Research Report

Prices Paid to Hospitals by Private Health Plans

Findings from Round 4 of an Employer-Led Transparency Initiative

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For more information on this publication, visit **www.rand.org/t/RRA1144-1**.

Published by the RAND Corporation, Santa Monica, Calif.

About This Report

Approximately 160 million Americans receive health insurance coverage through an employer or a union. Self-funded employers typically rely on insurance carriers and third-party administrators to negotiate prices and manage benefits but often have little insight into the prices negotiated on their behalf. However, price transparency has not been traditionally available in a manner that allows employers and health care purchasers to easily compare prices between hospitals and other providers.

In this study, we use 2018 to 2020 medical claims data from all U.S. states covering hospital and other provider spending to document variation in negotiated prices for the commercially insured population. We found wide variation in hospital prices across states. Case mix–adjusted hospital prices were below 175 percent of Medicare in Arkansas, Hawaii, and Washington, and were above 310 percent of Medicare in Florida, West Virginia, and South Carolina. The price information in this report can help employers and other purchasers of health care assess the prices that they pay for health care services. This report can also help contribute to policy discussions on hospital prices and health care prices for privately insured Americans.

This report contains a high-level summary of findings. A supplemental spreadsheet provides additional detail. This report follows three previous RAND Corporation studies on hospital prices and extends these studies by examining additional data sources and more recent periods and by documenting prices for additional providers. Unlike many other studies that have examined health care price variation, this study reports prices and identifies hospitals and groups of hospitals under joint ownership (*hospital systems*) by name.

This study was funded by the Robert Wood Johnson Foundation and participating employers and was carried out within the Payment, Cost, and Coverage Program in RAND Health Care and in collaboration with the Employers' Forum of Indiana.

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Acknowledgments

We thank the members and leaders of the Employers' Forum of Indiana (EFI) for conceptualizing the study question, initiating the pilot study, recruiting many participants for the study, and providing guidance and input throughout the course of the project. This project could not have been completed without the help of Gloria Sachdev and David Kelleher, both from EFI. This study design was conceptualized by Chapin White, formerly at RAND Corporation and now at the U.S. Congressional Budget Office. Christine Gallagher, Emily Hoch, Angela Kordell, and Emily Palumbo at RAND played invaluable roles in ensuring access to the data used in this study. Numerous employer coalitions also played a key role. Support for this research was provided by the Robert Wood Johnson Foundation, Arnold Ventures, and participating self-funded employers. This study also benefited from the dedicated work of numerous individuals at self-insured employers and insurers. The views expressed here do not necessarily reflect the views of the foundations, the self-insured employers who participated in the study, or the other data contributors.

Summary

Background, Goals, and Approach

Relative to other countries, a defining characteristic of the U.S. health care system is the wide variation in prices both within and across markets (Anderson et al., 2003; Anderson, Hussey, and Petrosyan, 2019; Cooper et al., 2019b). Driving this variation, and the largest source of insurance coverage in the United States, is insurance provided through an employer or a union in the form of employer-sponsored health insurance. Employers play an important role in the U.S. health care system both in financing health care spending and in selecting health plans to offer their employees. Employers fund health care costs out of worker wages and other benefits. In 2019, spending on hospital services accounted for 37 percent of total personal health care spending for the privately insured, or approximately $434 billion (Office of the Actuary, 2020). Hospital price increases are key drivers of growth in per capita spending among the privately insured (Cooper et al., 2019a). Several studies have highlighted variations in private health insurance prices, but information on provider prices in this market is not commonly available.

To address price variation, several initiatives have sought to increase the transparency of provider prices. Although price transparency programs and tools have increased the availability of information about procedure-level prices available to patients, employers do not commonly have usable information about the prices negotiated on their behalf—for example, the aggregate price levels of competing hospitals. Beginning in 2021, federal policies have required hospitals to post prices for common services. Although illustrative, publicly posted price data contain gaps in reporting, and many hospitals have not complied with the policy (McGinty, Mathews, and Evans, 2021; Nikpay et al., 2021).

This study is designed to help fill this knowledge gap. Employers can use this report to become better-informed purchasers of health benefits. For broader policy and research audiences, the information in this report also highlights the levels and variation in hospital prices paid by employers and private insurers.

To accomplish these goals, we compiled claims data, including provider identifiers and *allowed amounts* (amount paid to a health care provider per service, including amounts paid by the health plan and any amounts due from the patient, such as deductibles, copayments, and coinsurance), for enrollees in employer-sponsored health benefits from the following three types of data sources:

- self-insured employers that chose to participate in the study and that provided claims data for their enrollees
- state-based all-payer claims databases from Arkansas, Delaware, Colorado, Connecticut, Maine, New Hampshire, Oregon, Rhode Island, Utah, Vermont, and Washington

- health plans that chose to participate.

These data sources include hospital and associated spending from more than 4,000 hospitals in all states from 2018 to 2020. We include facility and professional claims for inpatient and outpatient services provided by both Medicare-certified short-stay hospitals and other facility types, including over 4,000 *ambulatory surgical centers* (ASCs), which are free-standing facilities that perform outpatient surgical services. For each private claim, we reprice the service using Medicare's grouping and pricing algorithms. We report price levels and trends for states, hospitals, *hospital systems* (groups of hospitals under joint ownership), and other provider types (e.g., ASCs), all of which we identify by name.

We calculate and report the following two types of hospital prices:

- *standardized prices*, meaning the average allowed amount per standardized unit of service, where services are standardized using Medicare's relative weights
- *relative prices*, meaning the ratio of the actual private insurer–allowed amount divided by the Medicare-allowed amount for the same services provided by the same hospital.

Relative prices have the advantage of incorporating all of Medicare's adjustments for case mix, wages, and inflation and are comparable across service lines (e.g., inpatient versus outpatient). Medicare prices are designed to provide modest profit margins for efficient hospitals (MedPAC, 2022). Relative price comparisons also allow for an easier price comparison across hospitals because we are comparing intensity-weighted price ratios relative to Medicare rather than absolute price differences for specific services. Importantly, we are using Medicare prices as a common benchmark to compare commercial prices. This study does not propose a percentage of Medicare price that employers *should* be paying hospitals and other health care providers but instead focuses on disclosing variations in private prices.

This report is designed to provide a level of transparency that allows employers to compare prices between hospitals and to consider whether the prices they are paying are appropriate. Because employer payments to hospitals are a key driver of employers' health care spending, making these prices accessible and transparent can help employers and policymakers design appropriate policies to address rising health care costs. Employers can use this information, along with knowledge of their employee population and other market-specific information, to determine whether the relative prices that they are paying are appropriate.

Outpatient Prices for Nonhospital Services

Many services can be performed in both hospital and nonhospital settings. Although existing research finds that, on average, nonhospital sites of care tend to be lower-priced than hospital-based sites of care, little evidence exists on prices for individual facilities. We compare prices for common outpatient surgeries performed in ASCs, with *hospital outpatient departments* (HOPDs), which are outpatient surgical centers connected to a hospital.

Hospital Prices During the Pandemic

Hospitals and health professionals have played critical roles during the coronavirus disease 2019 (COVID-19) pandemic. To combat the pandemic, new tests and treatments have become widespread but little information exists on prices for these services. In this report, we also compare prices relative to Medicare for common COVID-19 hospitalizations. Our intent is to add transparency to a sector that accounts for nearly 20 percent of the U.S. economy. The pandemic has impacted employers and workers. Because rising health care costs are paid directly from worker wages and other benefits, ignoring health care prices places downward pressure on health care affordability for employees and their families and reduces employee take-home pay.

Key Findings

This report's key findings are as follows:

- Some states (Hawaii, Arkansas, and Washington) had relative prices below 175 percent of Medicare prices, while other states (Florida, West Virginia, and South Carolina) had relative prices that were at or above 310 percent of Medicare prices.
- In 2020, across all hospital inpatient and outpatient services (including both facility and related professional charges), employers and private insurers paid 224 percent of what Medicare would have paid for the same services at the same facilities. This percentage remained relatively stable over the study period; it was 222 percent of Medicare prices in 2018 and 235 percent in 2019. In 2020, relative prices for hospital facility-only services averaged 235 percent, while associated professional services averaged 163 percent of what Medicare would have paid for the same services.
- The 224 percent total for 2020 is a reduction from the 247 percent figure reported for 2018 in the previous study. This reduction is the result of a substantial increase in the volume of claims from states with prices below the previous mean price. Despite this change in the claims-weighted study average, the median state prices changed very little: to 248 percent in 2020 from 254 percent in 2018 in the previous round.
- Among the common data contributors in both this round and the previous round, 2020 prices averaged 252 percent of Medicare, which is similar to the 247 percent relative price reported in the previous round for 2018.
- Prices for common outpatient services performed in ASCs averaged 162 percent of Medicare payments, but if paid using Medicare, payment rates for HOPDs would have averaged 117 percent of Medicare.
- Although relative prices are lower for ASC claims priced according to HOPD rules, HOPD prices are higher than ASC prices. Among a set of five procedures commonly performed in both ASCs and HOPDs, the average HOPD price was $6,169 and the average ASC price was $2,404.
- Very little variation in prices is explained by each hospital's share of patients covered by Medicare or Medicaid, although a larger portion of price variation is explained by hospital market power.
- Prices for COVID-19 hospitalization were similar to prices for overall inpatient admissions and averaged 241 percent of Medicare.

Implications

Because employer-sponsored spending comes from employee wages and benefits, employers have a fiduciary responsibility to administer benefits "solely in the interest of participants and beneficiaries" (U.S. Department of Labor, 2022). Employers and policymakers are unable to fulfill this obligation to their workforce without information on prices. For many employers, the prices they and their employees pay for hospital care might represent the value (e.g., quality of care, access to specialty providers, or breadth of network options) delivered by hospitals. Other employers might wish to use this and other information to reduce health care spending. For those employers, negotiating prices based on contextualized data presents a tangible way to reduce health care spending. Where quality and convenience are comparable, employers can use network and benefit design approaches to move patient volume away from higher-priced, lower-value hospitals and hospital systems and toward lower-priced, higher-value providers. Employers can also use this information to reformulate how contracts are negotiated on their behalf.

These types of changes are not possible without usable transparent prices paid to providers. However, price transparency alone will not lead to changes if employers do not act on price information. In some cases, employers might need state or federal policy interventions to rebalance negotiating leverage between hospitals and their health plans. Such interventions could include addressing noncompetitive health care markets, placing limits on payments for out-of-network hospital care, or allowing employers to buy into Medicare or another public option that pays providers prices based on Medicare.

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1. Background

Employers Bear Responsibility for Health Care Costs but Have Limited Access to Useful Information on Hospital Prices

In 2019, more than 155 million Americans, or 58 percent of the nonelderly U.S. population, received health insurance through an employer as a form of compensation (Kaiser Family Foundation, 2019). In 2020, the privately insured population accounted for 34.1 percent ($1.2 trillion) of U.S. health care spending. The 2021 average cost to provide employer-sponsored health insurance to a family was $22,221, a 47 percent increase from $15,073 in 2011 (Claxton et al., 2021).

The employer-sponsored insurance market consists of *fully insured* employers that pay state-regulated insurers a fixed premium per enrollee per month to provide benefits and *self-insured* employers that are financially responsible for covered benefits but contract with third-party administrators (TPAs) to manage the plan and process claims.

Although employers are responsible for health care costs, many employers do not have the analytic or contracting expertise to negotiate the prices they pay providers and instead rely on TPAs and insurers to negotiate contracts with providers in the case of both types of insurance. Employers commonly do not have access to information on the prices negotiated on their behalf. Many contracts between large provider systems and insurers include gag clauses that prohibit sharing detailed pricing information with employers or patients (Catalyst for Payment Reform, 2020). The lack of insight into negotiated prices limits employers' ability to prudently purchase health benefits and act as a responsible fiduciary of plan benefits. Employees bear the costs of employer-sponsored health benefits through a combination of employee premium contributions, employee out-of-pocket costs, and employer contributions for health care that take the place of other forms of compensation, such as wages and retirement benefits (Arnold and Whaley, 2020; Baicker and Chandra, 2006). Thus, rising employer health care costs erode wage growth.

A growing body of evidence highlights wide variation in prices among the privately insured population (Chernew, Hicks, and Shah, 2020; Cooper et al., 2019b; Neprash et al., 2015). If price variation follows variation in underlying hospital quality, performance, or access, then price variation might simply reflect the underlying complexity of hospital markets (Garthwaite, Ody, and Starc, 2020). However, if price variation is driven by factors such as market power or negotiation ability, then addressing unwarranted variation in prices is important for employers and purchasers. Unfortunately, without access to data on hospital price and quality, employers are unable to weigh these trade-offs.

