market Restructuring and Pricing in the Hospital Industry,” *Journal of Health Economics*, Vol. 20, No. 2, March 2001, pp. 213–237.

- Kuziemko, Ilyana, Katherine R. Meckel, and Maya Rossin-Slater, *Do Insurers Risk-Select Against Each Other? Evidence from Medicaid and Implications for Health Reform*, Cambridge, Mass.: National Bureau of Economic Research, Working Paper No. 19198, July 2013.
- La Forgia, Ambar, Amelia M. Bond, Robert Tyler Braun, Klaus Kjaer, Manyao Zhang, and Lawrence P. Casalino, “Association of Surprise-Billing Legislation with Prices Paid to In-Network and Out-of-Network Anesthesiologists in California, Florida, and New York: An Economic Analysis,” *JAMA Internal Medicine*, Vol. 181, No. 10, 2021, pp. 1324–1331.
- Lagasse, Jeff, “Anthem Completes Acquisition of MMM Holdings from InnovaCare Health,” *Healthcare Finance*, webpage, July 2, 2021. As of January 7, 2022: <https://www.healthcarefinancenews.com/news/anthem-completes-acquisition-mmm-holdings-innovacare-health>
- Landi, Heather, “Teladoc Finalizes Blockbuster Deal with Livongo in Less Than 3 Months,” *Fierce Healthcare*, webpage, October 30, 2020. As of January 17, 2022: <https://www.fiercehealthcare.com/finance/teladoc-finalizes-blockbuster-deal-livongo-less-than-three-months>
- Landi, Heather, “Walmart to Acquire Telehealth Company MeMD as Amazon Care Signs First Customer,” *Fierce Healthcare*, webpage, May 7, 2021a. As of January 17, 2022: <https://www.fiercehealthcare.com/tech/walmart-to-acquire-telehealth-company-memd-as-amazon-care-signs-first-customer>
- Landi, Heather, “Amwell Scoops up 2 Digital Health Companies for \$320M as Tech M&A Heats up,” *Fierce Healthcare*, webpage, July 28, 2021b. As of January 17, 2022: <https://www.fiercehealthcare.com/tech/amwell-scoops-up-two-digital-health-companies-for-320m-as-tech-m-a-heats-up>
- Layton, Timothy J., Alice Ndikumana, and Mark Shepard, “Chapter 18—Health Plan Payment in Medicaid Managed Care: A Hybrid Model of Regulated Competition,” in Thomas G. McGuire and Richard C. van Kleef, eds., *Risk Adjustment, Risk Sharing and Premium Regulation in Health Insurance Markets: Theory and Practice*, London: Academic Press, 2018, pp. 523–561.
- Lewis, Matthew S., and Kevin E. Pflum, “Hospital Systems and Bargaining Power: Evidence from Out-of-Market Acquisitions,” *RAND Journal of Economics*, Vol. 48, No. 3, Fall 2017, pp. 579–610.
- Li, Suhui, and Avi Dor, “How Do Hospitals Respond to Market Entry? Evidence from a Deregulated Market for Cardiac Revascularization,” *Health Economics*, Vol. 24, No. 8, August 2015, pp. 990–1008.

- Liu, Tong, “Bargaining with Private Equity: Implications for Hospital Prices and Patient Welfare,” SSRN, July 30, 2021.
- Livingston, Shelby, “The Engagements and Eventual Breakups of the Insurance Giants,” *Modern Healthcare*, Vol. 47, No. 8, February 18, 2017, pp. 12–13.
- Lorch, S. A., P. Maheshwari, and O. Even-Shoshan, “The Impact of Certificate of Need Programs on Neonatal Intensive Care Units,” *Journal of Perinatology*, Vol. 32, No. 1, January 2012, pp. 39–44.
- Luo, Jing, Martin Kulldorff, Ameet Sarpatwari, Ajinkya Pawar, and Aaron S. Kesselheim, “Variation in Prescription Drug Prices by Retail Pharmacy Type: A National Cross-Sectional Study,” *Annals of Internal Medicine*, Vol. 171, No. 9, November 2019, pp. 605–611.