Recent initiatives have sought to improve the transparency of prices in this market, with varying success. For example, several patient-facing price transparency initiatives, including

recent Centers for Medicare & Medicaid Services (CMS) proposals, have attempted to provide price information to patients through online tools and mobile applications. However, despite their novelty, these tools have had only modest impacts (Desai et al., 2016; Desai et al. 2017; Whaley et al., 2014). Nearly all Americans with commercial insurance already have access to a consumer-facing price transparency tool, although these tools vary in their usability and features (Phillips and Labno, 2014). Even with access to price information, patients face nonprice information and access barriers to "shopping" for health care providers in the same ways that they do for other goods and services (Chernew et al., 2021). Federal legislation implemented in 2020 requires hospitals to post information on negotiated prices for common services. However, the penalties for noncompliance are low, and many hospitals do not post price information (Gondi et al., 2021). Some hospitals have sought to further hide price information from search results (McGinty, Mathews, and Evans, 2021).

This series of reports is designed to provide a different, previously unavailable type of price transparency. Although existing price transparency tools provide a multitude of service-specific prices, they do not easily identify higher- and lower-priced providers for broad baskets of services. This absence of easily interpretable price rankings limits the ability of employers to knowledgeably develop or implement benefit design decisions. This report is designed to allow an easy comparison of hospital prices using a single metric. Employers can use this information to track price trends and to help assess the value of hospitals in their market.

Employers are typically wary of limiting the network of providers available to their employees, and the lack of price transparency further undermines self-insured employers' efforts to limit their insurance networks to lower-priced, high-quality hospitals. This lack of information also limits the ability of employers to monitor the prices negotiated on their behalf, to implement innovative insurance benefit designs, and to ensure that insurers are in fact negotiating favorable prices. Because employers are important buyers of health care services, equipping them with useful information on provider prices can help them to demand increased value from the health care system.

Although just one component of the health care system, hospitals account for 37 percent of total health care spending for the privately insured population (CMS, 2020a). Hospital price increases have been identified in previous research as a key contributor to rising health care costs among the privately insured population (Cooper et al., 2019a; Health Care Cost Institute, 2019). Despite their importance, the prices that private health plans pay for hospital care have been characterized as "chaos behind a veil of secrecy" (Reinhardt, 2006). Furthermore, the prices employers and other private insurers pay for hospital services have grown even faster than in public plans (Selden et al., 2015).

The divergence in prices between private and public plans has been linked to provider consolidation that increases hospital price negotiation leverage (Berenson, Ginsburg, and Kemper, 2010; Berenson et al., 2012; Gaynor, Ho, and Town, 2015). Despite higher prices, hospital consolidation has not been linked to improved quality outcomes or to operating

efficiency, and higher-priced providers often do not have higher quality than lower-priced providers (Beaulieu et al., 2020; Schmitt, 2017; Whaley, 2018a). When the variation in hospital prices is not tied to commensurate differences in quality, then a portion of prices paid to higher-priced hospitals might represent wasteful spending to employers. At the same time, other studies have documented large price differences between hospitals and nonhospital sites of care (e.g., ambulatory surgical centers [ASCs] and free-standing imaging or laboratory testing centers) even though many nonhospital sites of care provide equivalent or higher-quality services than those provided in hospitals. For example, other studies find that, compared to hospital outpatient departments (HOPDs), ASCs are associated with lower complication rates but similar patient satisfaction rates (Gardner et al., 2005; Grisel and Arjmand, 2009; Munnich et al., 2021; Munnich and Parente, 2014; Whaley, 2018b).

This variation in hospital prices is both a cause for high health care spending among the privately insured population and a potential opportunity for savings. Reducing the use of higher-priced hospitals and moving patient volume outside of hospitals to lower-priced sites of care is a potential way for employers to reduce health care spending. Likewise, employers taking a more active role in bargaining for prices and monitoring the prices negotiated on their behalf can also lead to health care spending reductions for employers and their employees.

Scope and Contribution of the Study

This study builds on three previous studies that examined variation in hospital facility prices in Indiana (White, 2017), in 25 states (White and Whaley, 2019), and in 49 states (Whaley et al., 2020). This study extends these existing reports by expanding the analysis to other states and populations, by including variation in prices for nonhospital services, and by examining prices for services related to the coronavirus disease 2019 (COVID-19) pandemic. Because of the expanded study sample, the results of this report might not be directly comparable to previous rounds. Particularly, the inclusion of additional data from state all-payer claims databases (APCDs) allows for inclusion of data from individual and fully insured insurance plans, which have slightly lower prices than self-funded plans (Craig, Ericson, and Starc, 2021). We examine differences in prices paid by private health plans for hospital inpatient, hospital outpatient, and nonhospital services compared to how much Medicare would have paid for the same services at the same facilities. Hospital inpatient services involve a stay of at least one night with a doctor's orders for formal admission and discharge, whereas hospital outpatient services are typically provided on an ambulatory basis. Examples of common inpatient services provided by community hospitals to the privately insured include childbirth, knee replacements, and septicemia treatment. Examples of common hospital outpatient services include imaging, emergency department visits, and colonoscopies. For several services provided in HOPDs, we also compare prices for the same types of services provided in ASCs.

For hospitals, we limit the analysis to *community hospitals*, which we define as Medicare-certified nonfederal short-stay general hospitals. Community hospitals include academic medical centers but exclude specialty hospitals (such as cancer hospitals, psychiatric hospitals, long-term care hospitals, and children's hospitals), skilled nursing facilities, inpatient rehabilitation facilities, and Veterans Administration facilities. The two most common types of hospitals are those paid under Medicare's inpatient prospective payment system (IPPS) and critical access hospitals (CAHs). To qualify as a CAH, a hospital must be very small and located in a rural area. Together, IPPS hospitals and CAHs comprise community hospitals—the population of interest for this study. We also include outpatient surgical services performed in nonhospital ASCs. ASCs are commonly free-standing facilities, which can either be independent or owned in part by a hospital. ASCs commonly compete with hospitals to provide outpatient surgical care (Munnich et al., 2021).

Although other studies have examined variation in hospital prices (Cooper et al., 2019b; Franzini et al., 2014; Ginsburg, 2010; Maeda and Nelson, 2017; Selden et al., 2015; Weber et al., 2021; White, Reschovsky, and Bond, 2014), these studies generally analyze and report market- or state-level average hospital prices and do not report hospital-specific prices. This study extends the existing literature on hospital prices using claims data from a large population of privately insured individuals, including hospitals and other facilities from across the United States. An important innovation of this study is that our data use agreements allow us to report prices paid to hospitals and *hospital systems* (hospitals under joint ownership) identified by name. Data use agreements for many widely used sources of private claims data prohibit the identification of specific providers.

2. Data and Methods

Data Sources

Medical Claims Data

The medical claims data in our analytic data set were aggregated from several sources. First, we included claims data from self-insured employers that chose to participate in the study. The participating self-insured employers include a variety of industries including state and local governments, manufacturing, and higher education, and they range in the number of covered lives from a few hundred to more than 100,000. The data used in this report include employers from all U.S. states. The data include both employers who operate within a single market and employers with a national presence. We also include data from several state employee plans. In many states, the state employee health plan is the largest provider of health insurance benefits.

The second source of data is APCD from eleven states: Arkansas, Colorado, Connecticut, Delaware, Maine, New Hampshire, Oregon, Rhode Island, Utah, Vermont, and Washington. The second round of the study included data from two APCDs (Colorado and New Hampshire), and the third round added Connecticut, Delaware, Maine, and Rhode Island. The Maine APCD data was provided by the Maine Health Data Organization under data release number 2019071702. Seventeen states operate an APCD with mandatory submission, five additional states have an APCD with voluntary submission, and three states are in the process of implementing an APCD (APCD Council, 2020). However, states vary in their data-release rules and costs to researchers for accessing data (APCD Council, 2020; Llopis-Jepsen, 2021). Not all residents of those states are represented in their APCDs, partly because of exemptions from reporting requirements for fully insured plans and partly because of self-insured plans opting out following the U.S. Supreme Court's *Gobeille v. Liberty Mutual Insurance Company* ruling (Fuse Brown and King, 2016). A national APCD could be used to vastly expand this study's findings.

All data sources provided claim identifiers and line item–level detail on services provided and allowed amounts. We used the claim and line-item identifiers to group claims into inpatient and outpatient procedures. A full description of this process is in Appendix A.

Hospital Systems

Hospitals were linked to *multihospital systems*, meaning groups of two or more short-stay hospitals under joint ownership. To link hospitals and other providers to systems, we used data provided by the Agency for Health Research and Quality's Compendium of U.S. Health Systems (AHRQ, 2019). These data allow us to link specific hospitals to their broader health systems.

Ambulatory Surgical Centers

Outpatient services performed in ASCs were identified as claims having a place-of-service code 24 for professional claims or a bill-type code beginning with 83 for facility claims. We then used National Provider Identifiers and Taxpayer Identification Numbers to link those claims to a data set of ASC ownership. Information on ownership of ASCs was obtained through a Freedom of Information Act request to CMS. ASC ownership data have been used in other studies to identify changes in physician behavior following ASC investment (Munnich et al., 2021). We flagged ownership shares of 5 percent or more that were affiliated with the following systems: Tenet (or subsidiary United Surgical Partners International), HCA, SurgCenter, Surgery Partners, Surgical Care Affiliates, and Envision (or subsidiary AMSURG).

COVID-19 Procedures

COVID-19-related inpatient stays were identified using the presence of the diagnosis code U071 on an inpatient claim. We did not limit this identification to the primary diagnosis, so these inpatient stays did not necessarily begin as admissions for COVID-19-related care. Consistent with Medicare payment policies, we applied a 20 percent increase to the diagnosis related group (DRG) weight for COVID-19 inpatient claims.

Quality

To incorporate quality metrics into the analysis, we used CMS's overall hospital star ratings from Hospital Compare, wherein one star is the worst rating and five stars is the best (YNHHSC/CORE, 2017). The star ratings summarize dozens of individual quality measures in seven domains that include mortality, safety, readmissions, and efficiency. Although many different hospital quality measures are available, the CMS star ratings provide an accessible and thoroughly documented summary measure. We downloaded the Hospital General Information file from CMS Hospital Compare, which includes data on star ratings for hospitals paid under Medicare's IPPS (CMS, 2021). The star ratings were merged with the analytic data set using Medicare Provider Numbers (MPNs). Of the hospitals in the study sample, 78 percent were matched to a CMS star rating.

We also used Hospital Safety Grade data from the Leapfrog Group. These measures include answers from the Leapfrog Hospital Survey containing questions on hospital safety, which was sent to all U.S. hospitals. The Leapfrog Hospital Safety Grade measures include standardized infection ratios for inpatient care, a measure score for falls and trauma, and other such safety measures. The Leapfrog Hospital Safety Grade includes up to 28 evidence-based measures of patient safety, which are then combined to produce a single numerical score and letter grade across hospital locations. Leapfrog also translates these numeric scores into letter grades (i.e., A, B, C, D, and F). Leapfrog combines measures of patient safety from CMS and from the 2019 Leapfrog Hospital Survey to produce these measures. The Leapfrog survey responses are

voluntary and self-reported, which might inflate reported hospital quality (Smith et al., 2017). Of the hospitals in the study sample, 63 percent were matched to a Leapfrog Hospital Safety Grade.

Hospital Patient Mix and Market Share

We also examine data on hospital patient mix and volume using data from the Healthcare Cost Reporting Information System (HCRIS) compiled and processed through the RAND Hospital Data repository. All Medicare-certified institutions are required to submit an annual cost report to CMS with information such as facility characteristics, utilization data, cost, charges, revenue, and financial statement data. From the HCRIS data, we construct each hospital's case mix–adjusted share of patient discharges who are enrolled in either Medicare or Medicaid and each hospital's case mix–adjusted profit margins. We also measured each hospital's market share by measuring each hospital's share of beds relative to the total number of beds in a metropolitan statistical area.

Methods

Definition of Price

In this report, *price* refers to the amount paid to a health care provider per service. The amount paid is often referred to as the *allowed amount*, and it includes amounts paid by the health plan and any amounts due from the patient, such as deductibles, copayments, and coinsurance. One challenge in comparing health care prices is that services differ widely in their intensity and complexity from patient to patient and from provider to provider. We used two approaches to make comparisons among hospitals. Both approaches are case mix–adjusted and account for differences in procedure composition among hospitals.