- Luo, Tianyuan, Cesar L. Escalante, and Carmina E. Taylor, “Labor Market Outcomes of Granting Full Professional Independence to Nurse Practitioners,” *Journal of Regulatory Economics*, Vol. 60, No. 1, August 2021, pp 22–54.
- Lyu, Peter F., Michael E. Chernew, and J. Michael McWilliams, “Soft Consolidation in Medicare ACOs: Potential for Higher Prices Without Mergers or Acquisitions,” *Health Affairs*, Vol. 40, No. 6, June 2021, pp. 979–988.
- Machta, Rachel M., Kristin A. Maurer, David J. Jones, Michael F. Furukawa, and Eugene C. Rich, “A Systematic Review of Vertical Integration and Quality of Care, Efficiency, and Patient-Centered Outcomes,” *Health Care Management Review*, Vol. 44, No. 2, April/June 2019, pp. 159–173.
- Madison, Kristin, “Hospital-Physician Affiliations and Patient Treatments, Expenditures, and Outcomes,” *Health Services Research*, Vol. 39, No. 2, April 2004, pp. 257–278.
- Mani, Meera, Katherine Linzer, Carlos Pardo Martin, and Brian Latko, “Five Trends Shaping the Future of Medicaid,” McKinsey & Company webpage, March 29, 2019. As of January 17, 2022:
<https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/five-trends-shaping-the-future-of-medicaid>
- Mann, Joyce, Glenn Melnick, Anil Bamezai, and Jack Zwanziger, “Uncompensated Care: Hospitals’ Responses to Fiscal Pressures,” *Health Affairs*, Vol. 14, No. 1, Spring 1995, pp. 263–270.
- Markowitz, Sara, and E. Kathleen Adams, *The Effects of State Scope of Practice Laws on the Labor Supply of Advanced Practice Registered Nurses*, Cambridge, Mass.: National Bureau of Economic Research, Working Paper No. 26896, March 2020.

- Markowitz, Sara, E. Kathleen Adams, Mary Jane Lewitt, and Anne L. Dunlop, “Competitive Effects of Scope of Practice Restrictions: Public Health or Public Harm?” *Journal of Health Economics*, Vol. 55, September 2017, pp. 201–218.
- Mathematica, *Medicaid Managed Care Enrollment and Program Characteristics, 2019*, Princeton, N.J., Summer 2021.
- Mathews, Anna Wilde, “Physicians, Hospitals Meet Their New Competitor: Insurer-Owned Clinics” *Wall Street Journal*, February 23, 2020.
- McMichael, Benjamin J., “Nurse Practitioner Scope-of-Practice Laws and Opioid Prescribing,” *Milbank Quarterly*, Vol. 99, No. 3, September 2021, pp. 721–745.
- Medicare Payment Advisory Commission, “Chapter 15: Congressional Request on Health Care Provider Consolidation,” *Report to the Congress: Medicare Payment Policy*, Washington, D.C., March 2020.
- Medicare Payment Advisory Commission, *Report to the Congress: Medicare and the Health Care Delivery System*, Washington, D.C., June 2021.
- MedPAC—*See* Medicare Payment Advisory Commission.
- de la Merced, Michael J., and Leslie Picker, “Judge, Citing Harm to Customers, Blocks \$48 Billion Anthem-Cigna Merger,” *New York Times*, February 18, 2017.
- Millett, Christopher, Arpita Chattopadhyay, and Andrew B. Bindman, “Unhealthy Competition: Consequences of Health Plan Choice in California Medicaid,” *American Journal of Public Health*, Vol. 100, No. 11, November 2010, pp. 2235–2240.
- Mitchell, Jean M., and Carole Roan Gresenz, “Documenting Horizontal Integration Among Urologists Who Treat Prostate Cancer,” *Medical Care Research and Review*, Vol. 79, No. 1, February 2022, pp. 141–150.