Standardized Prices

The *standardized price* of a basket of services equals the total allowed amount for those services divided by the number of standardized units of service. A *standardized unit* is a service of average intensity, with a relative weight equal to one, where the relative weight reflects the intensity of the service. For example, a heart transplant is far more complicated and requires far more clinical resources than an uncomplicated childbirth. In 2017, a heart transplant with complications had a relative weight of 27.1—and, therefore, accounted for 27.1 standardized units of inpatient service—compared with an uncomplicated childbirth, which had a relative weight of 0.6. A full definition of standardized prices is provided in Appendix A.

Relative Prices Using Medicare as a Benchmark

Without context, standardized prices can be difficult to interpret. Is an inpatient standardized price of $15,000 high or low? How do we compare prices if one hospital is located in an area with a high cost of living and another is located in an area with a low cost of living? To

summarize hospital prices and make them easier to interpret, we calculate and report *relative prices* using Medicare reimbursement amounts as a benchmark. The relative price is a ratio: the allowed amount from private health plan claims divided by the Medicare allowed amount—for the same services provided by the same hospital, using Medicare's price-setting formulas. Medicare payments are adjusted for geographic variations in wages, using the Medicare wage index. A detailed numerical example of how relative prices are calculated is provided in Appendix A. In Appendix A, we also discuss the appropriateness of using Medicare as a price benchmark.

Although this report benchmarks commercial prices to Medicare rates, it does not identify what percentage of Medicare is the optimal price for commercial prices. Employers can use this information, along with knowledge of their employee population and other market-specific information, to determine whether the relative prices that they are paying are appropriate.

Limitations

This study has several limitations. First, the claims data used in this study were available only for enrollees in self-insured plans sponsored by the employers that chose to participate in the study, residents of the states that contributed APCD medical claims, and enrollees in the private insurance plans that submitted data. The claims data included in the study represent only a portion of the entire population of privately insured patients, and it is possible that our estimates are not representative of the prices paid by the broader privately insured population. Although other commercial claims data resources offer broader scope, these other resources do not typically allow researchers to identify hospitals and providers by name. In states with a participating APCD, our claims data come from a mix of fully and self-insured plans. Researchers using the Massachusetts APCD found that self-insured plans on average paid hospital prices 2 to 4 percent higher than fully insured plans (Craig, Ericson, and Starc, 2021), and class-action lawsuits have alleged differential pricing by the same carrier for their fully insured versus self-insured products (U.S. Court of Appeals for the Sixth Circuit, 2007). Therefore, it is possible that our rankings and comparisons among states are affected by the mix of fully and self-insured claims data. It is also possible that the contributing employers and data contributors are not representative of other health care purchasers in their states or markets.

To ensure patient confidentiality, we suppressed reporting prices if fewer than 11 claims were available for a combination of hospital and type of service. Even in geographic areas with significant representation in our claims data, smaller hospitals and facilities might fail to meet the 11-plus claims threshold and thus might have their prices suppressed. Also, because hospitals tend to provide many more outpatient services than inpatient, many hospitals meet the 11-plus claims threshold for their outpatient services but not for their inpatient services. For these hospitals, we report only their outpatient prices and not their inpatient or inpatient plus outpatient prices. The system- and state-level prices and overall average prices for outpatient services include a broader set of hospitals than the corresponding average prices for inpatient services.

Our analysis is not limited to in-network providers, and the prices we report are a mixture of negotiated contracted rates paid to in-network providers and allowed amounts for services provided by out-of-network providers. Another limitation arises from the fact that the private claims data often do not include MPNs. It is possible that there are inaccuracies in the matching of provider identifiers in the claims data to MPNs and of the assignment of hospitals to systems. In some cases, the provider identifiers identified only the billing provider (i.e., the provider that submits the claim and receives payment) and not the servicing provider (i.e., the provider that actually provided the service). Although significant effort went into creating those matches and ensuring their accuracy, some discrepancies might remain.

In some cases, providers submitted a claim that was subsequently reversed and then resubmitted and paid. We removed reversals from the analytic data set, which was straightforward because those claims are clearly designated as reversals, and they have negative charge amounts and allowed amounts. We also attempted to remove all claims that were subsequently reversed by matching reversals with the original claim. Claims that were subsequently reversed might not have been removed in some cases either because our matching algorithm failed to detect the subsequent reversal or because the reversal occurred after the claims data were extracted for this study.

Simulating Medicare Prices

Simulating Medicare prices involves two steps: grouping (i.e., assigning services to case-mix groups) and pricing (i.e., assigning a price for each service based on the national base rate, the case-mix group, hospital-specific adjustments, and outlier adjustments). For each service, we applied Medicare pricing algorithms to reprice to the amount Medicare would have paid for the same service and the same provider. The pricing algorithm reflects, to the extent possible, the details of Medicare's payment formula.

Overall, Medicare prices provide a useful benchmark, but they do have some drawbacks. For example, Medicare's case mix–adjustment weights are based on relative costs measured among Medicare beneficiaries, and those relative weights might not be appropriate for enrollees in employer-sponsored plans. Future work should examine the appropriateness of applying Medicare case-mix adjustments to commercially insured populations. Also, Medicare's uncompensated care adjustments for inpatient hospital stays can result in extremely high Medicare prices for some hospitals. In general, the Medicare program calculates each hospital's uncompensated care costs, and then calculates an add-on payment for each Medicare-covered stay, where the Medicare add-ons partially offset the hospital's uncompensated care costs. Hospitals that provide large amounts of uncompensated care and have very few Medicare-covered stays, such as hospitals that specialize in childbirth and delivery, can receive very large add-ons to their Medicare prices for inpatient care. We applied an adjustment, described in Appendix A, to avoid using inappropriately large uncompensated care adjustments in calculating the Medicare price benchmark.

The allowed amounts reported by private health plans in claims data do not include nonclaims-based payments to providers, such as risk-sharing payments and pay-for-performance bonuses. Allowed amounts reported in claims data might also systematically exceed the amounts actually paid to the provider if the TPA applies a *spread price*, in which the TPA reimburses providers at a lower rate and retains a portion of the allowed amount (American Health Policy Institute, 2018). We also did not adjust prices to reflect systematic differences in hospitals' costs of treating the privately insured versus Medicare beyond that captured by Medicare's case-mix adjustment.

3. Findings

Study Sample

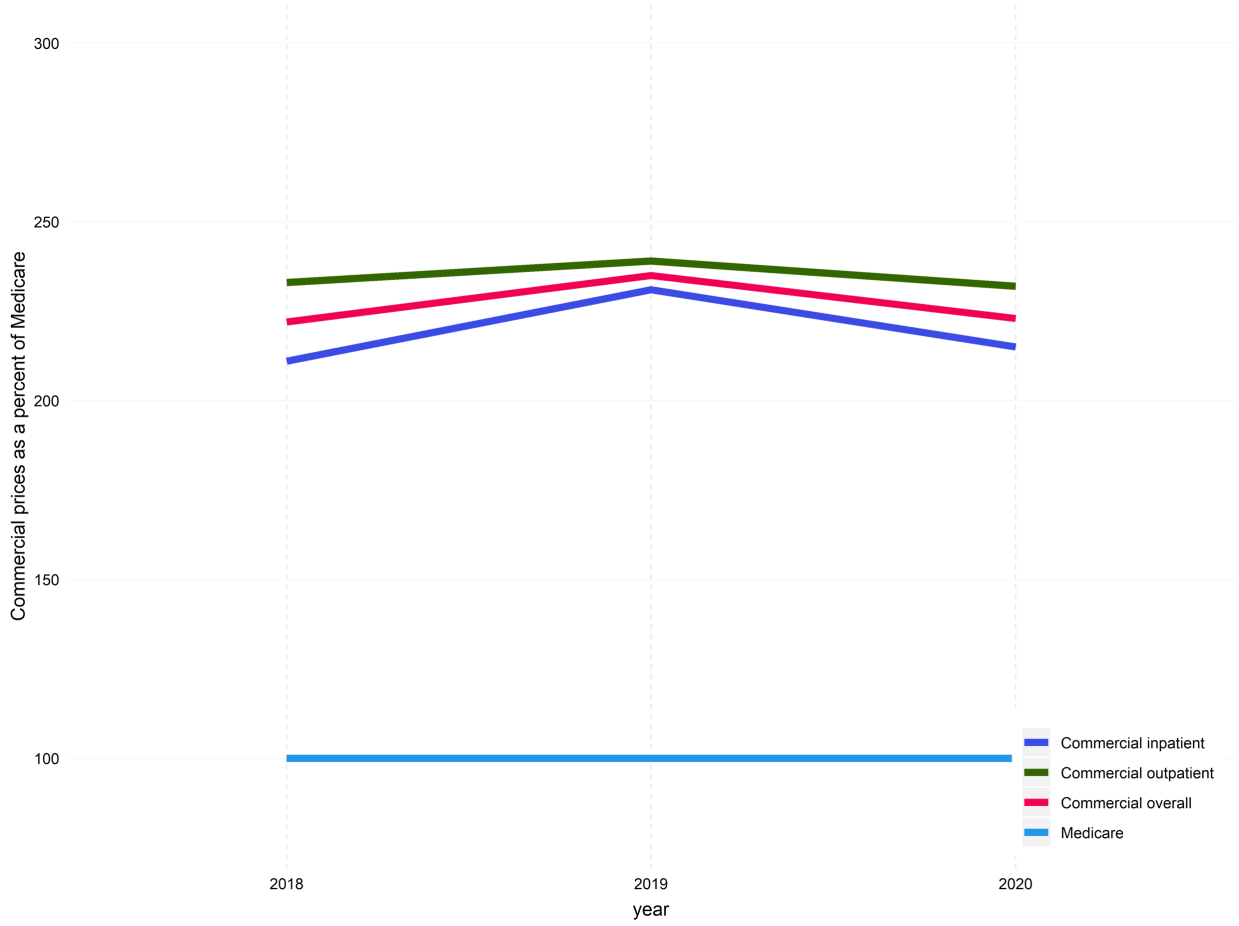
This study uses data from all U.S. states besides Maryland and includes 4,102 hospitals and 4,091 ASCs. (Data from Maryland were excluded because of Maryland's all-payer rate-setting program.) Between 2018 and 2020, the fully processed data include $78.8 billion of spending on hospital-based claims—$7.6 billion in professional spending, $36.5 billion on inpatient facilities, and $34.7 billion on outpatient facilities—and $2.0 billion in spending on ASC procedures. Eighty-three percent of the spending is grouped into services that include both facility and professional claims. The analysis includes approximately 1.3 million inpatient hospital stays, 12.2 million hospital outpatient services, and approximately 798,000 ASC procedures. The simulated Medicare payments for the same services provided by the same hospital facilities totaled almost $28.9 billion—$15.2 billion for inpatient hospital stays and $13.8 billion for hospital outpatient services, and $1.1 billion for ASC procedures.

A detailed list of both relative and standardized prices for each facility, identified by name and MPN, is included in the supplemental material. The supplemental material also includes CMS Hospital Compare star ratings for those hospital facilities.

Trends in Hospital Relative Prices

A key goal of this report is to compare prices paid by employers relative to prices paid by Medicare. We measure relative prices (including inpatient and outpatient care) for hospitals by calendar year. This analysis includes all hospitals in our analytic sample. As shown in Figure 3.1, from 2018 to 2020, the overall relative price increased from 222 percent of Medicare in 2018 to 235 percent in 2019, and then decreased to 224 percent in 2020. Relative prices for inpatient hospital services are lower than relative prices for outpatient services.

Figure 3.1. All-State Trends in Relative Prices

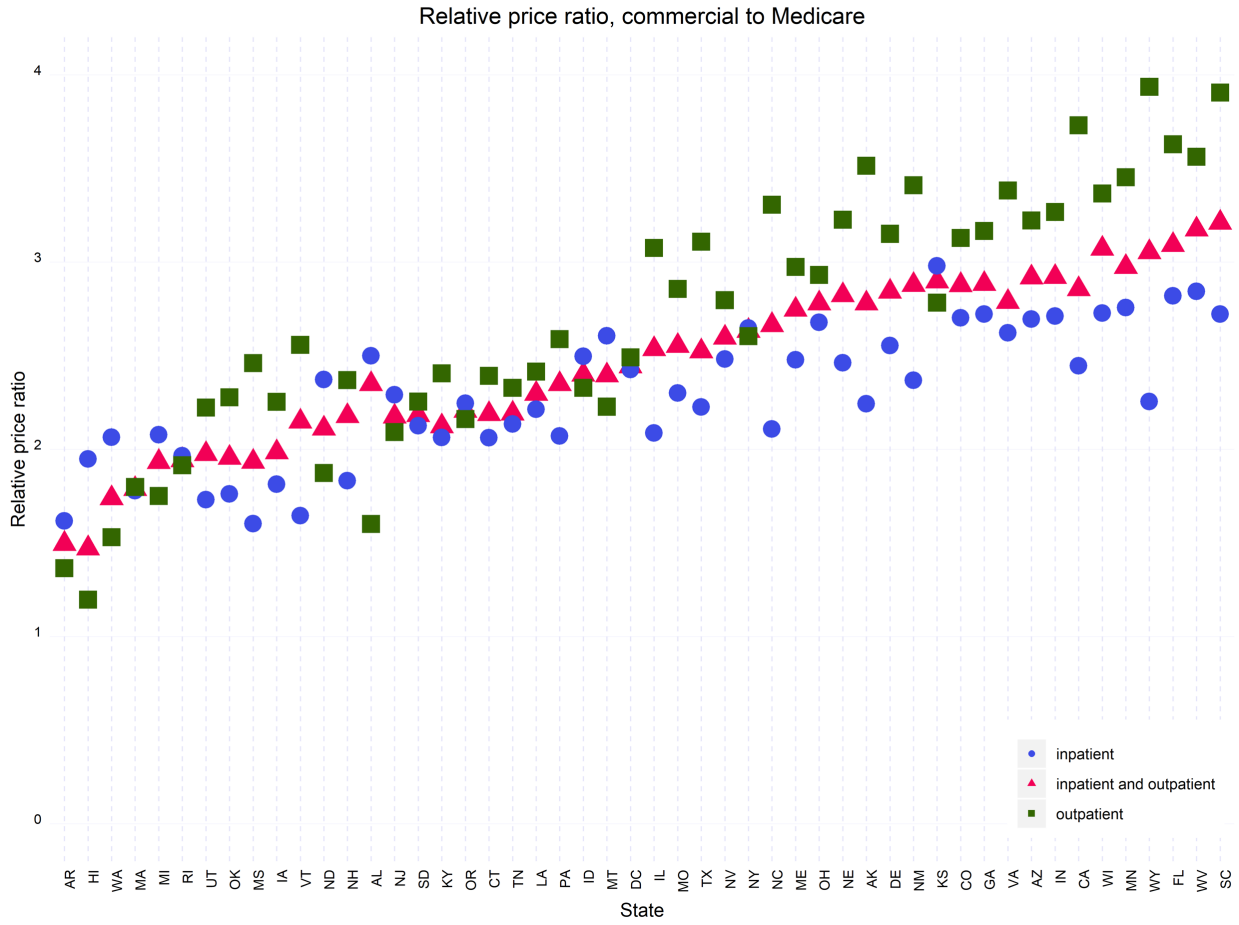


NOTE: Relative prices are the ratio of the amounts actually paid divided by the amounts that would have been paid—for the same services provided by the same hospitals—using Medicare's price-setting formulas.

Relative Prices, Overall and by State

We also found wide variation in relative prices across states (see Figure 3.2). The states included in the study varied approximately twofold in their relative prices in 2020, from below 175 percent of Medicare in Arkansas, Hawaii, and Washington to at or above 310 percent of Medicare in South Carolina, West Virginia, and Florida. Higher overall prices are driven by high relative outpatient prices. In 19 states, outpatient prices were above 300 percent of Medicare. The state-level relative prices plotted in Figure 3.2 are reported in the supplemental material, along with total private and Medicare allowed amounts and standardized prices.

Figure 3.2. Relative Prices by State, 2020



NOTE: Relative prices are the ratio of the amounts actually paid divided by the amounts that would have been paid—for the same services provided by the same hospitals—using Medicare's price-setting formulas.

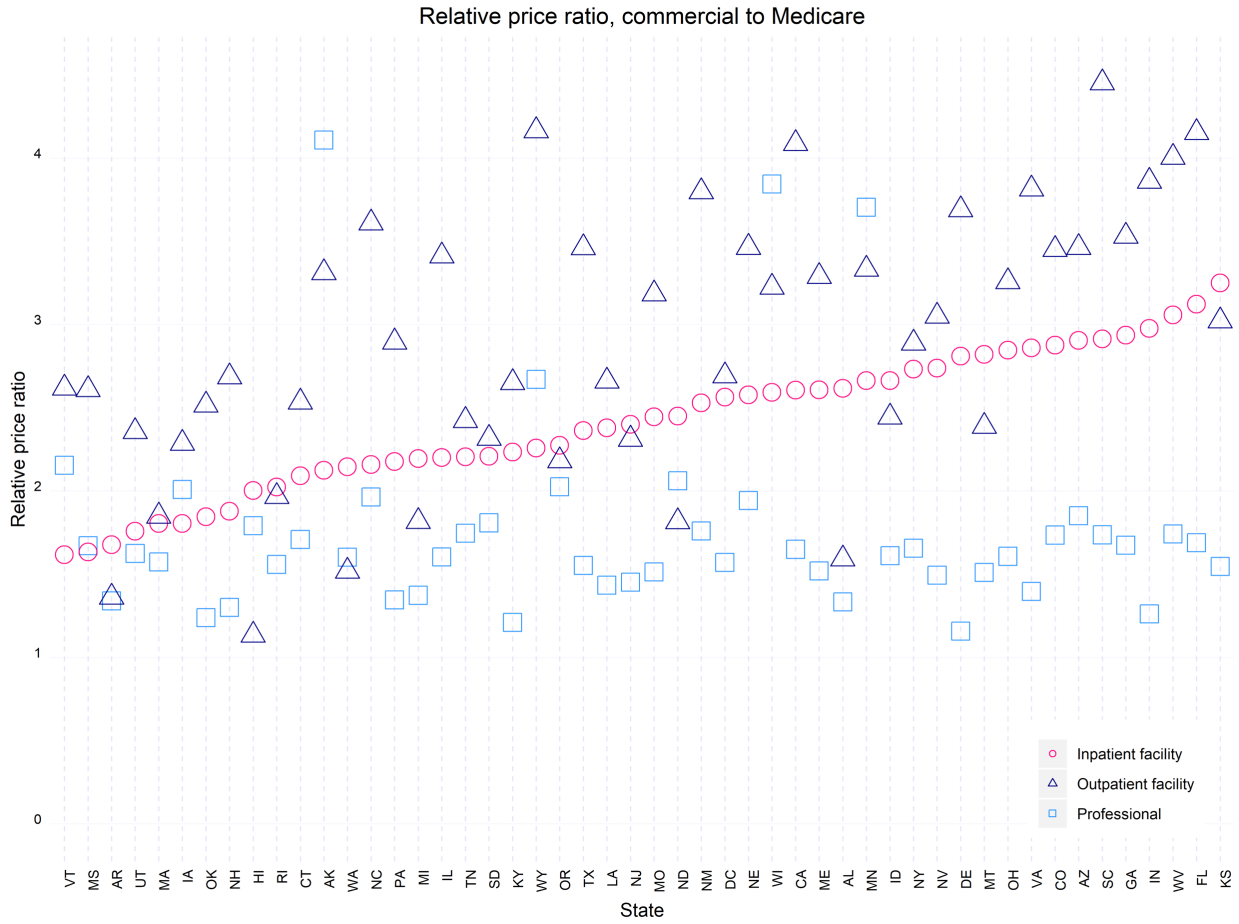
In 2020, the average overall relative price for hospital services compared to Medicare, including inpatient and outpatient facility, plus associated professional fees, across all data contributors, was 224 percent. For inpatient services, the average relative price in 2020 was 217 percent, while hospital outpatient procedures averaged a 231 percent difference. Prices for facility payments averaged 235 percent of Medicare, and prices for professional services averaged 163 percent of Medicare. When comparing across all states, the mean 2020 combined inpatient and outpatient hospital price was 246 percent of Medicare and the median price was 248 percent. To compare across states, we estimate the average price per claim in each state, and weight each state equally when computing the state-level average.

These prices have limited comparability with previous rounds of this study. Particularly, a substantial data addition to this version is the inclusion of additional state APCDs, which account for a large portion of claims volume. Of the 11 states contributing APCDs, all but three states have below-average prices. Arkansas, which newly contributed an APCD, has the lowest 2020

relative prices, and Washington, which also newly contributed an APCD, has the third lowest. Eighteen of the 23 data contributors in the previous round also contributed data to this study. In this round, the number of data contributors increased to 41. Among the common data contributors between this round and the previous round, 2020 prices averaged 252 percent of Medicare, which is similar to the 247 percent relative price reported in the previous round. When comparing across state level, the 2020 median relative price of 248 percent is similar to the 2018 median price of 254 percent from the previous round.

In addition to overall combined facility and professional fee prices, we separated prices by component—inpatient facility, outpatient facility, and professional fees. Facility fees account for approximately 85 percent of a total hospital bill. Figure 3.3 presents the state-level variation in the three price components. Overall, there is less variation in professional fees than there is for either inpatient or outpatient facility fees. In most states, professional fees are below 200 percent of Medicare.

Figure 3.3. Relative Facility and Professional Prices by State, 2020



NOTE: Relative prices are the ratio of the amounts actually paid divided by the amounts that would have been paid—for the same services provided by the same hospitals—using Medicare's price-setting formulas.

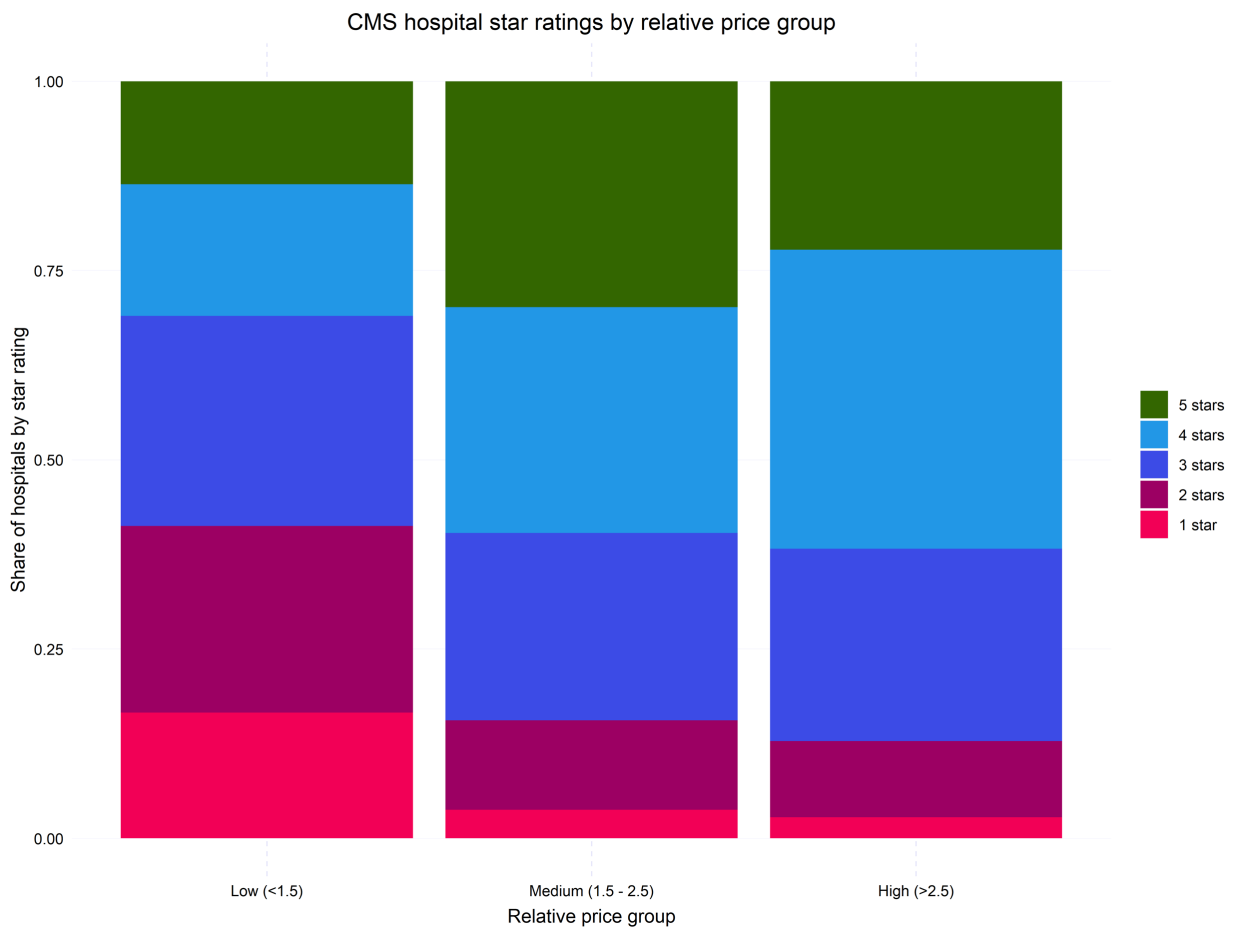
Prices and Quality

To examine the association between hospital prices and quality, we assigned each hospital to one of three groups based on its overall relative price: low (less than 150 percent of Medicare), medium (150 to 250 percent of Medicare), and high (250 percent of Medicare or greater). To account for differences in hospital size, the hospital shares within each price group were weighted by each hospital's simulated Medicare payments, which reflect the quantity and intensity of services.