- Morrisey, Michael A., “Hospital Cost Shifting, a Continuing Debate,” Employee Benefit Research Institute Issue Brief, No. 180, December 1996.
- Muench, Ulrike, Christopher Whaley, Janet Coffman, and Joanne Spetz, “Scope-of-Practice for Nurse Practitioners and Adherence to Medications for Chronic Illness in Primary Care,” *Journal of General Internal Medicine*, Vol. 36, No. 2, February 2021, pp. 478–486.
- Muhlestein, David B., and Nathan J. Smith, “Physician Consolidation: Rapid Movement from Small to Large Group Practices, 2013–15,” *Health Affairs*, Vol. 35, No. 9, September 2016, pp. 1638–1642.
- Myers, Molly S., and Kathleen M. Sheehan, “The Impact of Certificate of Need Laws on Emergency Department Wait Times,” *Journal of Private Enterprise*, Vol. 35, No. 1, Spring 2020, pp. 59–75.

- Nakagawa, Keisuke, Joseph Kvedar, and Peter Yellowlees, “Retail Outlets Using Telehealth Pose Significant Policy Questions for Health Care,” *Health Affairs*, Vol. 37, No. 12, December 2018, pp. 2069–2075.
- National Conference of State Legislatures, “Certificate of Need (CON) State Laws,” webpage, December 20, 2021. As of March 12, 2022:
<https://www.ncsl.org/research/health/con-certificate-of-need-state-laws.aspx>
- Neprash, Hannah T., Michael E. Chernew, Andrew L. Hicks, Teresa Gibson, and J. Michael McWilliams, “Association of Financial Integration Between Physicians and Hospitals with Commercial Health Care Prices,” *JAMA Internal Medicine*, Vol. 175, No. 12, December 2015, pp. 1932–1939.
- Neprash, Hannah T., J. Michael McWilliams, and Michael E. Chernew, “Physician Organization and the Role of Workforce Turnover,” *Annals of Internal Medicine*, Vol. 172, No. 8, April 21, 2020, pp. 568–570.
- New York Health Plan Association, “Managed Care Consolidation,” slides, November 16, 2017. As of December 20, 2021:
<https://nyhpa.org/wp-content/uploads/2017/01/EdFishman.pdf>
- Ni, Huan, Jomon Aliyas Paul, and Aniruddha Bagchi, “Effect of Certificate of Need Law on the Intensity of Competition: The Market for Emergency Care,” *Socio-Economic Planning Sciences*, Vol. 60, December 2017, pp. 34–48.
- Nicholson, Sean, “Barriers to Entering Medical Specialties,” working paper, Cambridge, Mass.: National Bureau of Economic Research, No. 9649, April 2003.
- Nikpay, Sayeh S., Michael R. Richards, and David Penson, “Hospital-Physician Consolidation Accelerated in the Past Decade in Cardiology, Oncology,” *Health Affairs*, Vol. 37, No. 7, July 2018, pp. 1123–1127.
- Office of the Assistant Secretary for Planning and Evaluation, *Evidence on Surprise Billing: Protecting Consumers with the No Surprises Act*, Washington, D.C., November 22, 2021.
- O’Hanlon, Claire E., Ashley M. Kranz, Maria DeYoreo, Ammarah Mahmud, Cheryl L. Damberg, and Justin Timbie, “Access, Quality, and Financial Performance of Rural Hospitals Following Health System Affiliation,” *Health Affairs*, Vol. 38, No. 12, December 2019, pp. 2095–2104.
- O’Hanlon, Claire E., Christopher M. Whaley, and Deborah Freund, “Medical Practice Consolidation and Physician Shared Patient Network Size, Strength, and Stability,” *Medical Care*, Vol. 57, No. 9, September 2019, pp. 680–687.
- Ohsfeldt, Robert L., and Pengxiang Li, “State Entry Regulation and Home Health Agency Quality Ratings,” *Journal of Regulatory Economics*, Vol. 53, No. 1, 2018.

- Paul, Jomon A., Huan Ni, and Aniruddha Bagchi, “Does Certificate of Need Law Enhance Competition in Inpatient Care Market? An Empirical Analysis,” *Health Economics, Policy and Law*, Vol. 14, No. 3, July 2019, pp. 400–420.
- Pelech, Daria, “Paying More for Less? Insurer Competition and Health Plan Generosity in the Medicare Advantage Program,” *Journal of Health Economics*, Vol. 61, September 2018, pp. 77–92.
- Physicians Advocacy Institute, “COVID-19’s Impact on Acquisitions of Physician Practices and Physician Employment 2019–2020,” slides, June 2021.
- Picker, Leslie, and Reed Abelson, “U.S. Sues to Block Anthem-Cigna and Aetna-Humana Mergers,” *New York Times*, July 21, 2016.
- Pollock, Jordan R., Jacob S. Hogan, Arjun K. Venkatesh, Benjamin J. Sandefur, Jeffery A. Weyand, Maya T. Harrington, Anna M. Pisac, and Rachel A. Lindor, “Group Practice Size Consolidation in Emergency Medicine,” *Annals of Emergency Medicine*, Vol. 79, No. 1, January 2022, pp. 2–6.
- Polsky, Daniel, Guy David, Jianing Yang, Bruce Kinosian, and Rachel M. Werner, “The Effect of Entry Regulation in the Health Care Sector: The Case of Home Health,” *Journal of Public Economics*, Vol. 110, 2014, pp. 1–14.
- Polyakova, Maria, M. Kate Bundorf, Daniel P. Kessler, and Laurence C. Baker, “ACA Marketplace Premiums and Competition Among Hospitals and Physician Practices,” *American Journal of Managed Care*, Vol. 24, No. 2, February 2018, pp. 85–90.
- Post, Brady, Tom Buchmueller, and Andrew M. Ryan, “Vertical Integration of Hospitals and Physicians: Economic Theory and Empirical Evidence on Spending and Quality,” *Medical Care Research and Review*, Vol. 75, No. 4, 2017, pp. 399–433.
- Post, Brady, Edward C. Norton, Brent Hollenbeck, Thomas Buchmueller, and Andrew M. Ryan, “Hospital-Physician Integration and Medicare’s Site-Based Outpatient Payments,” *Health Services Research*, Vol. 56, No. 1, February 2021, pp. 7–15.
- Pradhan, Rohit, Robert Weech-Maldonado, Jeffrey S. Harman, Mona Al-Amin, and Kathryn Hyer, “Private Equity Ownership of Nursing Homes: Implications for Quality,” *Journal of Health Care Finance*, Vol. 42, No. 2, 2014.
- Prager, Elena, and Matt Schmitt, “Employer Consolidation and Wages: Evidence from Hospitals,” *American Economic Review*, Vol. 111, No. 2, February 2021, pp. 397–427.
- Public Law 116–260, Consolidated Appropriations Act, 2021, December 27, 2020.

- Rabbani, Maysam, “Non-Profit Hospital Mergers: The Effect on Healthcare Costs and Utilization,” *International Journal of Health Economics and Management*, Vol. 21, No. 4, December 2021, pp. 427–455.
- Rahman, Momotazur, Omar Galarraga, Jacqueline S. Zinn, David C. Grabowski, and Vincent Mor, “The Impact of Certificate-of-Need Laws on Nursing Home and Home Health Care Expenditures,” *Medical Care Research and Review*, Vol. 73, No. 1, February 2016, pp. 85–105.
- RAND Corporation, “RAND Center of Excellence on Health System Performance,” webpage, undated. As of March 15, 2022:
<https://www.rand.org/health-care/centers/health-system-performance.html>
- Richards, Michael R., Sayeh S. Nikpay, and John A. Graves, “The Growing Integration of Physician Practices: With a Medicaid Side Effect,” *Medical Care*, Vol. 54, No. 7, July 2016, pp. 714–718.