As a proxy for hospital quality, we used CMS's star ratings (CMS, 2021). CMS uses a five-star quality rating system to measure the experiences Medicare beneficiaries have with their health plan and health care system. Systems are rated on a scale of one to five stars, with five being the highest.

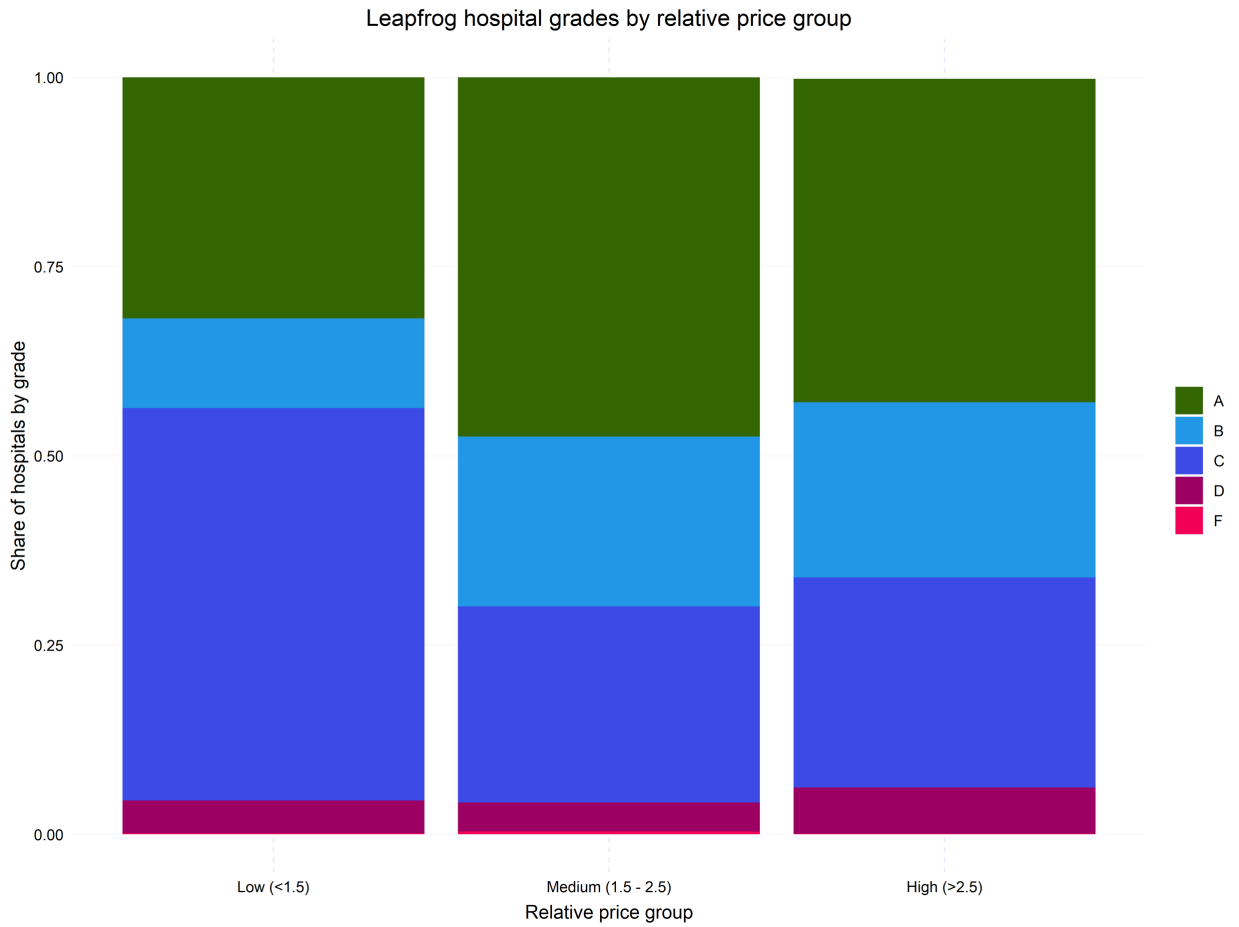
The relationship between star ratings and prices presented in Figure 3.4 indicates that lower-priced hospitals—those with prices less than 150 percent of Medicare (361 hospitals)—have lower-quality scores than higher-priced hospitals (1,402 hospitals). However, medium-priced hospitals, those between 150 and 250 percent of Medicare (1,409 hospitals), have the highest share of hospitals with five-star ratings. Among high-priced hospitals, 22 percent received five stars and only three percent received one star, whereas among low-priced hospitals, only 14 percent received five stars, while 17 percent of hospitals received one star. At the same time, the largest share of five-star hospitals, 30 percent, is among the medium-priced hospitals. Sixty percent of medium-priced hospitals received four or five stars. Thus, in at least some parts of the country, employers have options for high-value facilities that offer high quality at lower prices.

Figure 3.4. Share of Hospitals Receiving One Through Five Stars from Centers for Medicare & Medicaid Services by Price Group



We also used measures of hospital safety to explore the same question: Do hospitals with relatively high prices tend to deliver more value? As with the previous graphic, the relationship between Leapfrog Hospital Safety Grade measures and prices shows that the high-priced hospitals in our sample tended to have the same safety grades as medium-priced hospitals (see Figure 3.5). Among high-priced hospitals, 43 percent received A grades, and less than one percent received F grades. Similarly, among low-priced hospitals that were graded in our sample, 32 percent received A grades, and less than one percent received F grades for safety. Medium-priced hospitals had the highest share of A grades, 48 percent. Seventy percent of medium-priced hospitals received an A or B grade, the highest among any price group.

Figure 3.5. Hospitals That Received Safety Grades A Through F from Leapfrog by Price Group



Although this study provides evidence that there is not a clear link between hospital price and quality, the analysis of hospital quality and prices is incomplete for several reasons. First, it includes data from only the subset of U.S. hospitals that responded to the Leapfrog survey. Also, the Leapfrog and CMS measures we used to approximate hospital service value do not capture all the outcomes that health care purchasers value. To fully measure hospital value, one would have to also consider many other factors, including the prevalence and degree of positive health outcomes (the efficacy of prevention and treatments), not just hospital safety and patient experience.

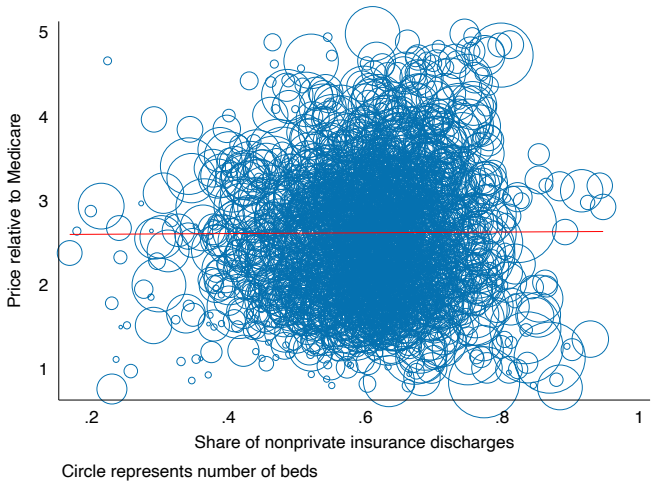
Prices and Patient Composition

The wide variation in prices is notable, and addressing this variation could lead to substantial reductions in medical spending. However, the sources of this variation are important to understand before employers and policymakers implement policies that attempt to address the gap between Medicare and commercial prices.

Several possible causes of this variation exist. First, there are natural variations in wages, cost of living, and other such factors related to geography. However, the Medicare system systematically adjusts for these differences, so they are unlikely to significantly contribute to the observed differences in relative prices. Second, they could be explained by differences in clinical quality. However, as illustrated above, we do not find strong relationships between prices and two leading quality metrics.

A common theory raised by hospitals is the economic need to charge commercial payers higher prices to offset underpayments by public payers and losses because of uncompensated care. As a test of this *cost-shift* theory, Figure 3.6 plots relative prices and the share of each hospital's case mix–adjusted discharges that comes from nonprivate patients, including publicly insured Medicaid and Medicare patients and uncompensated patients. Discharges by payer are from the HCRIS data. There is not a strong visual relationship between hospital prices and the share of patients covered by nonprivate prices. The relationship between a hospital's share of its discharges from nonprivate payers and relative prices charged to commercial payers is not statistically significant. The share of discharges from public payers explains less than 1 percent of the variation in private hospital prices. Although not a causal test, the absence of a strong correlation between hospital prices and payer composition does not support the hypothesis that higher hospital prices are in place to offset underpayments by public payers or hospital expenses on uncompensated care.

Figure 3.6. Hospital Relative Prices and Share of Discharges Attributed to Patients Without Private Insurance



NOTE: Red line represents regression slope.

Prices and Market Share

A substantial evidence base attributes increases in hospital prices to hospital mergers and market consolidation. To assess the impact of hospital consolidation on prices, we similarly examined the correlation between hospital market share and prices. To construct hospital market share, we measured each hospital's share of hospital beds out of the total number of beds in the hospital's metropolitan statistical area.

As shown in Figure 3.7, we find a positive correlation between hospital market share and prices. In a regression analysis, a 10 percent increase in hospital market share is associated with a statistically significant 0.5 percent increase in a hospital's price relative to Medicare. Of the variation in hospital relative prices, 7 percent is explained by differences in market share.

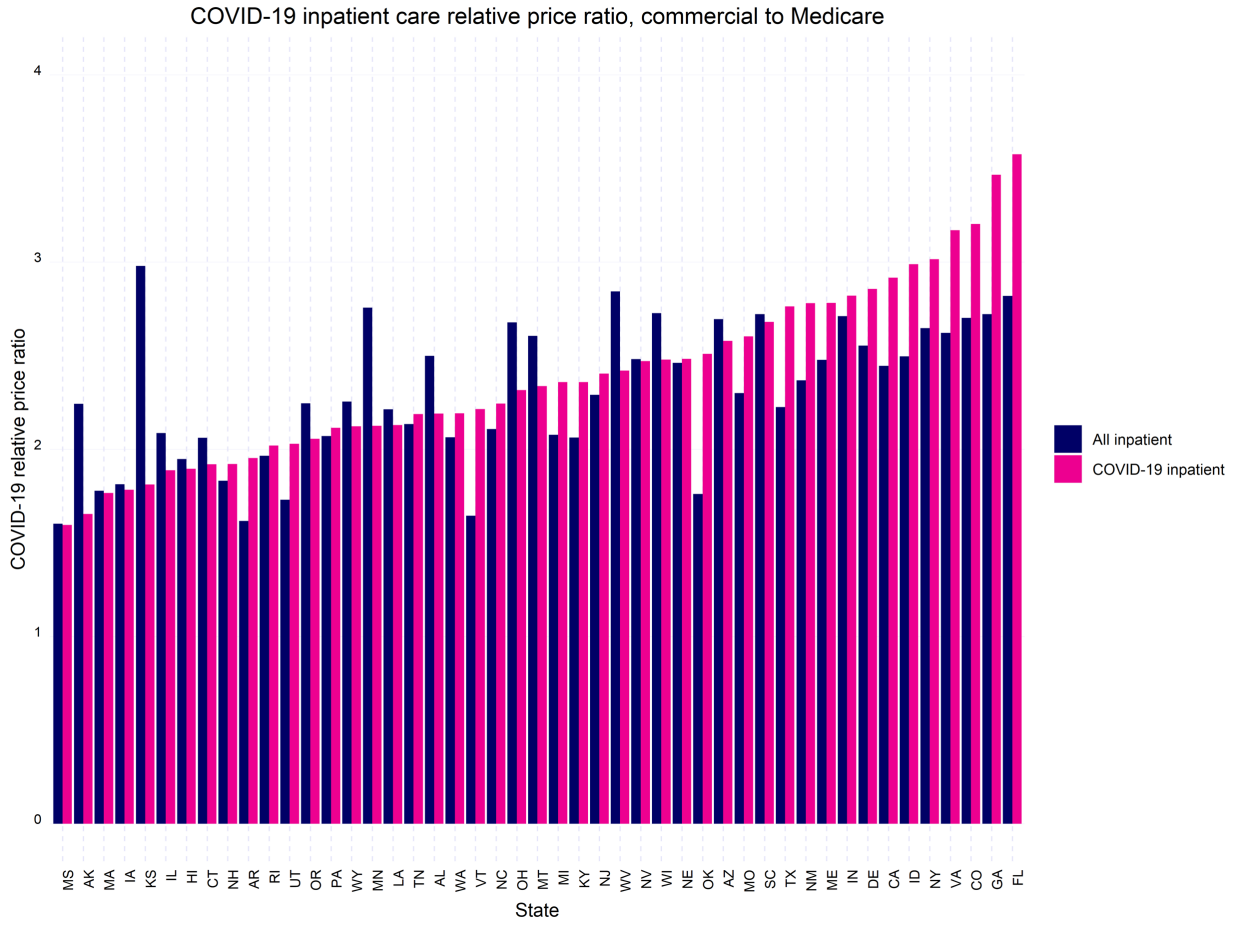
Figure 3.7. Hospital Relative Prices and Market Share

NOTE: Red line represents regression slope.