- Richards, Michael R., Jonathan A. Seward, and Christopher M. Whaley, “Treatment Consolidation After Vertical Integration: Evidence from Outpatient Procedure Markets,” *Journal of Health Economics*, Vol. 81, January 2022.
- Ridgely, M. Susan, Christine Buttorff, Laura J. Wolf, Erin Lindsey Duffy, Ashlyn K. Tom, Cheryl L. Damberg, Dennis P. Scanlon, and Mary E. Vaiana, “The Importance of Understanding and Measuring Health System Structural, Functional, and Clinical Integration,” *Health Services Research*, Vol. 55, No. S3, December 2020, pp. 1049–1061.
- Ridgely, M. Susan, Cheryl L. Damberg, Mark Totten, and José J. Escarce, “The Perils of PECOS: Using Medicare Administrative Data to Answer Important Policy Questions About Health Care Markets,” *Health Affairs Blog*, 2021. As of January 13, 2022:
<https://www.healthaffairs.org/doi/10.1377/forefront.20201222.615286/full/>
- Ridgely, M. Susan, Justin W. Timbie, Laura J. Wolf, Erin Lindsey Duffy, Christine Buttorff, Ashlyn Tom, and Mary E. Vaiana, *Consolidation by Any Other Name: The Emergence of Clinically Integrated Networks*, Santa Monica, Calif.: RAND Corporation, RR-A370-1, 2020. As of January 13, 2022:
https://www.rand.org/pubs/research_reports/RRA370-1.html
- Robinson, James C., and Kelly Miller, “Total Expenditures per Patient in Hospital-Owned and Physician-Owned Physician Organizations in California,” *JAMA*, Vol. 312, No. 16, October 2014, pp. 1663–1669.
- Romano, Patrick S., and David J. Balan, “A Retrospective Analysis of the Clinical Quality Effects of the Acquisition of Highland Park Hospital by Evanston Northwestern Healthcare,” *International Journal of the Economics of Business*, Vol. 18, No. 1, 2011, pp. 45–64.

- Rosenkrantz, Andrew B., Howard B. Fleishon, Ezequiel Silva III, Claire E. Bender, and Richard Duszak, Jr., “Radiology Practice Consolidation: Fewer but Bigger Groups Over Time,” *Journal of the American College of Radiology*, Vol. 17, No. 3, March 2020, pp. 340–348.
- Rosso, Ryan J., Noah D. Isserman, and Wen W. Shen, *Surprise Billing in Private Health Insurance: Overview of Federal Consumer Protections and Payment for Out-of-Network Services*, Washington, D.C.: Congressional Research Service, R46856, July 26, 2021.
- Sanger-Katz, Margot, Julie Creswell, and Reed Abelson, “Mystery Solved: Private-Equity-Backed Firms Are Behind Ad Blitz on ‘Surprise Billing,’” *New York Times*, September 13, 2019.
- Scheffler, Richard M., Laura M. Alexander, and James R. Godwin, *Soaring Private Equity Investment in the Healthcare Sector: Consolidation Accelerated, Competition Undermined, and Patients at Risk*, Washington, D.C.: American Antitrust Institute and Petris Center on Health Care Markets and Consumer Welfare, May 18, 2021.
- Scheffler, Richard M., Daniel R. Arnold, Brent D. Fulton, and Sherry A. Glied, “Differing Impacts of Market Concentration on Affordable Care Act Marketplace Premiums,” *Health Affairs*, Vol. 35, No. 5, May 2016, pp. 880–888.
- Scheffler, Richard M., Daniel R. Arnold, and Christopher M. Whaley, “Consolidation Trends in California’s Health Care System: Impacts on ACA Premiums and Outpatient Visit Prices,” *Health Affairs*, Vol. 37, No. 9, September 2018, pp. 1409–1416.
- Schlesinger, Mark, Robert Dorwart, Claudia Hoover, and Sherrie Epstein, “Competition, Ownership, and Access to Hospital Services: Evidence from Psychiatric Hospitals,” *Medical Care*, Vol. 35, No. 9, September 1997, pp. 974–992.
- Schmitt, Matt, “Do Hospital Mergers Reduce Costs?” *Journal of Health Economics*, Vol. 52, March 2017, pp. 74–94.
- Schultz, Olivia A., Lewis Shi, and Michael Lee, “Assessing the Efficacy of Certificate of Need Laws Through Total Joint Arthroplasty,” *Journal for Healthcare Quality*, Vol. 43, No. 1, Jan–Feb 2021, pp. e1–e7.
- Schwartz, Karyn, Eric Lopez, Matthew Rae, and Tricia Neuman, “What We Know About Provider Consolidation,” Kaiser Family Foundation, webpage, September 2, 2020. As of February 18, 2022:
<https://www.kff.org/health-costs/issue-brief/what-we-know-about-provider-consolidation>
- Scott, Kirstin W., E. John Orav, David M. Cutler, and Ashish K. Jha, “Changes in Hospital-Physician Affiliations in U.S. Hospitals and Their Effect on Quality of Care,” *Annals of Internal Medicine*, Vol. 166, No. 1, January 2017.

- Seeley, Elizabeth, and Surya Singh, *Competition, Consolidation, and Evolution in the Pharmacy Market: Implications for Efforts to Contain Drug Prices and Spending*, New York: Commonwealth Fund, August 2021.
- Shakya, Shishir, and Alicia Plemmons, “Does Scope of Practice Affect Mobility of Nurse Practitioners Serving Medicare Beneficiaries?” *Journal of Labor Research*, Vol. 41, No. 4, Special Issue, 2020, pp. 421–434.
- Short, Marah N., and Vivian Ho, “Weighing the Effects of Vertical Integration Versus Market Concentration on Hospital Quality,” *Medical Care Research and Review*, Vol. 77, No. 6, December 2020, pp. 538–548.
- Short, Marah, Vivian Ho, and Ayse McCracken, *The Integration and De-Integration of Physicians and Hospitals Over Time*, Houston, Tex.: Center for Health + Biosciences at Rice University’s Baker Institute for Public Policy, January 2017.
- Singer, Sara J., Michaela Kerrissey, Mark Friedberg, and Russell Phillips, “A Comprehensive Theory of Integration,” *Medical Care Research and Review*, Vol. 77, No. 2, 2020, pp. 196–207.
- Singh, Rohin, Kent R. Richter, Jordan R. Pollock, Jack M. Haglin, Noel Balli, Joshua S. Catapano, Richard S. Zimmerman, and Naresh P. Patel, “Trends in Neurosurgical Practice Size: Increased Consolidation 2014–2019,” *World Neurosurgery*, Vol. 149, May 2021, pp. e714–e720.
- Smith, Laura Barrie, “The Effect of Nurse Practitioner Scope of Practice Laws on Primary Care Delivery,” *Health Economics*, Vol. 31, No. 1, January 2022, pp. 21–41.
- Social and Scientific Systems, Inc., *Impact of the Assignment of Benefits Legislation*, Silver Spring, Md., January 15, 2015.
- Sridharan, Mathangi, Azeem Tariq Malik, Frank M. Phillips, Sheldon Retchin, Wendy Xu, Elizabeth Yu, and Safdar N. Khan, “Certificate-of-Need State Laws and Elective Posterior Lumbar Fusions: Is It Time to Repeal the Mandate?” *World Neurosurgery*, Vol. 144, December 2020, pp. e495–e499.
- Staiger, Douglas O., Joanne Spetz, and Ciaran S. Phibbs, “Is There Monopsony in the Labor Market? Evidence from a Natural Experiment,” *Journal of Labor Economics*, Vol. 28, No. 2, April 2010, pp. 211–236.
- State of New York, State of Tennessee, and the Commonwealth of Virginia v. Anthem, Inc. and Cigna Corp.*, 855 F.3d 345 (D.C. Cir. 2017).