Prices for COVID-19 Hospitalizations

The COVID-19 pandemic has introduced new tests and procedures, but how prices for these procedures vary is unclear. Figure 3.8 plots the state-level relative prices for inpatient COVID-19 hospitalizations. In 2020, COVID-19 inpatient hospitalizations averaged 241 percent of Medicare, which is similar to the relative price for all inpatient procedures. Similar levels of variation exist across states, with relative prices below 175 percent of Medicare in Mississippi and Alaska, and approximately 350 percent of Medicare in Florida and Georgia.

Figure 3.8. Relative Prices for COVID-19 Hospitalizations



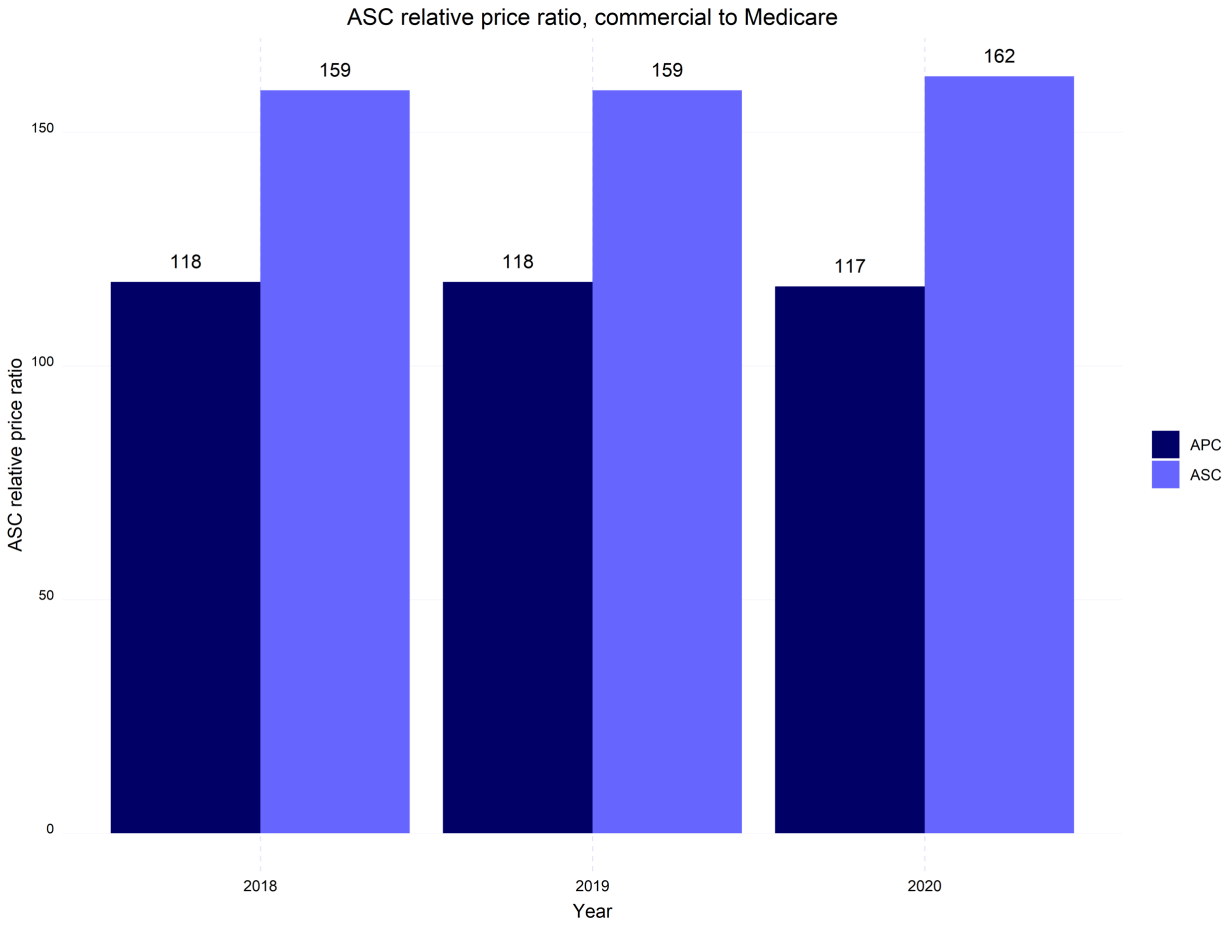
Price Differences Between Hospital and Nonhospital Facilities

As discussed above, many common surgical services can be performed in hospital and nonhospital facilities. However, Medicare reimburses ASCs at a lower rate than HOPDs. Medicare ASC rates are set at approximately 60 percent of HOPD rates. Thus, applying the Medicare payment rate to ASC services will reflect the lack of site-neutral payments in Medicare. We simulated Medicare payments using Medicare payment rates to ASCs and simulated relative prices that apply the Ambulatory Payment Classification (APC) model that is used to pay HOPDs under Medicare. In other words, we calculated the commercial percent of Medicare for ASC services if the ASC was paid as an HOPD. Because Medicare has higher payment rates for HOPDs, this simulated percent of Medicare will be lower than the percent of Medicare that uses Medicare ASC payment rates.

Figure 3.9 presents ASC prices relative to Medicare prices. ASC commercial prices increased slightly faster than Medicare over the study period, from 159 percent of Medicare to 162 percent, but remain well below hospital outpatient relative prices (highlighted in Figure 3.1), which

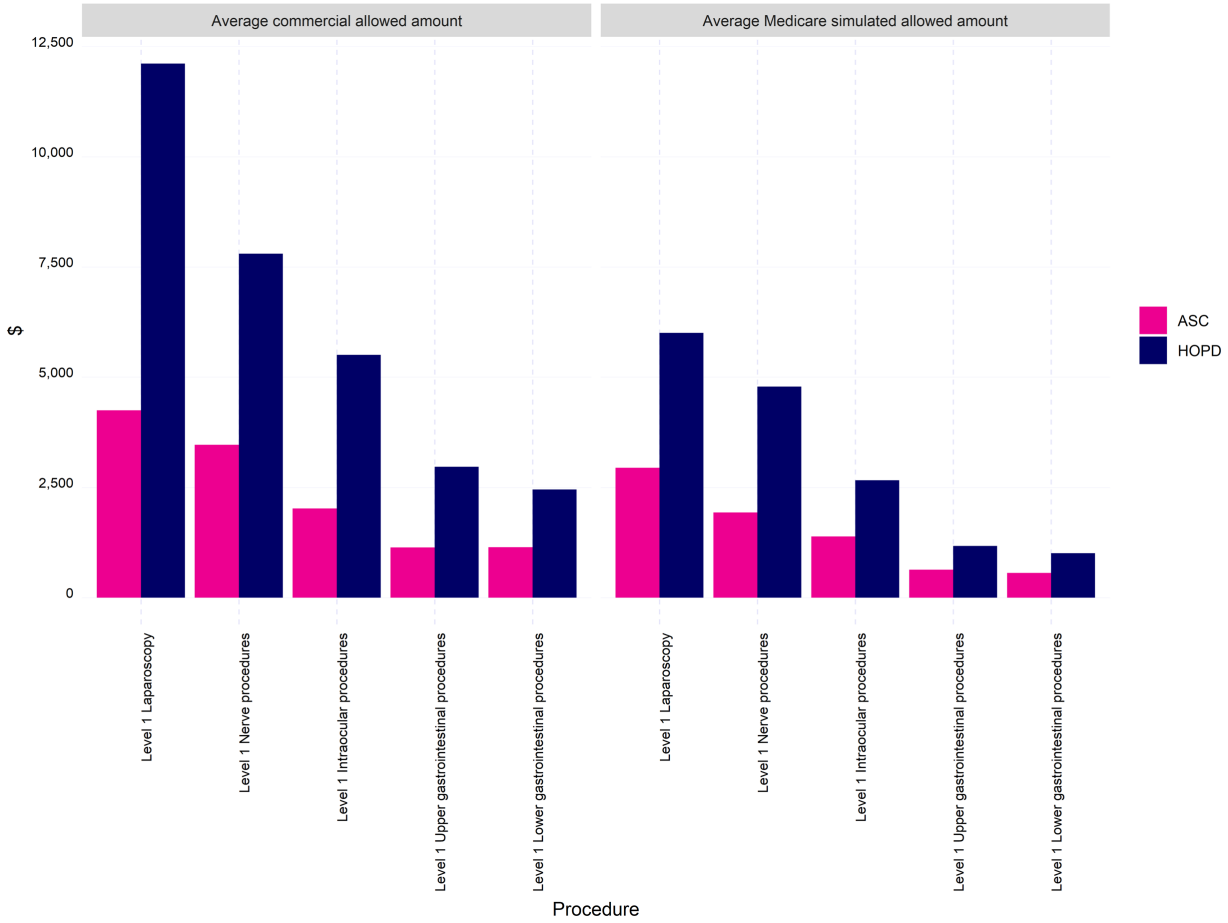
averaged 234 percent of Medicare during this period. Figure 3.9 also reports relative prices using Medicare APC's pricing model for HOPDs. In other words, the APC payment bars in Figure 3.9 reflect relative prices for ASCs, if the ASC were paid the same as HOPDs in Medicare. In this scenario, relative prices for ASCs averaged 118 percent of Medicare in 2018 and 2019 and 117 percent in 2020.

Figure 3.9. Trends in Ambulatory Surgical Center Commercial Prices Relative to Medicare



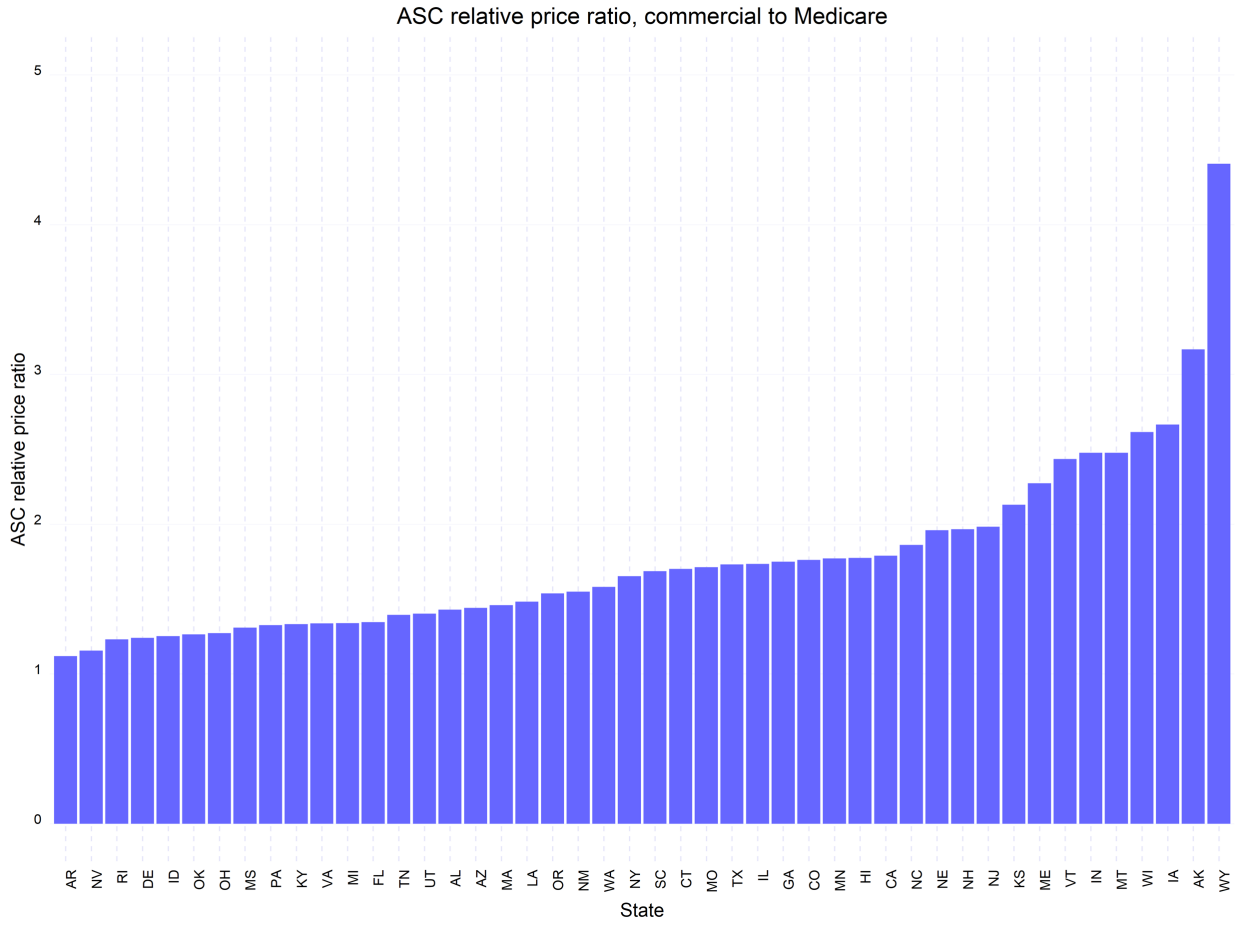
Differences in payments between ASCs and HOPDs are further reflected in Figure 3.10, which reports differences in mean private insurance and Medicare payments between ASCs and HOPDs for five common procedures. Across these procedures, Medicare per-procedure payments to HOPDs were 2.1 times larger than payments to ASCs. Among the private insured population used in this study, private insurer payments to HOPDs were 2.6 times larger than payments to ASCs. Thus, there exist larger payment differences based on site of care for private insurers than among Medicare.

Figure 3.10. Hospital Outpatient Department and Ambulatory Surgical Center Commercial and Medicare Prices for Common Procedures, 2018–2020



To illustrate the differences in prices based on site of care across states, Figure 3.11 plots state-level ASC relative prices. Relative prices ranged from close to Medicare rates in Arkansas, Nevada, and Rhode Island to above 300 percent of Medicare in Alaska and Wyoming.

Figure 3.11. State-Level Ambulatory Surgical Center Commercial Prices Relative to Medicare



4. Conclusion

Employers play a critical role in providing the largest source of insurance coverage and financing the U.S. health care system. This study documents wide variation in prices paid by employers and private insurers for hospital care. Prices also vary widely based on site of care. This report presents private insurance prices relative to Medicare as a way to compare private insurance prices to a common payer and as a way to apply a publicly available approach to fairly compare private insurance prices among different hospitals. This report is paired with supplemental data that discloses prices for specific hospitals.

Employers rely on third-party administrators, brokers, and consultants to negotiate prices and to help them navigate the complex landscape of the U.S. health care system. For some employers, hospital prices might simply reflect the value that hospitals deliver to their workforce. Other employers might view the prices of some hospitals as excessive. This report is not designed to make this distinction for employers but to provide information transparency that allows them to make this judgment. Employers who view the prices negotiated on their behalf as higher than they are comfortable paying might seek to use this study's information to reduce spending. This information can complement employers' existing benefit approaches in two ways.

First, the report highlights variation in prices, both among hospitals and among hospital and nonhospital facilities. Innovative employers and purchasers, such as the California Public Employees' Retirement System (CalPERS), have used this type of data to design programs that steer patients toward lower-priced hospitals and nonhospital facilities. For example, the CalPERS reference-based pricing program caps reimbursement for higher-priced hospitals and directs patients to lower-priced hospitals and ASCs. Evaluations of this program find meaningful reductions in savings, albeit for the narrowly defined set of procedures for which the program has been applied (Robinson, Brown, and Whaley, 2017). The lack of larger-scale savings has potentially muted other employers' interest in this type of model (Scanlon, 2020; Sinaiko, Alidina, and Mehrotra, 2019). More popular programs have "flipped" this model by offering rewards to go to lower-priced providers. Although widespread, these models have not led to meaningful savings (Whaley et al., 2022). Motivated by findings from earlier versions of this report, several Indiana employers implemented a narrow network plan for outpatient surgeries (Meyer, 2020). Narrow and tiered network plans have been linked to meaningful reductions in health care spending (Sinaiko, Landrum, and Chernew, 2017).

A potential disadvantage of the consumer-focused approaches, such as reference pricing, is that they add a layer of complexity to the patient's journey through the U.S. health care system. Regardless of insurance benefit design, patients still face challenges of referral patterns and navigating a rapidly consolidating health care system (Chernew et al., 2021). Even with robust information on prices, patients often have limited agency in selecting providers for

"downstream" care. These challenges are exacerbated by the rapid consolidation in physician markets. Physicians employed by a hospital or health system are likely to refer patients to a hospital instead of lower-priced sites of care (Richards, Seward, and Whaley, 2022; Whaley et al. 2021). These structural changes to the U.S. health care system hinder the ability of patient-focused information or financial incentives to meaningfully reduce spending.

A second potential use of the information contained in this report is to apply insight into the prices negotiated on behalf of employers and their workers to hold third parties accountable for prices negotiated on their behalf. For example, earlier rounds of this report highlighted that the Parkview Health System in Fort Wayne, Indiana, had among the highest prices in the country when measured relative to Medicare rates. Several Fort Wayne–area employers used this information to place pressure on their TPA to negotiate a new contract with lower prices (Slater, 2020). Equipped with information on negotiated prices, employers were able to place pressure on a large hospital system and TPAs to achieve lower prices for their workforce (Long, 2020). Other employer and policymaker pressures in Indiana led the Indiana University Health system to announce plans to reduce prices to the national average rate (Rudavsky, 2021).

Other employers have used similar price transparency information to monitor prices negotiated on their behalf. Perhaps the most well-known example is the State of Montana Benefit Plan, which, starting in 2016, instructed its TPA to cap prices at approximately 235 percent of Medicare rates. The introduction of this price cap was followed by substantial reductions in health care spending and a flattening of premium and patient deductible costs (Allen, 2018). This model addresses hospital prices "upstream" from the point of decision by patients and relies on purchasers to monitor the price negotiation process rather than relying on patients to navigate the complexities of the U.S health care system.

In either of these approaches, employers who view hospital prices as excessive can use price transparency information to inform benefit design choices and to have insight into the prices that are negotiated on their behalf. The choices employers make on health benefits dictate how a large and rising share of employee compensation is allocated and affect out-of-pocket costs for employees. For some employers, reducing growth in take-home wages to offset rising health care costs is an informed choice. For other employers, innovative approaches can be used to reduce spending on health care and increase the relative amount of compensation provided in wage benefits. Responsible employers can make either choice but should use information on prices to ensure this decision is an informed one.

Appendix A. Background on Hospital Markets and Pricing

How Private Health Plans Set Hospital Prices

Private health plans and hospitals generally agree to prices through a complex process of contract negotiations. If the hospital and health plan can agree on a set of contracted prices, then the hospital will be included in the plan's network, and patients typically face lower cost-sharing payments at in-network facilities compared with out-of-network facilities. If the health plan and hospital do not agree to a contract, patients who use services at that hospital will face out-of-network cost sharing, or the services will not be treated as a covered benefit at all, and patients will also potentially be subject to balance billing by the hospital, in which the hospital charges the patient for services not covered by insurance.

Both hospitals and private health plans have consolidated in part to increase their respective bargaining leverage. Many hospitals have joined hospital systems, which allow them to jointly negotiate prices. Some hospital systems have instituted all-or-nothing clauses, which require all hospitals to be in the network if a single hospital is in the network. These clauses limit the ability of employers to design lower-priced networks. In addition, several dominant hospital systems have implemented gag clauses that limit the ability of price transparency tools to display negotiated prices for these hospitals (Catalyst for Payment Reform and Health Care Incentives Improvement Institute, 2015; Gold, 2017).

The prices that result from the contract negotiations between health plans and hospitals can vary widely. In general, hospitals and plans both consider the hospital attributes that are important for patients (e.g., hospital safety, convenience, reputation, and quality scores). The hospitals for which patients have stronger preferences are generally able to negotiate higher prices, and health plans with larger market shares are generally able to demand lower prices (Trish and Herring, 2015). However, idiosyncratic factors such as market environment appear to play a large role, and the wide variation in prices has led to an increased focus on price transparency initiatives.

How Medicare Calculates Prices Paid for Hospital Services

Medicare, rather than negotiating with providers, sets prices administratively based on legislation enacted by Congress. Although some variation exists in Medicare's hospital prices, the variation is much narrower than for private health plans and is clearly related to specific hospital and patient characteristics. For each procedure and service, CMS has established a fee schedule, which is publicly available. Medicare then adjusts this fee schedule based on geographic marketplace and hospital type (e.g., teaching hospital or CAH). For hospital services,

Medicare uses different price-setting formulas depending on the type of hospital and the type of service.

For Medicare payments, case-mix adjustment is applied based on the type of service that an individual patient receives and is designed to account for the fact that services vary in the resource requirements. In the inpatient setting, Medicare uses Medicare Severity Diagnosis Related Groups (MS-DRGs), and, in the outpatient setting, Medicare uses APCs (MedPAC, 2018). For ASCs, Medicare uses APCs but also reduces payments by an ASC adjustor. Hospital-specific adjustments are applied to all services provided by a given hospital and are designed to account for differences in local wages among hospitals, the cost of doing business, and other hospital characteristics (e.g., teaching status). Outlier payments are added in a small number of cases to lessen hospitals' financial losses from treating cases that are exceptionally costly.

Detailed Method

Obtaining and Preprocessing the Claims Data

RAND entered into data use agreements with TPAs, the organizations that maintain APCDs, and health plans. The agreements describe the data security protocols and restrict the data to be used only for this project and sometimes also for related follow-on studies. The data security protocols and analytic plan were approved by RAND's Human Subjects Protection Committee.

Each participating employer instructed its health plan administrator or data warehouse to transmit paid claims data to RAND based on the following criteria:

- only enrollees in a plan sponsored by one of the participating employers
- facility claims and claims for professional services, but no pharmacy claims
- services provided from 2018 through 2020 (and, in some cases, a longer period)
- claims from private health plans only (this excludes enrollees in Medicare Advantage plans and Medicaid managed-care organizations)
- employer-sponsored plans with medical coverage (this excludes enrollees in dental-only plans or vision-only plans)
- employer-sponsored plans as enrollees' primary payer (this excludes claims paid as secondary payer—e.g., through a Medicare supplemental plan or through coordination of benefits with another private health plan).

The claims data that were transmitted to RAND excluded any direct patient identifiers (e.g., name or member number), and they were transmitted by secure file transfer protocol. Some data contributors provided limited data sets that contained protected health information, namely dates of service and date of birth. Before analyzing limited data sets, RAND preprocessed the data in a *cold room*, using an air-gapped computer to create a fully deidentified data set. Deidentification required stripping out any data elements that could be used to indirectly identify patients while retaining the minimum data necessary for the pricing analysis. For example, before leaving the cold room, date of birth was used to calculate age (in years) at the time of service, and age was

kept while date of birth was stripped out. Similarly, the "from" and "to" dates on the claim were used to identify the year in which a service was provided and the length of the service in days. The year of the service and length of service were kept while the specific dates of service were stripped out. After preprocessing, the claims data were transferred to a secure, dedicated encrypted drive where the main analysis was performed.

A *claim* is a request for payment for a set of services provided by a specific facility to an individual patient over a period of one or more days. A claim might consist of many line items, in which each line item represents one specific service and diagnosis. We applied the following criteria to limit the types of services and providers included in the analysis:

- facility claims—this excludes claims for professional services and prescription drug claims
- facility claims for hospital inpatient or hospital outpatient services
- claims for facilities whose identities in the private claims data could be matched to MPNs
- claims for services provided by Medicare-certified community hospitals—that is, short-stay hospitals that are paid by Medicare either under the IPPS or the CAH payment system
- claims for services covered by Medicare and paid through the IPPS or the outpatient prospective payment system (OPPS).

Each claim in the database includes detailed information on the procedure or service performed, the provider that performed the service, the price for that procedure that was negotiated by the provider and the insurer, and the amount of that price that was paid by the patient. Flags for in- versus out-of-network providers were generally either unavailable or not reported consistently. Therefore, the analysis included claims regardless of provider network status.

Measuring Relative Prices for Hospital Inpatient and Outpatient Services

Subsetting to Hospital Inpatient and Outpatient Services

To measure hospital prices, we had to identify claims for hospital services, as opposed to services provided by other types of facilities (e.g., skilled nursing facilities). To select hospital inpatient and outpatient services, we *subsetted* our data to include only claims with the place of service reported as hospital inpatient (type-of-bill code equal to 111 or 117) or hospital outpatient (type-of-bill code equal to 131 or 137).