- Stevenson, David G., and David C. Grabowski, “Private Equity Investment and Nursing Home Care: Is It a Big Deal?” *Health Affairs*, Vol. 27, No. 5, 2008, pp. 1399–1408.

- Stone, Jon, “UnitedHealth Group Soon to Be Largest Employer of Doctors in the US; Clinical Laboratory Outreach More Critical Than Ever Before,” *Dark Daily*, webpage, June 29, 2018. As of February 25, 2022:
<https://www.darkdaily.com/2018/06/29/unitedhealth-group-soon-to-be-largest-employer-of-doctors-in-the-us-clinical-laboratory-outreach-more-critical-than-ever-before-629/>
- Sullivan, Daniel, “Monopsony Power in the Market for Nurses,” *Journal of Law and Economics*, Vol. 32, No. 2, 1989, pp. S135–S178.
- Teladoc Health, “Teladoc Health Completes Acquisition of InTouch Health, Creating Single Virtual Care Delivery Leader from Hospital to Home,” press release, Purchase, N.Y., July 1, 2020.
- Tenn, Steven, “The Price Effects of Hospital Mergers: A Case Study of the Sutter–Summit Transaction,” *International Journal of the Economics of Business*, Vol. 18, No. 1, 2011, pp. 65–82.
- Thompson, Aileen, “The Effect of Hospital Mergers on Inpatient Prices: A Case Study of the New Hanover–Cape Fear Transaction,” *International Journal of the Economics of Business*, Vol. 18, No. 1, 2011, pp. 91–101.
- Timbie, Justin W., Ashley M. Kranz, Maria DeYoreo, Blen Eshete-Roesler, Marc N. Elliott, José J. Escarce, Mark E. Totten, and Cheryl L. Damberg, “Racial and Ethnic Disparities in Care for Health System–Affiliated Physician Organizations and Non-Affiliated Physician Organizations,” *Health Services Research*, Vol. 55, No. S3, December 2020, pp. 1107–1117.
- Town, Robert, and Gregory Vistnes, “Hospital Competition in HMO Networks,” *Journal of Health Economics*, Vol. 20, No. 5, September 2001, pp. 733–753.
- Tozzi, John, “UnitedHealth Chases 10,000 More Doctors for Biggest U.S. Network,” *Bloomberg News*, March 5, 2021.
- Trish, Erin E., and Bradley J. Herring, “How Do Health Insurer Market Concentration and Bargaining Power with Hospitals Affect Health Insurance Premiums?” *Journal of Health Economics*, Vol. 42, July 2015, pp. 104–114.
- UnitedHealth Group, “Optum Completes Acquisition of DaVita Medical Group from DaVita,” press release, Eden Prairie, Minn., June 19, 2019.
- U.S. Department of Health and Human Services, “Telehealth: Delivering Care Safely During COVID-19,” webpage, updated July 15, 2020. As of December 20, 2021:
<https://www.hhs.gov/coronavirus/telehealth/index.html>

- U.S. Department of Health and Human Services, Office of Inspector General, “Data on Medicaid Managed Care Payments to Providers Are Incomplete and Inaccurate,” webpage, updated March 26, 2021. As of August 25, 2022:
<https://oig.hhs.gov/oei/reports/OEI-02-19-00180.asp>
- U.S. Department of Health and Human Services, Office of Personnel Management, Department of the Treasury, and Department of Labor, “Requirements Related to Surprise Billing,” *Federal Register*, Vol. 86, No. 131, July 13, 2021, pp. 36872–36985.
- U.S. Department of Justice, “Justice Department and State Attorneys General Sue to Block Anthem’s Acquisition of Cigna, Aetna’s Acquisition of Humana,” press release, Washington, D.C., July 21, 2016.
- U.S. Department of Justice, “Justice Department Issues Statement on the Vertical Merger Guidelines,” press release, Washington, D.C., September 15, 2021.
- U.S. Department of Justice and the Federal Trade Commission, “Horizontal Merger Guidelines,” webpage, updated June 25, 2015. As of January 17, 2022:
<https://www.justice.gov/atr/horizontal-merger-guidelines-08192010>
- U.S. Department of Justice and the Federal Trade Commission, *Vertical Merger Guidelines*, Washington, D.C., June 30, 2020.