Subsetting to Community Hospitals and Assigning Medicare Provider Numbers

We excluded from the analysis hospitals that are not Medicare certified, and we excluded hospitals other than IPPS or CAHs. Excluded facilities include cancer hospitals, children's hospitals, long-term care hospitals, and inpatient rehabilitation facilities. We also excluded from the analysis federal hospitals operated by the Veterans Health Administration.

To identify the universe of community hospitals, we used the December 2018 Medicare Provider of Services (POS) file, which lists hospitals from the Medicare POS by name. Then we manually assigned MPNs based on clear matches of name, address, and place of service. In some cases, the same hospital appears twice in the POS, once as an IPPS hospital and a second time after transitioning to CAH status. In those cases, the hospital MPN was assigned based on the timing of its transition to become a CAH.

Standardized Price Definition

Standardized units are defined and applied differently depending on the type of service. In the hospital inpatient setting, a standardized unit is one inpatient stay with relative weight equal to one. We used MS-DRG relative weights, although there are other algorithms available for assigning relative weights for inpatient stays, including All Patient Refined DRGs and Pediatric Modified DRGs. Relative weighting algorithms are designed to assign relative weights based on the clinical characteristics of the stay and the expected resource requirements.

In the hospital outpatient setting, a standardized unit is one service with a relative weight equal to one. In the outpatient setting, Medicare uses the APC system to assign relative weights to services. Like DRGs, APCs are designed to assign relative weights to services based on the clinical characteristics of the patient and service and the expected relative resource requirements.

In the ASC setting, a standardized unit is one service with a relative weight equal to one. Medicare uses a similar payment model to hospital outpatient services but multiplies by an ASC conversion factor, which is approximately 60 percent of the hospital outpatient conversion factor.

Appropriateness of Medicare as a Price Benchmark

Medicare provides a useful price benchmark for several reasons. Medicare is the largest purchaser of health care services in the world and, in many ways, defines and enforces the technical standards used for claims processing and payment in the U.S. health care system.

Private health plans negotiate prices with providers, and those negotiated prices will reflect the negotiating leverage of both the plan and the provider. Medicare prices, in contrast, are not affected by bargaining leverage but are instead set with the overarching goal of compensating providers fairly based on their costs of doing business and the services they provide (MedPAC, 2022). Medicare's price-setting formulas are not perfect (Hayes, Pettengill, and Stensland, 2007), but they have been refined over time based on ongoing analysis of legitimate sources of cost variation (Institute of Medicine, 2012) and with the goal of balancing the competing interests of providers, taxpayers, and beneficiaries.

Medicare hospital prices are adjusted for several key sources of legitimate variation in costs (MedPAC, 2022), including

- annual updates based on empirical measures of overall inflation in wages and prices of inputs used to produce hospital services, with a downward adjustment for expected improvements in productivity over time
- geographic adjustments based on local variation in wages and the cost of doing business
- hospital-specific adjustments for medical education and treating low-income patients and uninsured patients
- case-mix adjustment based on the diagnoses and treatments provided to an individual patient
- additional outlier payments for cases that are exceptionally costly relative to Medicare's standard price.

The federal government makes freely and publicly available detailed data on the prices paid (see, for example, CMS, 2016a; 2016b), detailed descriptions of the formulas that determine those prices (see, for example, Department of Health and Human Services and CMS, 2015), and the methods used to measure and summarize those prices (CMS, 2020b).

A growing body of research reports private prices relative to Medicare prices, allowing benchmarking and comparisons with the findings from the current study (Ginsburg, 2010; White, 2012; Selden et al., 2015; Clemens and Gottlieb, 2016; Trish et al., 2017; Pelech, 2017; Sen et al., 2019).

Finally, using Medicare as a price benchmark allows for comparisons of price ratios and not comparisons of absolute price differences. Price ratios are less likely to be influenced by outlier procedures.

Simulating Medicare Payment Amounts for Inpatient Services

The private claims data are reported at the line item level, whereas Medicare inpatient payments are determined based on services provided over the course of an inpatient stay. Therefore, we first collapsed our private claims data to the stay level, summing charges and allowed amounts across line items and maintaining a list of all diagnoses and treatment codes over the course of the stay.

For stays occurring at IPPS hospitals, we fed our stay-level claims data through the MS-DRG grouper software (CMS, 2018a). The grouper software assigns an MS-DRG based on diagnoses and procedures reported on the claims data, automatically applying the appropriate grouper version based on the federal fiscal year of the date of discharge (e.g., v36.0 for discharges from October 2016 through September 2017 and v38 for discharges from October 2020 through September 2021). The grouper software is compatible with International Classification of Disease versions 9 and 10 codes, and it successfully assigned MS-DRGs to almost all inpatient stays at IPPS hospitals. Stays that could not be assigned a valid MS-DRG were dropped from the analysis.

We then assigned the Medicare payment amount for each inpatient stay at an IPPS hospital, incorporating MS-DRG relative weights, hospital-specific adjustments, and any outlier payments. The factors applied to the hospital-specific adjustments include

- local wage indexes
- successful reporting of hospital quality indicators, as mandated by Section 501(b) of the 2003 Medicare Prescription Drug, Improvement, and Modernization Act
- meaningful use of electronic health records
- disproportionate share hospital adjustments for hospitals that treat large shares of low-income patients
- indirect medical education adjustments for teaching hospitals
- increased payments for Medicare-dependent hospitals, sole community hospitals, and essential access community hospitals
- uncompensated care adjustments
- Hospital Readmission Reduction Program penalties
- value-based payment adjustments.

As described in the report, Medicare's uncompensated care adjustments can result in very high Medicare prices for a handful of hospitals that provide large amounts of uncompensated care and have few Medicare discharges. To avoid using inappropriately high Medicare inpatient prices as a benchmark in those cases, we applied a correction factor to each hospital's Medicare-uncompensated care adjustment. The correction factor, which was calculated separately for each hospital year, equaled the number of Medicare discharges divided by the sum of the number of Medicare discharges and the number of private discharges, both calculated from RAND Hospital Data (2020). Private discharges were estimated as total discharges minus the sum of Medicare discharges and Medicaid and Children's Health Insurance Program discharges. Conceptually, the correction factor follows the spirit of the Medicare price benchmark (i.e., what would private plans pay if they followed Medicare's price setting?) and Medicare's uncompensated care adjustment (i.e., by how much does the price for each inpatient stay have to increase so that the hospital receives an appropriate amount in the aggregate?). In other words, if private health plans were paying Medicare prices, then the aggregate Medicare uncompensated care payments would be spread over a base that includes both Medicare discharges and private discharges, so the per-discharge adjustment would be correspondingly smaller.

Most data contributors provided claims data that included billed charges, and, for those claims, outlier payments were calculated based on billed charges multiplied by cost-to-charge ratios from the provider-specific file. A few data contributors did not agree to provide claims data that included billed charges, and, for those claims data, we simulated outlier payments for inpatient stays by applying a uniform 5 percent add-on. A few minor payment adjustments were not included in the analysis: add-on payments for new technologies, downward adjustments for short-stay transfers, and adjustments for low-volume hospitals.

CAHs are paid by Medicare for inpatient and outpatient services based on their reasonable costs plus 1 percent (CMS and Medicare Learning Network, 2022). Therefore, for inpatient stays

occurring at CAHs, we simulated Medicare payment amounts as billed charges multiplied by the hospital's Medicare inpatient cost-to-charge ratio multiplied by 1.01. The Medicare inpatient cost-to-charge ratio for each CAH and federal fiscal year was calculated using RAND Hospital Data (2020), which are based on data reported in the Healthcare Cost Report Information System form 2552-10.

Simulating Medicare Payment Amounts for Outpatient Services

To simulate Medicare payments for outpatient services provided at IPPS hospitals, we first fed our line item–level claims data through Integrated Outpatient Code Editor (IOCE) software (3M Health Information Systems, 2017). The IOCE determines, for each line item, whether the service is eligible for payment under the Medicare OPPS and, if so, the appropriate APC. Under Medicare's OPPS, line items might fall into one of three following categories:

- assigned an APC and eligible for payment by Medicare
- eligible for payment by Medicare but *packaged*, meaning that the line item is not paid separately and is instead subsumed within a larger service with its own APC (CMS and Medicare Learning Network, 2022)
- ineligible for payment under the Medicare OPPS.

We define an *outpatient service* as a line item that is assigned an APC. In some cases, a single patient visit can generate payment for several separate services.

We excluded from the analysis any line items that were flagged by the IOCE as ineligible for payment under the Medicare OPPS (such as outpatient therapy services, which are paid by Medicare under a fee schedule), nonallowed, or paid under special pass-through provisions. After excluding those line items, we identified all line items with valid APCs and assigned Medicare payment amounts to those line items, taking into account the relative weight of the APC, geographic wage adjustments, discounting for multiple procedures, and outlier payments. For claims from data contributors that did not provide billed charges, a uniform 1 percent add-on was applied for outlier payments. Payments for services provided by a sole community hospital (a type of IPPS hospital) were increased by 7.1 percent. Outpatient claims without any valid APCs were dropped from the analysis.

Some outpatient claims have two or more APCs, in which case we calculated the share of Medicare payments generated by each APC within a claim. We then summed the allowed amounts in the private claims data for each claim and allocated those allowed amounts to line items with APCs: This approach allowed us to calculate relative prices for different types of outpatient services.

To simulate Medicare payments for outpatient services provided by CAHs, we multiplied the billed charges for each line item by the Medicare outpatient cost-to-charge ratio and then multiplied the result by 1.01.

A Numerical Example

Suppose a hospital provided 50 inpatient hospital stays to enrollees in plans sponsored by employers that participated in the study. To calculate the relative price of those services, we follow these steps (see Table A.1):

1. Sum the total actual allowed amount in the private health plan claims data for those 50 stays ($1.5 million).
2. Group each inpatient stay using Medicare's MS-DRG grouper and assign a relative weight based on MS-DRGs and Medicare's relative weights (1.5).
3. Calculate the number of standardized services as the sum of the relative weights for all the stays or, equivalently, the number of stays multiplied by the average relative weight (75).
4. Calculate the standardized price as the total actual allowed amount divided by the number of standardized services ($20,000).
5. Simulate the amount that Medicare would have paid for those 50 stays ($10,000), taking into account relative weights and applying, as precisely as possible, the payment formulas used in the Medicare fee-for-service program ($750,000).
6. Calculate the relative price as the ratio of the total actual allowed amount over the simulated amount calculated in step 2 (2.00).

Table A.1. Calculating Relative Prices: A Simplified Example

	Values	Note
Number of services (A)	50	
Total actual allowed amount (B)	$1,500,000	
Case mix (average MS-DRG weight) (C)	1.5	
Standardized units of service (D)	75	= A * C
Standardized price (E)	$20,000	= B / D
Simulated Medicare payment amount (F)	$750,000	
Medicare price (G)	$10,000	= F / D
Relative price (H)	200%	= E / G

Calculating Standardized and Relative Prices for Hospitals, Hospital Systems, States, and Types of Services

Table A.1 illustrates the calculation of the standardized price and the relative price of inpatient care for a single hospital. Extending this concept, the relative price of inpatient care for a group of hospitals equals the sum of the allowed amounts for services provided by the group of hospitals divided by the sum of the simulated Medicare-allowed amounts for those services. Similarly, the standardized price for a group of hospitals equals the sum of the allowed amounts divided by the sum of the standardized units. The same general approach is used to calculate

standardized prices and relative prices for specific types of services (e.g., hospital outpatient emergency department visits and hospital inpatient stays for orthopedic procedures).

The overall relative price for a single hospital equals the total allowed amount (including inpatient and outpatient services) divided by the simulated Medicare payments for services provided by the hospital (including inpatient and outpatient services).

Abbreviations

APC	Ambulatory Payment Classification
APCD	all-payer claims database
ASC	ambulatory surgical center
CAH	critical access hospital
CalPERS	California Public Employees' Retirement System
CMS	Centers for Medicare & Medicaid Services
COVID-19	coronavirus disease 2019
DRG	diagnosis related group
HCRIS	Healthcare Cost Reporting Information System
HOPD	hospital outpatient department
IOCE	Integrated Outpatient Code Editor
IPPS	inpatient prospective payment system
MedPAC	Medicare Payment Advisory Commission
MPN	Medicare provider number
MS-DRG	Medicare Severity Diagnosis Related Group
OPPS	outpatient prospective payment system
POS	Provider of Services
TPA	third-party administrator

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