- U.S. Government Accountability Office, *Drug Industry: Profits, Research and Development Spending, and Merger and Acquisition Deals*, Washington, D.C., GAO-18-40, November 2017.
- Vita, Michael G., and Seth Sacher, “The Competitive Effects of Not-for-Profit Hospital Mergers: A Case Study,” *Journal of Industrial Economics*, Vol. 49, No. 1, March 2001, pp. 63–84.
- Wang, Erwin, Sonia Arnold, Simon Jones, Yan Zhang, Frank Volpicelli, Joseph Weisstuch, Leora Horwitz, and Bret Rudy, “Quality and Safety Outcomes of a Hospital Merger Following a Full Integration at a Safety Net Hospital,” *JAMA Network Open*, Vol. 5, No. 1, 2022.
- West, Jacob, Garret Johnson, and Ashish K. Jha, “Trends in Acquisitions of Physician Practices and Subsequent Clinical Integration: A Mixed Methods Study,” *Journal of Evaluation in Clinical Practice*, Vol. 23, No. 6, December 2017, pp. 1444–1450.
- Westat, *Impact of State Scope of Practice Laws and Other Factors on the Practice and Supply of Primary Care Nurse Practitioners*, Rockville, Md., November 16, 2015.
- Whaley, Christopher, “Premium Service: Comparing Cost and Quality for Colorectal Cancer Screening,” working paper, SSRN, September 27, 2018.

- Whaley, Christopher M., Daniel R. Arnold, Nate Gross, and Anupam B. Jena, “Physician Compensation in Physician-Owned and Hospital-Owned Practices,” *Health Affairs*, Vol. 40, No. 12, December 2021, pp. 1865–1874.
- Whaley, Christopher M., Xiaoxi Zhao, Michael Richards, and Cheryl L. Damberg, “Higher Medicare Spending on Imaging and Lab Services After Primary Care Physician Group Vertical Integration,” *Health Affairs*, Vol. 40, No. 5, May 2021, pp. 702–709.
- Wu, Bingxiao, Jeah Jung, Hyunjee Kim, and Daniel Polsky, “Entry Regulation and the Effect of Public Reporting: Evidence from Home Health Compare,” *Health Economics*, Vol. 28, No. 4, April 2019, pp. 492–516.
- Yang, Bo Kyum, Mary E. Johantgen, Alison M. Trinkoff, Shannon R. Idzik, Jessica Wince, and Carissa Tomlinson, “State Nurse Practitioner Practice Regulations and U.S. Health Care Delivery Outcomes: A Systematic Review,” *Medical Care Research and Review*, Vol. 78, No. 3, June 2021, pp. 183–196.
- Yang, Y. Tony, Laura B. Attanasio, and Katy B. Kozhimannil, “State Scope of Practice Laws, Nurse-Midwifery Workforce, and Childbirth Procedures and Outcomes,” *Women’s Health Issues*, Vol. 26, No. 3, May–June 2016, pp. 262–267.
- Yuce, Tarik K., Jeanette W. Chung, Cynthia Barnard, and Karl Y. Bilimoria, “Association of State Certificate of Need Regulation with Procedural Volume, Market Share, and Outcomes Among Medicare Beneficiaries,” *JAMA*, Vol. 324, No. 20, 2020, pp. 2058–2068.
- Zhang, Jonathan, Yiwei Chen, Liran Einav, Jonathan Levin, and Jay Bhattacharya, “Consolidation of Primary Care Physicians and Its Impact on Healthcare Utilization,” *Health Economics*, Vol. 30, No. 6, June 2021, pp. 1361–1373.
- Zhu, PengCheng, and Peter E. Hilsenrath, “Mergers and Acquisitions in U.S. Retail Pharmacy,” *Journal of Health Care Finance*, Vol. 41, No. 3, Winter 2015.